

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-1

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title:

**Respond to Turbine First Stage Pressure Transmitter Failure**K/A Reference: 001000A2.11  
RO – 4.4 SRO – 4.7Job Performance Measure  
No: Simulator 1

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ 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 at 50% Power.
- Startup in progress IAW 3-POP-2.1; Operation at Greater than 45% Power.
- Control Rods are in AUTO.

Required Materials: None

General References: 3-AOP-INST-1; Instrument / Controller Failures  
3-AOP-ROD-1; Rod Control and Indication System Malfunction

Initiating Cue: You are the ATC.

Time Critical Task: No

Validation Time: 5 minutes

Alternate Path: Yes

Task Standard: Respond to the initial failure IAW 3-AOP-INST, attempt to restore Tavg using control rods and then trip the reactor IAW 3-AOP-ROD-1 following the second malfunction.

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Performance Information

(Denote critical steps with a check mark ✓)

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✓1. **Performance Step:** Take manual actions as necessary to control parameters and stabilize the plant.

Standard: Place Rod Control in Manual.

Comment: Procedure Step 3.1

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2. **Performance Step:** Has an instrument failure occurred?

Standard: Determine an instrument failure has occurred; PT-412A has failed low.

Comment: Procedure Step 4.1 (Includes identification of 3-AOP-INST-1 as the appropriate mitigating procedure.)

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3. **Performance Step:** GO TO applicable step for the indicated failure.

Standard: Identify Turbine 1<sup>st</sup> Stage Pressure, step 4.174 as the affected step.

Comment: Procedure Step 4.2

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4. **Performance Step:** Has Channel A failed?

Standard: Determine PT-412A has failed low.

Comment: Procedure Step 4.174.

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## Performance Information

(Denote critical steps with a check mark ✓)

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5. Performance Step: Are control rods in manual control?

Standard: Rod control should be in manual at this time.

Comment: Procedure Step 4.175.

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6. Performance Step: Determine  $T_{ref}$  based on PT-412B using Graph RPC-9 ( $T_{ref}$  vs 1<sup>st</sup> Stage Pressure).

Standard: Using Graph determine  $T_{ref}$ .

Comment: Procedure Step 4.176. (Student may note previous  $T_{ave}$  value and wish to return to previous temperature)

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✓ 7. Performance Step: Is  $T_{ave}$  within 1.5°F of  $T_{ref}$ ? Control any of the following as necessary to maintain  $T_{ave}$  and  $T_{ref}$  on program for current reactor power:

- Rod control
- Boron concentration
- Turbine load

**CUE: The CRS directs restoring  $T_{ave}$  using Control Rods.** (Restore to previous rod height is acceptable)

Standard: Withdraw Control Rods to restore  $T_{ave}$ . (Restore to previous rod height is acceptable)

Comment: Procedure Step 4.177 & RNO.

**NOTE: Malfunction of rods to occur while withdrawing. Continuous outward rod motion.**

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**ALTERNATE PATH BEGINS HERE**

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## Performance Information

(Denote critical steps with a check mark ✓)

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8. Performance Step:      Observe Rods continuing to withdraw in Manual after In-Hold-Out switch released.

Standard: Observe step counters and IRPI continuing outward motion.

Comment:                      The following steps are from procedure 3- AOP-ROD-1.  
The candidate may just trip the reactor and GO TO 3-E-0.

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9. Performance Step:      Was this procedure entered due to continuous Unwarranted rod motion?

Standard: Determines Yes.

Comment: Procedure Step 4.1.

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10. Performance Step:      Is rod control in manual?

Standard: Determines rod control is in manual.

Comment: Procedure Step 4.2.

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11. Performance Step:      Does continuous unwarranted rod motion exist?

Standard: Determines Yes.

Comment: Procedure Step 4.3.

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## Performance Information

(Denote critical steps with a check mark ✓)

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✓ **12. Performance Step:** Trip the Reactor and GO TO E-0.

Standard: Trips the Reactor. (Manual Action)

Comment: Procedure Step 4.4

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Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

Approximately 50% Power IC

PT-412A, First Stage Turbine Pressure fails low.

MAL-TUR010A – TURB FIRST STAGE PRESS FAIL TO 0

Continuous Outward Unwarranted Rod Motion in Manual  
(Malfunction will be inserted when rod motion is initiated)

SW1-PCS003A

MAL-CRF006

MAL-CRF007

## Initial Conditions:

- Reactor at 50% Power.
- Startup in progress IAW 3-POP-2.1; Operation at Greater than 45% Power.
- Control Rods are in AUTO.

## Initiating Cue:

You are the ATC.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-2 (RO ONLY)

Facility: Indian Point 3 Task No: \_\_\_\_\_

Task Title: Transfer Buses 1-4 to the Station Aux Transformer

K/A Reference: 062000A401 Job Performance Measure No: \_\_\_\_\_ Simulator 2  
RO – 3.3 SRO – 3.1 (RO Only)

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 plant shutdown is in progress in accordance with 3-POP-3.1.
- Generator Load is approximately 35 MWe.
- All Precautions, Limitations, and Prerequisites of 3-SOP-EL-005, Operation of On-Site Power Sources have been reviewed, met and signed off.

Required Materials: 3-SOP-EL-005, Operation of On-Site Power Sources

General References: 3-SOP-EL-005, Operation of On-Site Power Sources

Initiating Cue: You are the BOP and the CRS has directed you to transfer Buses 1 - 4 to the Station Aux Transformer in accordance with 3-SOP-EL-005, Section 4.4.

Time Critical Task: No

Validation Time: 15 minutes

Alternate Path: No

Task Standard: Buses 1 – 4 are energized from the Station Aux Transformer and Unit Aux Transformer breakers are open.

## Performance Information

(Denote critical steps with a check mark ✓)

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1. Performance Step: Reviews NOTE prior to step 4.4.1.

Standard: Student reviews NOTE and utilizes proper place keeping.

Comment: NOTE prior to step 4.4.1.

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2. Performance Step: VERIFY LESS THAN 100 VOLT DIFFERENCE BETWEEN Station and Unit Auxiliary Transformers by performing either of the following:

- ADJUST MTG voltage
- PLACE Station or Unit Auxiliary Transformers Tap Changers in manual and ADJUST voltage

Standard: Student observes meters; adjusts MTG voltage or Station Aux or Unit Aux Transformers Tap Changers if necessary.

Comment: Procedure Step 4.4.1.

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✓ 3. Performance Step: IF desired to transfer 6.9KV Bus 1 to Station Auxiliary Transformer, THEN PERFORM the following:

1. PERFORM Voltage check per step 4.4.1.
2. **PLACE 6900V Bus No. 1 Synchroscope in Bus 1 Bus 5.**
3. IF Synchroscope is at 12 o'clock, THEN (CCR):
  - a. **CLOSE 6900V Bus No. 1-5 Tie breaker.**
  - b. **OPEN 6900V Bus No. 1 Normal Feed breaker.**
4. PLACE 6900V Bus No. 1 Synchroscope in Off.
5. IF transfer can NOT be completed, THEN CONTACT I&C to investigate.
6. VERIFY less than 2000 amps on 6900V Bus No. 5.

Standard: Student determines that transfer is desired. Observes voltage meters, places switch handle in Bus 1 Bus 5 position. When synchroscope is at 12 o'clock, rotates No. 1-5 Tie Breaker switch to Closed position and releases to auto. Student then rotates No. 1 Normal Feed Breaker switch to the Open position and releases to auto.

Comment: Procedure Step 4.4.2. Only bolded steps above are critical (2 & 3).

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## Performance Information

(Denote critical steps with a check mark ✓)

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- ✓ **4. Performance Step:** IF desired to transfer 6.9KV Bus 2 to Station Auxiliary Transformer, THEN PERFORM the following:
1. IF both of the following breakers are closed, THEN VERIFY 480V Bus No. 2A-3A Tie breaker is open:
    - a. 480V Bus No. 2A Normal Feed
    - b. 480V Bus No. 3A Normal Feed
  2. PERFORM Voltage check per step 4.4.1.
  3. **PLACE 6900V BUS No. 2 Synchroscope in Bus 2 Bus 5.**
  4. IF Synchroscope is at 12 o'clock, THEN (CCR):
    - a. **CLOSE 6900V Bus No. 2-5 Tie breaker.**
    - b. **OPEN 6900V Bus No. 2 Normal Feed breaker.**
  5. PLACE 6900V Bus No. 2 Synchroscope in Off.
  6. IF transfer can NOT be completed, THEN CONTACT I&C to investigate.
  7. VERIFY less than 2000 amps on 6900V Bus No. 5.

Standard:

Student determines that transfer is desired. Observes voltage meters, places switch handle in Bus 2 Bus 5 position. When synchroscope is at 12 o'clock, rotates No. 2-5 Tie Breaker switch to Closed position and releases to auto. Student then rotates No. 2 Normal Feed Breaker switch to the Open position and releases to auto.

Comment: Procedure Step 4.4.3. Only bolded steps above are critical (3 & 4).

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## Performance Information

(Denote critical steps with a check mark ✓)

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- ✓ **5. Performance Step:** IF desired to transfer 6.9KV Bus 3 to Station Auxiliary Transformer, THEN PERFORM the following:
1. IF both of the following breakers are closed, THEN VERIFY 480V Bus No. 2A-3A Tie breaker is open:
    - a. 480V Bus No. 2A Normal Feed
    - b. 480V Bus No. 3A Normal Feed
  2. PERFORM Voltage check per step 4.4.1.
  3. **PLACE 6900V BUS No. 3 Synchroscope in Bus 3 Bus 6.**
  4. IF Synchroscope is at 12 o'clock, THEN (CCR):
    - a. **CLOSE 6900V Bus No. 3-6 Tie breaker.**
    - b. **OPEN 6900V Bus No. 3 Normal Feed breaker.**
  5. PLACE 6900V Bus No. 3 Synchroscope in Off.
  6. IF transfer can NOT be completed, THEN CONTACT I&C to investigate.
  7. VERIFY less than 2000 amps on 6900V Bus No. 6.

Standard:

Student determines that transfer is desired. Observes voltage meters, places switch handle in Bus 3 Bus 6 position. When synchroscope is at 12 o'clock, rotates No. 3-6 Tie Breaker switch to Closed position and releases to auto. Student then rotates No. 3 Normal Feed Breaker switch to the Open position and releases to auto.

Comment: Procedure Step 4.4.4. Only bolded steps above are critical (3 & 4).

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## Performance Information

(Denote critical steps with a check mark ✓)

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- ✓ **6. Performance Step:** IF desired to transfer 6.9KV Bus 4 to Station Auxiliary Transformer, THEN PERFORM the following:
1. PERFORM Voltage check per step 4.4.1.
  2. **PLACE 6900V BUS No. 4 Synchroscope in Bus 4 Bus 6.**
  3. IF Synchroscope is at 12 o'clock, THEN (CCR):
    - a. **CLOSE 6900V Bus No. 4-6 Tie breaker.**
    - b. **OPEN 6900V Bus No. 4 Normal Feed breaker.**
  4. PLACE 6900V Bus No. 4 Synchroscope in Off.
  5. IF transfer can NOT be completed, THEN CONTACT I&C to investigate.
  6. VERIFY less than 2000 amps on 6900V Bus No. 6.

**Standard:** Student determines that transfer is desired. Observes voltage meters, places switch handle in Bus 4 Bus 6 position. When synchroscope is at 12 o'clock, rotates No. 4-6 Tie Breaker switch to Closed position and releases to auto. Student then rotates No. 4 Normal Feed Breaker switch to the Open position and releases to auto.

**Comment:** Procedure Step 4.4.5. Only bolded steps above are critical (2 & 3).

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- 7. Performance Step:** WHEN transfer is complete, THEN VERIFY the Unit and Station Auxiliary Transformer Tap Changers are in Auto.

**Standard:** Student ensures both tap changers are in Auto.

**Comment:** Procedure Step 4.4.6.

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**Terminating Cue:** JPM Complete



## VERIFICATION OF COMPLETION

Job Performance Measure No. \_\_\_\_\_

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

Generator Load < 40 MWe

## Initial Conditions:

- A plant shutdown is in progress in accordance with 3-POP-3.1.
- Generator Load is approximately 35 MWe.
- All Precautions, Limitations, and Prerequisites of 3-SOP-EL-005, Operation of On-Site Power Sources have been reviewed, met and signed off.

## Initiating Cue:

You are the BOP and the CRS has directed you to transfer Buses 1 - 4 to the Station Aux Transformer in accordance with 3-SOP-EL-005, Section 4.4.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-3

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Adjust Accumulator Level and/or Pressure as Required

K/A Reference:

006000A1.13

Job Performance Measure

No:

Simulator 3

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:

- The plant is at 100% power
- 31 SI Accumulator has a low level
- The Refueling Water Purification pump is NOT in service
- System Engineering has been informed that the accumulator is to be filled
- 32 SI Pump motor starting requirements are satisfied
- A dedicated operator is briefed and stationed to operate valves if necessary should SI actuation occur.

Required Materials: 3-SOP-SI-001; Safety Injection System Operation

General References: 3-SOP-SI-001; Safety Injection System Operation

Initiating Cue: The CRS has directed you to fill 31 SI accumulator to 24% using 32 SI Pump in accordance with SOP-SI-001, step 4.3.2.

Time Critical Task: No

Validation Time: 12 minutes

Alternate Path: No

Task Standard: 31 SI Accumulator filled to 24% with 32 SI Pump secured.

## Performance Information

(Denote critical steps with a check mark ✓)

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1. Performance Step: ENTER LCO 3.5.2 Action Statement.

Standard: Recognizes applicability of Technical Specification LCO 3.5.2.

Comment: Procedure Steps 4.3.2.3 through 4.3.2.5.  
When SI-859A, B and C valves are open, then a dedicated operator SHALL be stationed at SI-859C in continuous communication with the CCR to close SI-859C and SI-859A should SI actuation occur. (TS 3.6.3 Basis)

**CUE: LCO 3.5.2 is entered.**

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✓2. Performance Step: UNLOCK and OPEN the following valves:

- SI-859A, Accumulator Drain/Safety Injection Test Line Isolation
- SI-859C, Accumulator Drain/Safety Injection Test Line Isolation

OPEN SI-859B, Accumulator Drain/Safety Injection Test Line Isolation.

Standard: Contacts NPO to open valves.

Comment: Procedure Steps 4.3.2.4 and 4.3.2.5

**CUE: SI-859A, B, and C valves are open.**

NOTE: The NPO is also stationed at SI-859C in continuous communication with the CCR to close SI-859C and SI-859A should SI actuation occur.

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3. Performance Step: PERFORM Step 1.0 of Attachment 2, Data Sheet for Monitoring PRT Level.

Standard: Records initial PRT level, date, and time on Attachment 2.

Comment: Procedure Step 4.3.2.7 and NOTE on Attachment 2; "Initial and final PRT levels are recorded to determine whether SI-855, Test Line Relief, leaks by while Safety Injection Pumps are in service."

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## Performance Information

(Denote critical steps with a check mark ✓)

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✓4. **Performance Step:** START 32 SI Pump AND VERIFY adequate discharge pressure.

Standard: 32 HHSIP running with adequate discharge pressure

Comment: Procedure Step 4.3.2.8

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5. **Performance Step:** VERIFY SI pump recirc flow is 25 gpm or greater on FI-950, SI Pump Recirculation Flow Indicator. IF less than 25 gpm, THEN immediately STOP pump.

Standard: Request Recirculation Flow from NPO.

**CUE: State that the NPO reports Recirculation Flow is 50 gpm.**

Comment: Procedure Step 4.3.2.9.

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6. **Performance Step:** VERIFY the following valves are closed:

- SI-HCV-943, Accumulator Vent Control
- NNE-AOV-863, PORVs And Accumulators
- N<sub>2</sub> Supply Containment Isolation

Standard: Verify valves closed.

Comment: Procedure Step 4.3.2.10.

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## Performance Information

(Denote critical steps with a check mark ✓)

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- ✓ **7. Performance Step:**    IF desired to fill 31 accumulator, THEN:
- OPEN SI-AOV-891A, 31 Accumulator N<sub>2</sub> Supply Isolation.
  - OPEN SI-AOV-890A, 31 Accumulator Fill Isolation.
  - MAINTAIN desired pressure by throttling SI-HCV-943.
  - WHEN Desired level is reached, THEN CLOSE the following:
    - SI-HCV-943, Accumulator Vent Control
    - SI-AOV-890A, 31 Accumulator Fill Isolation
    - SI-AOV-891A, 31 Accumulator N<sub>2</sub> Supply Isolation

Standard:                      Recognizes the possible need to vent the accumulator while filling to 24%. Restores 31 Accumulator to required Tech Spec Level & Pressure.

Comment: Procedure Step 4.3.2.11.

- 
- ✓ **8. Performance Step:**    WHEN accumulator filling is complete, THEN STOP SI pump and PLACE control switch in AUTO.

Standard: Secures 32 HHSIP. Returns control switch to AUTO.

Comment: Procedure Step 4.3.2.16.

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Terminating Cue: JPM Complete



## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

Any 100% IC

31 Accumulator Level is low, out of spec.

SI-859A open as part of IC.

## Initial Conditions:

- The plant is at 100% power
- 31 SI Accumulator has a low level
- The Refueling Water Purification pump is NOT in service
- System Engineering has been informed that the accumulator is to be filled
- 32 SI Pump motor starting requirements are satisfied
- A dedicated operator is briefed and stationed to operate valves if necessary should SI actuation occur.

## Initiating Cue:

The CRS has directed you to fill 31 SI accumulator to 24% using 32 SI Pump in accordance with SOP-SI-001, step 4.3.2.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-4

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Depressurize the RCS following a SGTR (using PORVs) IAW 3-E-3.K/A Reference: 010000A4.03Job Performance Measure  
No: \_\_\_\_\_Simulator 4  
As  
completed

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing: \_\_\_\_\_

Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ 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 Steam Generator Tube Rupture has occurred in 32 SG.
- Procedure 3-E-3; Steam Generator Tube Rupture is completed up to and including step 15.
- Steam Generator 32 is isolated and RCS cooldown is complete.

Required Materials: 3-E-3; Steam Generator Tube Rupture

General References: 3-E-3; Steam Generator Tube Rupture

Initiating Cue: You are directed to depressurize the RCS to minimize break flow and refill Pressurizer in accordance with 3-E-3. Steps 1 through 15 of 3-E-3 are completed.

Time Critical Task: No

Validation Time: 7 minutes

Alternate Path: Yes

Task Standard: RCS depressurized in accordance with 3-E-3.

## Performance Information

(Denote critical steps with a check mark √)

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1. Performance Step: Check Ruptured SG(s) Pressure – Stable or Increasing.

Standard: Observes ruptured SG pressure stable.

Comment: Procedure Step 16.

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2. Performance Step: Observes NOTE prior to step 17.

Standard: Reviews NOTE prior to step 17, uses place keeping.

Comment: Subcooling is increasing.

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3. Performance Step: Check RCS Subcooling Based On Qualified Core Exit TCs  
– Greater than 60°F.

Standard: Checks QSPDS for subcooling > 60 degrees.

Comment: Procedure Step 17.

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4. Performance Step: Observes NOTE prior to step 18.

Standard: Reviews NOTE prior to step 17, uses place keeping.

Comment: Understands NOTE.

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## Performance Information

(Denote critical steps with a check mark ✓)

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✓ **5. Performance Step:** DEPRESSURIZE RCS Using PRZR Spray to Minimize Break Flow and Refill PRZR:

- a. CHECK normal PRZR spray AVAILABLE
- b. INITIATE maximum PRZR spray
- c. CHECK RCS pressure DECREASING

Standard: Verifies normal spray available (RCPs running). Attempts to open both spray valves using Master Controller and/or Individual Controllers. Both spray valves fail to open. Uses RNO and goes to step 20.

Prior to initiating spray, operator will review depressurization criteria in step 19.

- BOTH of the following:
  1. RCS pressure – LESS THAN RUPTURED SG(s) PRESSURE
  2. PRZR level – GREATER THAN 14% (32%)OR
- BOTH of the following:
  1. RCS pressure – WITHIN 300 PSI OF RUPTURED SG(s) PRESSURE
  2. PRZR level – GREATER THAN 45% (50%)OR
- PRZR level – GREATER THAN 73% (58%)

**If step 19 termination criteria is met, terminate the JPM and ask follow-up questions related to step 18 RNO and the use of PRZR PORVs per step 20.**

Comment: Procedure Step 18.

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**ALTERNATE PATH BEGINS HERE**

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6. Performance Step: Observes CAUTION and NOTE prior to step 20.

Standard: Reviews NOTE prior to step 20, uses place keeping.

Comment: Understands CAUTION and NOTE.

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## Performance Information

(Denote critical steps with a check mark ✓)

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✓ **7. Performance Step:**      DEPRESSURIZE RCS Using PRZR PORV to Minimize Break Flow and Refill PRZR:

- a. CHECK PRZR PORVs – ANY AVAILABLE
- b. OPEN one PRZR PORV
- c. CHECK RCS pressure DECREASING

Standard:                      Determines both block valves are open and both PORVs have power. Opens one PORV, verifies RCS pressure is decreasing.

Comment:      Procedure Step 20. Should review termination criteria prior to initiating the depressurization with the open PORV. Pressure will drop rapidly; PZR Level will rise rapidly as well.

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## Performance Information

(Denote critical steps with a check mark ✓)

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✓8. **Performance Step:** DETERMINE If RCS Depressurization Using PRZR PORV Should Be Terminated:

a. CHECK ANY of the following conditions satisfied:

• BOTH of the following:

1. RCS pressure – LESS THAN RUPTURED SG(s) PRESSURE
2. PRZR level – GREATER THAN 14% (32%)

OR

• PRZR level – GREATER THAN 73% (58%)

OR

• RCS subcooling based on qualified core exit TCs – LESS THAN 40°F

b. CLOSE PRZR PORV

Standard:

Verifies one of the three criteria is met and depressurization should be stopped. Closes open PORV.

Comment:

Procedure Step 21. Should review termination criteria prior to initiating the depressurization with the open PORV. Pressure will drop rapidly; PZR Level will rise rapidly as well.

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Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question: If step 19 termination criteria had not been met, describe the required actions if when initiating pressurizer spray you found spray to be ineffective in reducing RCS pressure?

Answer: If spray was ineffective or not functional, the action would be to follow the RNO for step 18 to step 20 and attempt to depressurize the RCS using PORVs. I would review and monitor the termination criteria given in step 21 while depressurizing using the PORVs.

Response:

Result: SAT or UNSAT

Examiner's signature and date: \_\_\_\_\_

## Simulator Setup

Reset Simulator to any 100% Power IC

Insert the following malfunctions:

- SWI-AIR002A OFF (turns 1228 green lamp off)
- SWI-AIR002B ON (turns 1228 red lamp on)
- SWI-AIR002C OFF (keeps valve 1228 closed)
- MAL-SGN005B 15 (initiates a tube rupture on 32 SG at ~ 325 gpm)

Perform the following to setup the JPM:

- Insert a SGTR in 32 SG MAL-SGN005B (~ 325 gpm)
- Initiate a Rx Trip and Safety Injection
- Perform the actions in E-0 and RO-1 and transition to E-3
- Perform steps 1-15 in E-3 and freeze the simulator

Initial Conditions:

- A Steam Generator Tube Rupture has occurred in 32 SG.
- Procedure 3-E-3; Steam Generator Tube Rupture is completed up to and including step 15.
- Steam Generator 32 is isolated and RCS cooldown is complete.

Initiating Cue:

You are directed to depressurize the RCS to minimize break flow and refill Pressurizer in accordance with 3-E-3. Steps 1 through 15 of 3-E-3 are completed.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-5

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: RHR Pump Trip while on shutdown cooling IAW 3-AOP-RHR-1K/A Reference: 005000A2.03  
RO – 2.9 SRO – 3.1Job Performance Measure  
No: Simulator 5

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ 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:

- MODE 5
- RCS Temperature is 162°F
- PRZR Cold Cal Level is 64% (RCS is de-pressurized)
- 31 RHR Pump in service for shutdown cooling

Required Materials: 3-POP-4.1; Operation at Cold Shutdown  
3-AOP-RHR-1; Loss of RHR

General References: 3-POP-4.1; Operation at Cold Shutdown  
3-AOP-RHR-1; Loss of RHR

Initiating Cue: Maintain Stable MODE 5 conditions with 31 RHR Pump in service for shutdown cooling.

Time Critical Task: No.

Validation Time: 15 minutes

Alternate Path: No.

Task Standard: Restore shutdown cooling by starting 32 RHR Pump IAW 3-AOP-RHR-1.

## Performance Information

(Denote critical steps with a check mark ✓)

- 
1. Performance Step: Operator recognizes the loss of 31 RHR Pump.  
Acknowledges Panel SHF – Electrical Annunciator Alarm;  
“480 V SWGR MOTOR TRIP (COMMON)”.

Standard: Acknowledges Annunciator Alarm, recognizes that 31 RHR Pump has tripped.

Comment: Operator is monitoring MODE 5 shutdown cooling, should recognize the loss of 31 RHR Pump and enter 3-AOP-RHR-1. The operator may refer to the Annunciator Response Procedure (ARP) first. If a field operator is dispatched to the breaker, cue that the pump motor has tripped on overcurrent.

**CUE: 31 RHR Pump Motor breaker has tripped on motor overcurrent.  
(Local breaker flags if NPO dispatched)**

- 
2. Performance Step: Operator recommends entry or enters 3-AOP-RHR-1 to respond to the loss of shutdown cooling.

Standard: Operator enters 3-AOP-RHR-1; Loss of RHR.

Comment: Cue student to enter procedure, if they recommend the SRO enter the procedure.

**CUE: Cue student to enter 3-AOP-RHR-1 if recommended.**

**CUE: Cue student that the additional Reactor Operator will control Pressurizer Level.**

- 
- ✓ 3. Performance Step: Is RCS temperature < 200°F?

Standard: Operator answers yes and continues to step 4.2 of procedure. Operator recognizes that RHR is out of service, utilizes core exit thermocouples to verify temperature < 200 degrees or RCS Wide Range Temperature < 200 degrees.

Comment: Procedure Step 4.1. RCS Wide Range Temperature indication may be utilized as well.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

4. Performance Step: Is vacuum fill in progress?

Standard: Operator answers no and proceeds to step 4.4.

Comment: Procedure Step 4.2. RCS is still pressurized.

---

5. Performance Step: Is the RCS solid?

Standard: Operator answers no and proceeds to step 4.6.

Comment: Procedure Step 4.4.

---

6. Performance Step: Sound containment evacuation alarm.

Standard: Operator sounds the containment evacuation alarm.

Comment: Procedure Step 4.6.

---

7. Performance Step: Is RCS at reduced inventory (< 67"-6")?

Standard: Operator answers no and proceeds to step 4.15.

Comment: Procedure Step 4.7.

---

8. Performance Step: Has containment closure been established?

Standard: Operator answers no and ensures that the RNO task is initiated. "INITIATE containment closure to be achieved within 4 hours OR time to boil, whichever is shorter.

Comment: Procedure Step 4.15. Cue the operator that the Field Supervisor has initiated containment closure. Time to boil determination is not being tested.

**CUE: Field Supervisor has initiated containment closure.**

---



## Performance Information

(Denote critical steps with a check mark ✓)

- 
9. Performance Step: Have either of the following valves inadvertently closed?
- AC-MOV-730
  - AC-MOV-731

Standard: Operator answers no and proceeds to step 4.19.

Comment: Procedure Step 4.16.

- 
- ✓10. Performance Step: Is an RHR pump running?

Standard: Operator answers no and performs steps in the RNO. Operator closes RHR heat exchanger flow control valve (SI-HCV-638/640). Operator determines that the pump was not stopped due to cavitation, but recognizes that 32 RHR Pump is available and proceeds to step 4.25.

Comment: Procedure Step 4.19 and associated RNO. Step 2 of the RNO is a two part; "IF RHR pump was stopped due to cavitation **OR** any RHR pump is available, **THEN GO TO** Step 4.25." Operator does not want to go to step 4.37 if a RHR pump is available (32).

- 
11. Performance Step: Is RCS level > 62'-6"?

Standard: Operator answers yes and continues to step 4.26.

Comment: Procedure Step 4.25.

- 
12. Performance Step: Dispatch an operator to monitor RHR pump restart for abnormal indications.

Standard: Operator dispatches an operator to 32 RHR Pump.

Comment: Procedure Step 4.26. Cue that operator is standing by for pump start.

**CUE: Operator is standing by for pump start.**

- 
13. Performance Step: GO TO Step 4.31

Standard: Operator proceeds to step 4.31.

Comment: Procedure Step 4.27.

---

---

√ **14. Performance Step:** Start an available RHR pump.

Standard: Operator starts 32 RHR while monitoring indications such as pump amps, recirc flow, etc.

Comment: Procedure Step 4.31.

**CUE:** Local operator reports no abnormal indications, pump running satisfactorily.

---

√ **15. Performance Step:** Slowly open any of the following to establish flow at  $\geq 1170$  gpm:

- SI-HCV-638
- SI-HCV-640

Standard: Operator establishes  $\geq 1170$  gpm flow for shutdown cooling.

Comment: Procedure Step 4.32.

---

Terminating Cue: JPM Complete

VERIFICATION OF COMPLETION

Job Performance Measure No.

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

- MODE 5
- RCS Temperature is 162°F
- PRZR Cold Cal Level is 64% (RCS is de-pressurized)
- 31 RHR Pump in service for shutdown cooling
- 31 RHR Pump trips on motor overcurrent.
- 2<sup>nd</sup> Reactor Operator is required to control Pressurizer Level (Instructor).
- 2<sup>nd</sup> Reactor Operator may be required to control VCT Level as well. May want VCT level higher to preclude auto make-up later (Instructor).

## Initial Conditions:

- MODE 5
- RCS Temperature is 162°F
- PRZR Cold Cal Level is 64% (RCS is de-pressurized)
- 31 RHR Pump in service for shutdown cooling

## Initiating Cue:

Maintain Stable MODE 5 conditions with 31 RHR Pump in service for shutdown cooling.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-6

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Swap Essential Service Water Pumps (Check Valve on O/S pump not seated)K/A Reference: 076000A2.02  
RO – 2.7 SRO – 3.1Job Performance Measure  
No: Simulator 6

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ 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:**

- MODE 1, 100% Power
- Service Water Pump Mode Selector Switch selected to 4-5-6.

Required Materials: 3-SOP-RW-005; Service Water System Operation  
3-ARP-012; Panel SJF – Cooling Water and Air  
3-AOP-SW-1; Service Water Malfunction

General References: 3-SOP-RW-005; Service Water System Operation  
3-ARP-012; Panel SJF – Cooling Water and Air  
3-AOP-SW-1; Service Water Malfunction

Initiating Cue: You have been directed to swap essential service water pumps IAW 3-SOP-RW-005; Service Water System Operation. System Engineering requests that 36 Service Water Pump be removed from service.

Time Critical Task: No

Validation Time: 15 minutes

Alternate Path: Yes

Task Standard: Swap essential service water pumps IAW 3-SOP-AOP-SW-1, step 4.1.8.



## Performance Information

(Denote critical steps with a check mark ✓)

- 
1. Performance Step: REVIEW Unit Log to ensure motor starting requirements of 3-SOP-EL-004a; Electric Motor Operation, will be met.

Standard: Operator requests to review Unit Log.

**Cue: Motor starting requirements of 3-SOP-EL-004A have been met.**

Comment: Procedure Step 4.1.8.1. Cue operator that motor starting requirements have been met. Cold start criteria. Cue operator if needed that NPO in field has verified pump ready to start.

**CUE: NPO in field has verified pump is ready to start.**

- 
- ✓2. Performance Step: START desired SWP.

Standard: Operator starts desired SWP (34 or 35), observing and monitoring pump, motor, and system parameters.

Comment: Procedure Step 4.1.8.2. Operator should observe normal pump parameters including observing an increase in associated SW header pressure. Cue operator if needed that NPO in field has verified pump ready to start and has verified proper operation following start.

**CUE: NPO in field has verified pump is operating properly.**

- 
3. Performance Step: WHEN pressure increase is noted on affected header, THEN SECURE desired SWP. (36 SWP per system engineering)

Standard: Operator secures 36 SWP monitoring service water header pressure.

Comment: Procedure Step 4.1.8.3.

---

**ALTERNATE PATH BEGINS HERE**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓4. **Performance Step:** VERIFY affected header pressure stabilizes between 60 and 97.5 psig. Acknowledge Panel SJF Annunciator Alarm for low service water header pressure; "SERVICE WTR. HDR. (34, 35, 36) HIGH LOW PRESS"; review and take appropriate actions IAW the Alarm Response Procedure (ARP).

IF low pressure condition exists, THEN:

- START 1 additional pump, as necessary.
- INVESTIGATE cause of alarm.

IF necessary, THEN GO TO 3-AOP-SW-1; Service Water Malfunction.

**Standard:** Operator acknowledges low header pressure condition, recognizes that it is not a normal response and refers to the ARP. Operator may go directly to the AOP. Operator also recognizes entry condition for AOP-SW-1. They may request NPO in field to investigate. If they have an NPO investigate in field, then cue that it appears that 36 SWP shaft is rotating backwards. Operator should start 1 additional pump, as necessary.

**Comment:** Procedure Step 4.1.8.4 and ARP step 3.2. (Pressure should stabilize below 60 psig, but above 50 psig)

**CUE: (If NPO asked to investigate) It appears that 36 SWP shaft is rotating backwards.**

---

5. **Performance Step:** Is essential header affected?

**Standard:** Operator enters 3-AOP-SW-1; Service Water Malfunction. Operator answers yes and proceeds to next step.

**Comment:** Procedure Step 4.1 of 3-AOP-SW-1.

---

6. **Performance Step:** Are Backup SW Pumps available?

**Standard:** Operator answers yes and proceeds to next step.

**Comment:** Procedure Step 4.2.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

7. Performance Step: Start Backup SW Pumps as necessary to maintain 75 to 110 psig.

Standard: Operator starts Backup SW Pump if necessary.

Comment: Procedure Step 4.3. Operator should not need to start a backup pump, but may start one. They will start one if they failed to start a normal essential pump per the ARP.

---

8. Performance Step: **IAAT** SW Header pressure can **NOT** be maintained > 50 PSIG, **THEN PERFORM** one of the following based on system's ability to provide cooling:

- Trip the reactor and **INITIATE** E-0.
- **INITIATE** plant shutdown to MODE 3 ...

Standard: Operator recognizes that IAAT statement does not apply as header pressure is greater than 50 psig. Operator proceeds to next step.

Comment: Procedure Step 4.4.

---

9. Performance Step: **IAAT** a loss of all normal SW Pumps has occurred, **THEN GO TO** Step 4.50.

Standard: Operator recognizes that IAAT statement does not apply. Operator proceeds to next step.

Comment: Procedure Step 4.5.

---

10. Performance Step: **INITIATE** determination of affected header from pressure Indications and individual component temperatures.

Standard: Operator determines that the essential service water header is the only header affected.

Comment: Procedure Step 4.6.

---

## Performance Information

(Denote critical steps with a check mark ✓)

- 
11. Performance Step: Dispatch operators as necessary to perform the following:
- Determine cause of low pressure:
    - System leakage
    - SW pump discharge check **NOT** seated
    - SW TCV failed open
    - Strainer  $\Delta P$
- CUE: (If NPO asked to investigate) It appears that 36 SWP shaft is rotating backwards.**

Standard: Operator requests NPO in field to investigate. From field report, operator recognizes that the SW pump discharge check is NOT seated.

Comment: Procedure Step 4.7. Cue as necessary to describe discharge check valve not seated.

- 
- ✓ 12. Performance Step: **IAAT** A SW Pump discharge check valve is determined to be leaking back, **THEN** notify operator to close Associated SW pump outlet stop.

Standard: Operator recognizes that the SW pump discharge check is NOT seated. Operator notifies field NPO to close associated SW pump outlet stop.

Comment: Procedure Step 4.8. Have the simulator booth operator close the associated SW pump outlet stop.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

Any 100% IC

Service Water Pump Mode Selector Switch selected to 4-5-6.

36 Service Water Pump I/S.

Discharge check valve failed such that pressure drops to less than 60 psig, but greater than 50 psig. (Ensure pressure does not drop below trip setpoint.)

## Initial Conditions:

- MODE 1, 100% Power
- Service Water Pump Mode Selector Switch selected to 4-5-6.

## Initiating Cue:

You have been directed to swap essential service water pumps IAW 3-SOP-RW-005; Service Water System Operation. System Engineering requests that 36 Service Water Pump be removed from service.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-7



Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title:

Verify Containment Spray Operation IAW E-0, step 9.K/A Reference: 026000A2.03  
RO – 4.1 SRO – 4.4Job Performance Measure  
No: Simulator 7

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ 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 or Large Steam Break in Containment is in progress, 3-E-0;  
Reactor Trip or Safety Injection has been completed through step 8.

Required Materials: 3-E-0; Reactor Trip or Safety Injection

General References: 3-E-0; Reactor Trip or Safety Injection

Initiating Cue: You have been directed to continue implementation of 3-E-0.

Time Critical Task: No

Validation Time: 10 minutes

Alternate Path: Yes

Task Standard: Manually initiate Containment Spray and Phase B Isolation.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: CHECK containment pressure – HAS REMAINED LESS THAN 22 PSIG

Standard: Operator observes that containment pressure is greater than 22 psig and proceeds to the RNO.

Comment: Procedure Step 9.a. NOTE: Containment Spray and Phase B Isolation has not initiated and will not manually initiate via the red pushbuttons on CR panel SBF-1.

---

2. Performance Step: ENSURE containment spray has initiated.

Standard: Operator recognizes that containment spray has not initiated although required.

Comment: Procedure Step 9, RNO step a.1).

---

✓ 3. Performance Step: IF containment spray has NOT initiated, THEN manually INITIATE.

Standard: Operator recognizes that spray has not initiated and attempts to manually initiate containment spray by simultaneously depressing both red pushbuttons on CR panel SBF-1.

Comment: Procedure Step 9, RNO step a.2).

---

✓ 4. Performance Step: IF containment spray cannot be initiated manually, THEN manually START pumps and ALIGN valves.

Standard: Operator recognizes that simultaneously depressing both red pushbuttons on CR panel SBF-1 did not work. Operator then manually starts containment spray pumps and aligns appropriate valves to initiate spray flow.

Comment: Procedure Step 9, RNO step a.3).

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

5. Performance Step: Verify containment isolation phase B valves are closed.

Standard: Operator recognizes that containment phase B valves are not closed.

Comment: Procedure Step 9, RNO step a.4).

---

✓ **6. Performance Step:** IF containment isolation phase B valves are NOT closed, THEN manually CLOSE valves.

Standard: Operator recognizes that all containment phase B valves are not closed and manually initiates closure from the control room. Operator verifies all containment phase B valves are closed.

1. AC-MOV-784, RCP CCW Bearing Return Isolation
2. AC-MOV-786, RCP CCW Bearing Return Isolation
3. AC-MOV-769, RCP CCW Supply Isolation
4. AC-MOV-797, RCP CCW Supply Isolation
5. AC-FCV-625, RCP CCW Thermal Barrier Return Isolation
6. AC-MOV-789, RCP CCW Thermal Barrier Return Isolation
7. CH-MOV-222, Seal Water Return Isolation

Comment: Procedure Step 9, RNO step a.5). All valves will close all 7 valves from the control room.

---

✓ **7. Performance Step:** STOP all RCPs.

Standard: Operator stops all RCPs.

Comment: Procedure Step 9, RNO step a.6).

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

LOCA or Large Steam Break in containment.

Containment Pressure > 22 psig.

Containment Spray and Phase B does not actuate automatically.

Containment Spray and Phase B red pushbuttons do not work.

Initial Conditions:

A LOCA or Large Steam Break in Containment is in progress, 3-E-0; Reactor Trip or Safety Injection has been completed through step 8.

Initiating Cue:

You have been directed to continue implementation of 3-E-0.

# JOB PERFORMANCE MEASURE

## JPM SIMULATOR-8

Facility: Indian Point

Task No: \_\_\_\_\_

Task Title:

Pressurizer Pressure Channel fails low, trip bistables.K/A Reference: 012000A4.04  
RO – 3.3 SRO – 3.3Job Performance Measure  
No: Simulator 8

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ 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:

- 100% Power.
- PZRZ Pressure Channel Defeat Switch is in the "Defeat III and IV" switch position.

Required Materials: 3-ARP-003; Panel SAF Annunciator Alarm Response  
3-AOP-INST-1; Instrument/Controller FailuresGeneral References: 3-ARP-003; Panel SAF Annunciator Alarm Response  
3-AOP-INST-1; Instrument/Controller Failures

Initiating Cue: You are the ATC. Respond to changing plant conditions or events.

Time Critical Task: No

Validation Time: 15 minutes

Alternate Path: No

Task Standard: Respond to Alarm Channel PT-456 failing low. Respond to alarms and remove the channel from service IAW 3-INST-1; Instrument/Controller Failures. Trip appropriate bistables.



## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Respond to the following two Panel SAF – Reactor Coolant System alarms using the appropriate alarm response procedure(s):

- “PRESSURIZER LOW PRESS”
- “PRESSURIZER LOW PRESS (SI) CHANNEL TRIP”

Standard: Operator acknowledges the annunciators on Panel SAF and enters either or both ARP(s).

Comment: Annunciator Alarm Response expectations. Student may recognize the failed alarm channel, recognize plant is stable, and then enter 3-AOP-INST-1; Instrument/Controller Failures directly.

---

2. Performance Step: VERIFY alarm by observing PRZR pressure to determine if a channel or controller has failed.

Standard: Operator observes that Pressurizer Pressure Channel II (PT-456) has failed low. Operator recognizes that this was the alarm channel and observes that pressurizer pressure is stable and remains on program.

Comment: Procedure Step 3.1 (ARP).

---

3. Performance Step: IF channel or controller failure has occurred, THEN GO TO 3-AOP-INST-1, Instrument/Controller Failures.

Standard: Operator recognizes that a channel failure low has occurred on Pressurizer Pressure Channel II (PT-456). Operator enters 3-AOP-INST-1, Instrument/Controller Failures.

Comment: Procedure Step 3.2 (ARP). **If student recommends entry into 3-AOP-INST-1, cue student to enter AOP-INST-1.**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

4. Performance Step: Take manual actions as necessary to control parameters and stabilize the plant.

Standard: Operator recognizes that this was the alarm channel and observes that pressurizer pressure is stable and remains on program. No manual control actions required.

Comment: Procedure Step 3.1 (AOP).

---

5. Performance Step: Has an instrument failure occurred?

Standard: Operator answers yes and proceeds to the next step. Operator recognizes that a channel failure low has occurred on Pressurizer Pressure Channel II (PT-456).

Comment: Procedure Step 4.1 (AOP).

---

6. Performance Step: **GO TO** the applicable step for the indicated failure.

Standard: Operator recognizes a PRZR Pressure channel failure and proceeds to step 4.83.

Comment: Procedure Step 4.2 (AOP).

---

7. Performance Step: Is PRZR pressure being controlled in auto?

Standard: Operator answers yes and proceeds to the next step.

Comment: Procedure Step 4.83 (AOP).

---

8. Performance Step: Has PI-457 failed high?

Standard: Operator answers no and proceeds to step 4.87.

Comment: Procedure Step 4.84 (AOP).

---

9. Performance Step: Has PI-474 failed high?

Standard: Operator answers no and proceeds to step 4.89.

Comment: Procedure Step 4.87 (AOP).

---

## Performance Information

(Denote critical steps with a check mark ✓)

- 
- ✓10. **Performance Step:**      **PERFORM** the following for affected instrument using Attachment 5 (Defeating Failed PRZR Pressure Channels)
- Place P/455A PRESS DEFEAT (Rack B-6) in position specified in Table 1 (Black Key).
  - Place ΔT DEFEAT (Rack B-8) in position specified in Table 2 (Black Key).

Standard:                      Operator places P/455A PRESS DEFEAT (Rack B-6) in the "DFT CH II III" position.

Operator places 3T/411A ΔT Defeat Switch (Rack B-8) in the "DFT CH II" position.

Comment: Procedure Step 4.89 (AOP).

- 
11. Performance Step:      Is PRZR pressure recorder transfer switch selected to non-affected channel?

Standard: Operator answers yes and proceeds to next step.

Comment: Procedure Step 4.90 (AOP).

- 
12. Performance Step: Return PRZR heater and spray controls to auto as desired.

Standard: Operator maintains controls in Auto.

Comment: Procedure Step 4.91 (AOP).

- 
13. Performance Step: Refer to Technical Specifications.

Standard: Operator starts to review Technical Specifications per step 4.92.

**CUE:**                              **STA and the CRS have completed reviewing the Technical Specification actions, step 4.92 may be signed off.**

Comment: Procedure Step 4.92 (AOP). Cue operator that step 4.92 is complete.

---

14. Performance Step: Are all redundant bistable status lights for failed instrument listed in Attachment 6 (PRZR Pressure Tables) Table 1 (Page 127) extinguished? (PI-456 – White)

- A-11, OTΔT LOOP 1 TC411A
- C-11, OTΔT LOOP 3 TC431A
- D-11, OTΔT LOOP 4 TC441A
- A-14, PRZR LO PRESS PC455A
- C-14, PRZR LO PRESS PC457A
- D-14, PRZR LO PRESS PC474A
- A-15, PRZR HI PRESS PC455B
- C-15, PRZR HI PRESS PC457B
- I-1, PRZR LO PRESS PC455E
- K-1, PRZR LO PRESS PC457E

Standard: Operator verifies all above redundant bistable status lights are extinguished.

Comment: Procedure Step 4.93 (AOP). Operator overtly points to the extinguished lights. If they don't overtly point, ask them to.

---

√ 15. Performance Step: Trip bistables for failed instrument listed in Attachment 6 (PRZR Pressure Tables) Table 2 (Page 131). PI-456, Protection Rack White A-10.

- Loop 2, Over Temp Trip
- Loop 2, High Press Trip
- Loop 2, Low Press Trip
- Loop 2, Unblock SI
- Loop 2, SI

Standard: Operator trips all required bistables per Attachment 6, Table 2 for PI-456.

Comment: Procedure Step 4.94 (AOP).

---

---

16. Performance Step: Are all bistable status lights for failed instrument listed in Attachment 6 (PRZR Pressure Tables) Table 3 (Page 133) illuminated? (PI-456-White)

- B-11, OTΔT LOOP 2 TC421A
- B-14, PRZR LO PRESS PC456A
- B-15 PRZR HI PRESS PC456B
- J-1, PRZR LO PRESS PC456E

Standard: Operator verifies all bistable status lights are illuminated per Attachment 6, Table 3 for PI-456.

Comment: Procedure Step 4.95 (AOP). Operator overtly points to the illuminated lights. If they don't overtly point, ask them to.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

Any 100% IC

PZRZ Pressure Channel Defeat Switch is in the "Defeat III and IV" switch position.

Fail Pressurizer Pressure Channel II (selected for alarm) – PT-456 low.

## Initial Conditions:

- 100% Power.
- PZRZ Pressure Channel Defeat Switch is in the "Defeat III and IV" switch position.

## Initiating Cue:

You are the ATC. Respond to changing plant conditions or events.



# JOB PERFORMANCE MEASURE

## JPM IN-PLANT-1

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Locally Start and Synchronize for Parallel Operation #31 EDGK/A Reference: 064000A2.03  
RO – 3.1 SRO – 3.1Job Performance Measure  
No: In-Plant 1

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:

- Unit is at 100% Power
- No equipment is out of service

Required Materials: 3-SOP-EL-001; Diesel Generator Operation

General References: 3-SOP-EL-001; Diesel Generator Operation

## Initiating Cues:

1. The Shift Manager has directed you to manually start 31 EDG, synchronize for parallel operations to 2A Bus, and raise load to 500KW IAW 3-SOP-EL-001; Diesel Generator Operation.
2. All applicable precautions and limitations of 3-SOP-EL-001; Diesel Generator Operation have been reviewed, signed off and met.
3. The pre-start checklist has been completed for 31 EDG.
4. The procedure has been satisfactorily completed and signed off through step 4.1.9.

Time Critical Task: No

Validation Time: 18 minutes

Alternate Path: No

Task Standard: 31 EDG started, paralleled with bus 2A and loaded to 500KW.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: PLACE Lamp Test switch in ON and VERIFY alarm lights operational.

Standard: Place Lamp Test switch to ON and verify alarm lamps illuminated.

Comment: Procedure Step 4.1.10.

**CUE: Test switch on, all lamps illuminated.**

---

2. Performance Step: RETURN Lamp Test switch to OFF.

Standard: Place Lamp Test switch to OFF and verify alarm lamps extinguished.

Comment: Procedure Step 4.1.11.

**CUE: Test switch OFF, all lamps extinguished.**

---

3. Performance Step: VERIFY Lockout Relay switch is RESET.

Standard: The EDG 86 Lockout Relay turned to RESET.

Comment: Procedure Step 4.1.12.

**CUE: 86 Relay RESET**

---

4. Performance Step: VERIFY Voltage Regulator Unit-Parallel Switch is in UNIT.

Standard: Verify switch in UNIT

Comment: Procedure Step 4.1.13.

---

5. Performance Step: VERIFY Voltage Regulator Transfer Control switch is in AUTO.

Standard: Verify switch in AUTO

Comment: Procedure Step 4.1.14.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

6. Performance Step: VERIFY Local Remote Switch is in LOCAL.

Standard: Verify switch in LOCAL

Comment: Procedure Step 4.1.15.

---

7. Performance Step: VERIFY the following relay flags on EDG cabinet are reset:

- Reverse Power Relay
- Overcurrent Phase 1, 2 & 3
- Under Over Voltage Relay

Standard: Verify all relay flags reset.

Comment: Procedure Step 4.1.16.

---

8. Performance Step: NOTIFY CCR that EDG will be started in manual.

Standard: Contact CR the EDG will be started.

Comment: Procedure Step 4.1.17.

**CUE: Acknowledge as the CCR.**

---

9. Performance Step: IF essential SW pressure is less than 75 psig, THEN  
START additional pumps, to return SW pressure to 75 psig  
or greater.

Standard: Verify SW Pressure > 75 psig.

Comment: Procedure Step 4.1.18.

**CUE: Service Water Pressure is 90 psig.**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓**10. Performance Step:** PLACE Engine Control switch in MAN.

Standard: Engine Control switch in MAN

Comment: Procedure Step 4.1.19.

**CUE: Engine Control switch in MAN.**

---

✓**11. Performance Step:** DEPRESS engine START pushbutton.

Standard: DEPRESS Engine Start pushbutton.

Comment: Procedure Step 4.1.20.

**CUE: EDG started.**

---

✓**12. Performance Step:** WHEN engine speed stabilizes, THEN TEST the Generator frequency response using the Governor Raise Lower Switch as follows:

- RAISE frequency to 61 Hz.
- LOWER frequency to 59 Hz.
- ADJUST frequency to 60 Hz.

Standard: RAISE and LOWER frequency 1.0 Hz using Governor Switch. Return to 60 Hz.

Comment: Procedure Step 4.1.21.

**CUE: Frequency increases and decreases 1.0 Hz. Frequency returns to 60 HZ.**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **13. Performance Step:** TEST Generator Voltage response using the Automatic Voltage Control Rheostat as follows:

- RAISE voltage to 510 volts.
- LOWER voltage to 450 volts.
- RETURN voltage to 480 VAC.

Standard: RAISE and LOWER voltage using Auto Volt Control rheostat. Returns voltage to 480 volts using rheostat.

Comment: Procedure Step 4.2.22.

**CUE: Voltage increases and decreases 30 volts. Voltage returns to 480 volts.**

---

14. Performance Step: VERIFY the following Diesel Engine Gage Panel indications:

- Crankcase Exhauster ON light ILLUMINATED.
- Lube Oil Pressure is between 68 and 85 psig
- Fuel Oil Pressure is between 30 and 45 psig (may be as high as 50 psig with EDG unloaded)
- Jacket Water Pressure is between 30 and 35 psig
- Air Manifold Pressure is between 0 and 2 psig (no load)

Standard: Observe the above conditions.

Comment: Procedure Step 4.1.23.

**CUE:**

- **Crankcase exhauster ON**
  - **Lube oil pressure is 73 psig**
  - **Fuel oil pressure is 37 psig**
  - **Jacket water pressure is 32 psig**
  - **Air manifold pressure is 0 psig**
-

## Performance Information

(Denote critical steps with a check mark ✓)

---

15. Performance Step:      VERIFY Diesel Gen. Vent Hood Blower starter indicating light is ON.

Standard: Verifies Hood Blower starter indicating light is energized.

Comment: Procedure Step 4.1.24.

**CUE: Red Light is illuminated.**

---

16. Performance Step: VERIFY SERV WTR COOLING LOW FLOW alarm is clear.

Standard: Verifies alarm not illuminated.

Comment: Procedure Step 4.1.25.

**CUE: Alarm not illuminated.**

---

17. Performance Step:      RECORD at least one set of running EDG Readings on applicable EDG Data Table.

Standard: Student starts to take readings using Attachment 1, 31 EDG DATA TABLE.

Comment: Procedure Step 4.1.26. Cue operator that readings are complete.

**CUE: Attachment 1, 31 EDG DATA TABLE is complete. All readings are SAT.**

---

18. Performance Step:      IF the Diesel is being run for maintenance AND a shutdown is desired, THEN GO TO Step 4.4.13.

Standard:                      Operator recognizes that the step is N/A based on initiating cue and proceeds to section 4.2 of the procedure.

Comment: Procedure Step 4.1.27.

---



## Performance Information

(Denote critical steps with a check mark ✓)

---

19. Performance Step: NOTIFY CCR that EDG is ready to be synchronized to 480V bus.

Standard: Operator informs CCR that 31 EDG is to be synchronized to 2A bus.

Comment: Procedure Step 4.2.1.

**CUE: CCR acknowledges that EDG is ready to be synchronized to 2A bus and directs you to continue synchronization and loading of 31 EDG.**

---

✓ 20. Performance Step: PLACE Voltage Regulator Unit-Parallel switch in PARALLEL.

Standard: Operator simulates placing Unit-Parallel switch in the parallel position.

Comment: Procedure Step 4.2.2.

**CUE: Unit-Parallel switch indicates parallel.**

---

✓ 21. Performance Step: PLACE applicable Synchroscope switch in ON.

Standard: Operator locates the synchroscope key and simulates turning the correct synchroscope switch to the on position.

Comment: Procedure Step 4.2.3.

**CUE: Synchroscope switch indicates on.**

---

✓ 22. Performance Step: ADJUST EDG Voltage to match Incoming (EDG) and Running (Bus) AC Volts using the Automatic Voltage Control Rheostat.

Standard: Operator simulates adjusting automatic voltage control rheostat to match EDG voltage to bus voltage.

Comment: Procedure Step 4.2.4.

**CUE: EDG and Bus voltage both read 490V.**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **23. Performance Step:** ADJUST EDG speed, using the Governor RAISE LOWER switch, to rotate Synchroscope slowly in fast direction.

Standard: Operator simulates adjusting governor so synchroscope rotates slowly in the fast direction.

Comment: Procedure Step 4.2.5.

**CUE: Synchroscope is rotating slowly in the fast direction.**

---

✓ **24. Performance Step:** WHEN Synchroscope is rotating slowly in fast direction AND indicates approximately 2 minutes before 12 o'clock, THEN CLOSE running EDG output breaker:

Standard: Operator simulates closing the EDG output BKR when the synchroscope indicates two minutes before the 12 o'clock position.

Comment: Procedure Step 4.2.6.

**CUE:** EDG output BKR indicates closed; Red BKR position light illuminates, green light extinguishes; synchroscope is stationary in the 12 o'clock position.

---

✓ **25. Performance Step:** RAISE load to 50 to 100 KW using Governor Switch.

Standard: Operator simulates increasing load to 50 to 100 KW using the governor switch.

Comment: Procedure Step 4.2.7.

**CUE: Load indicates 90 KW.**

---

26. Performance Step: PLACE Synchroscope switch in OFF.

Standard: Operator simulates turning synchroscope switch off.

Comment: Procedure Step 4.2.8.

**CUE: Synchroscope control switch indicates off.**

---

## Performance Information

(Denote critical steps with a check mark ✓)

- 
- ✓ **27. Performance Step:** Concurrently PERFORM the following:
- RAISE load using Governor Switch until required load is obtained.
  - ADJUST Automatic Voltage Control rheostat to achieve and maintain 350 – 400 lagging KVARs.

Standard: Operator simulates adjusting load with the governor switch and VARS using the voltage control rheostat.

Comment: Procedure Step 4.2.9.

**CUE: EDG load indicates 500 KW and VAR meter indicates 400 lagging KVARs.**

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A, In-Plant JPM

## Initial Conditions:

- Unit is at 100% Power
- No equipment is out of service

## Initiating Cue:

1. The Shift Manager has directed you to manually start 31 EDG, synchronize for parallel operations to 2A Bus, and raise load to 500KW IAW 3-SOP-EL-001; Diesel Generator Operation.
2. All applicable precautions and limitations of 3-SOP-EL-001; Diesel Generator Operation have been reviewed, signed off and met.
3. The pre-start checklist has been completed for 31 EDG.
4. The procedure has been satisfactorily completed and signed off through step 4.1.9.

# JOB PERFORMANCE MEASURE

## JPM IN-PLANT-2

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Perform a Radioactive Liquid Release IAW 3-SOP-WDS-014K/A Reference: 2.3.11  
RO – 3.8 SRO – 4.3Job Performance Measure  
No: In-Plant 2

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:**

- 31 Monitor Tank has been on recirculation IAW 3-SOP-WDS-006; Monitor Tank Operations and has been appropriately sampled by Chemistry.
- The Most Restrictive Discharge Rate has been determined to be 1980 gpm.
- R-18 is operable and has been source checked satisfactorily.
- The CRS has reviewed the release alignment and release calculations for completeness and signed the release permit authorizing release.
- The Liquid Waste Releases procedure; 3-SOP-WDS-014, has been completed and signed off through step 4.1.14.

**Required Materials:** 3-SOP-WDS-014; Liquid Waste Releases**General References:** 3-SOP-WDS-014; Liquid Waste Releases**Initiating Cue:** Perform a release of the 31 Waste Monitor Tank IAW 3-SOP-WDS-014, Section 4.1, beginning at step 4.1.15.**Time Critical Task:** No.**Validation Time:** 10 minutes**Alternate Path:** Yes



Task Standard: Perform a release of the 31 Waste Monitor Tank IAW 3-SOP-WDS-014 and respond to all indications.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: PLACE RCV-018 permissive to UNBLOCK.

Standard: Operator requests CCR to place RCV-018 permissive in UNBLOCK position.

Comment: Procedure Step 4.1.15.

**CUE: RCV-018 permissive in UNBLOCK.**

---

2. Performance Step: OPEN WD-RCV-018, Waste Condensate Discharge to River and PLACE in AUTO.

Standard: Operator requests CCR to OPEN WD-RCV-018 and place in AUTO.

Comment: Procedure Step 4.1.16.

**Cue: WD-RCV-018 is OPEN and in AUTO.**

---

3. Performance Step: Operator reviews NOTE and CAUTION prior to step 4.1.17.

Standard: Operator reviews and uses placekeeping.

Comment: NOTE and CAUTION prior to step 4.1.17.

---

✓4. Performance Step: UNLOCK and THROTTLE OPEN WD-1785, Liquid Waste Discharge To River Isolation as necessary to maintain discharge flow rate to less than or equal to the Most Restrictive Discharge Rate from permit (D) as indicated on FT-1064, Release Line Flow Transmitter.

Standard: Operator locates the valve and throttles open. Operator recognizes that per the NOTE and CAUTION, the valve could be completely opened and still not exceed the 120 gpm maximum flow rate.

Comment: Procedure Step 4.1.17. Cue operator flow rate on FT-1064.

**CUE: After operator simulates opening WD-1785 and after they view and overtly point to FT-1064, then tell them they read approximately 60 gpm.  
(60 x 1.5 = 90 < 120 gpm)**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

5. Performance Step: THROTTLE as necessary the applicable monitor tank pump discharge to obtain flow on FI-1064 less than or equal to Most Restrictive Discharge Rate from permit (D).

- CH-1242A; 31 Monitor Tank Pump Discharge Isolation
- CH-1242B; 32 Monitor Tank Pump Discharge Isolation

Standard: Operator recognizes that an appropriate flow rate has been achieved and that throttling the applicable monitor tank pump discharge valve (CH-1242A) is not necessary.

Comment: Procedure Step 4.1.18. If necessary cue operator that CH-1242A is appropriately throttled, FT-1064 still reads 60 gpm.

**CUE: CH-1242A is appropriately throttled, FT-1064 still reads 60 gpm.**

---

6. Performance Step: DETERMINE time required to release previously determined volume.

Standard: Cue provided, approximate time is 90 minutes. Operator calculates an approximate time required to release. Determines based on approximately 85% of tank volume at a release rate of 90 gpm.

**CUE: Approximate time required is 90 minutes.**

Comment: Procedure Step 4.1.19.

---

## Performance Information

(Denote critical steps with a check mark ✓)

- 
7. Performance Step:      VERIFY FT-1064 is operable by ensuring a non-zero value is displayed on digital waste release flow meter (55' PAB).
- CIRCLE Yes or No for "Discharge flow meter operable" on permit.

**CUE: Report that FT-1064 is now reading zero (0). Appears failed.**

Standard:                      Operator recognizes that the FT-1064 is not reading properly, could be inoperable or could be a lineup issue. The operator circles No for "Discharge flow meter operable" on permit.

Comment:    Procedure Step 4.1.20. Ensure operator acknowledges (3-way communication) that the FT-1064 now reads zero (0).

---

**ALTERNATE PATH BEGINS HERE**

---

8. Performance Step:      IF FT-1064 is inoperable or indicates 0 AND tank level is decreasing, THEN ESTIMATE discharge flow rate at about 1 hour into release by tank level change or pump performance curves and RECORD on permit.

**CUE:                              FT-1064 is reading zero (0) and the 31 Monitor Tank Level is NOT decreasing. Level is staying the same.**

Standard:                      Operator acknowledges that FT-1064 is reading zero (0) and that 31 Monitor Tank Level is NOT decreasing.

Comment:                      Procedure Step 4.1.20.1. Again ensure 3-way communication is completed regarding the cue.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **9. Performance Step:** IF FT-1064 is inoperable or indicates 0  
AND tank level is NOT decreasing,  
THEN TERMINATE release and investigate.

Standard: Operator recognizes that the release needs to be terminated and terminates the release. He may call the control room (CCR) directly to close the WD-RCV-018. He may implement Attachment 10; Monitor Tank Release Termination Alignment.

Comment: Procedure Step 4.1.20.2. Terminate this JPM when he has terminated the release per above standard. He may also locally terminate the release by closing the WD-1785.

**CUE: WD-RCV-018 is closed. Release is terminated, this JPM is now complete.**

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A  
In-Plant JPM

Initial Conditions:

- 31 Monitor Tank has been on recirculation IAW 3-SOP-WDS-006; Monitor Tank Operations and has been appropriately sampled by Chemistry.
- The Most Restrictive Discharge Rate has been determined to be 1980 gpm.
- R-18 is operable and has been source checked satisfactorily.
- The CRS has reviewed the release alignment and release calculations for completeness and signed the release permit authorizing release.
- The Liquid Waste Releases procedure; 3-SOP-WDS-014, has been completed and signed off through step 4.1.14.

Initiating Cue:

Perform a release of the 31 Waste Monitor Tank IAW 3-SOP-WDS-014, Section 4.1, beginning at step 4.1.15.



# JOB PERFORMANCE MEASURE

## JPM IN-PLANT-3

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Local Charging Pump Operation from RWST with CCW not availableK/A Reference: 008000A2.01  
RO – 3.3 SRO – 3.6Job Performance Measure  
No: In-Plant 3

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:

Following an earthquake:

- The Reactor is Tripped and is being cooled by natural circulation.
- A number of CCR control functions have been lost including the ability to control charging from the control room.

Required Materials: 3-SOP-ESP-001; Local Equipment Operation and Contingency Actions. **Need separate copies of Section 4.10 and 4.11 of procedure 3-SOP-ESP-001.**

General References: 3-SOP-ESP-001; Local Equipment Operation and Contingency Actions. **Need separate copies of Section 4.10 and 4.11 of procedure 3-SOP-ESP-001.**

Initiating Cue: The CRS has directed you to start and establish local control of 31 Charging Pump with suction from the RWST IAW 3-SOP-ESP-001, Section 4.10.

Time Critical Task: No

Validation Time: 10 minutes

Alternate Path: Yes

Task Standard: Establish local control of 31 Charging Pump with City Water aligned for cooling.

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓1. **Performance Step:** VERIFY suction supply is available from VCT or RWST

- VCT (LCV-112C OPEN)
- RWST (LCV-112B OR 288 OPEN)

Standard: Operator recognizes from initial cue that the CRS directed suction from the RWST. Operator verifies open or simulates opening LCV-112B or 288.

Comment: Procedure Step 4.10.1

**CUE: Neither LCV-112B or 288 is open. (Note: Once student describes how to open one of these valves, cue them it is now open.)**

---

2. Performance Step: VERIFY CCW is in service to support charging pump operation.

- IF CCW is NOT available, THEN ALIGN city water cooling per Section 4.11, Charging Pump Cooling Using City Water.

**CUE: A loss of all Component Cooling Water has occurred. FI-637, CCW Return from Charging Pump Flow Indication indicates zero.**

Standard: Operator understands cue that CCW is not available and requests Section 4.11 of procedure.

Comment: Procedure Step 4.10.2. **When requested provide student with a copy of Section 4.11 of 3-SOP-ESP-001.**

**CUE: Provide copy of Section 4.11 of 3-SOP-ESP-001.**

---

**ALTERNATE PATH BEGINS HERE**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **3. Performance Step:** IF CCW can NOT be established, THEN PROVIDE Normal Backup City Water as follows:

- **CLOSE AC-756A, CC Supply Header to Charging Pumps Inlet Isolation.**
- **CLOSE AC-756B, CC Return Header from Charging Pumps Outlet Isolation.**
- **OPEN MW-26, City Water Emergency Cooling Supply to Charging Pumps Isolation.**
- **OPEN AC-701A, Emergency City Water Cooling Supply to Charging Pump Inlet Isolation.**
- **Verify flange next to AC-701B, Emergency City Water Cooling Return from Charging Pumps Outlet Drain, is REMOVED.**
- **OPEN AC-701B, Emergency City Water Cooling Return from Charging Pumps Outlet Drain.**

**Standard:** Operator locates and overtly describes (simulates) the positioning of the above valves. The operator then transitions back to step 4.10.2 to complete start and local control of 31 Charging Pump.

**Comment:** Procedure Step 4.11.1.

**CUE:** Following the student's overt valve operating description, tell them each valve is in the required / described position. Best to cue following each simulated manipulation.

---

✓ **4. Performance Step:** PLACE speed control of pump(s) to be run to MAN (Charging Pump Speed Control Station PL-6).

**Standard:** Operator locates and simulates places speed control station to MAN.

**Comment:** Procedure Step 4.10.3.

**CUE:** In Manual.

---

---

Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **5. Performance Step:** ADJUST speed controller to approximately 20% (Charging Pump Speed Control Station PL-6).

Standard: Operator locates and simulates adjusting speed controller to 20%.

Comment: Procedure Step 4.10.4.

**CUE: Speed control knob set to 20%.**

---

✓ **6. Performance Step:** PLACE charging pump(s) emergency control switch to LOCAL (Charging, Letdown and 31 Pressurizer Heaters Local Control Panel on PL-2).

Standard: Operator locates and simulates placing control switch in LOCAL.

Comment: Procedure Step 4.10.5.

**CUE: Control switch is in LOCAL.**

---

✓ **7. Performance Step:** START directed pump(s) via local START pushbutton (Charging, Letdown and 31 Pressurizer Heaters Local Control Panel on PL-2).

Standard: Operator locates and simulates starting 31 Charging Pump via local pushbutton.

Comment: Procedure Step 4.10.6.

**CUE: 31 Charging Pump RUNNING.**

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A  
In-Plant JPM

**Need separate copies of Section 4.10 and 4.11 of procedure 3-SOP-ESP-001.**



Initial Conditions:

Following an earthquake:

- The Reactor is Tripped and is being cooled by natural circulation.
- A number of CCR control functions have been lost including the ability to control charging from the control room.

Initiating Cue:

The CRS has directed you to start and establish local control of 31 Charging Pump with suction from the RWST IAW 3-SOP-ESP-001, Section 4.10.

# JOB PERFORMANCE MEASURE

JPM  
RO ADMIN #1

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Electrical Verification – Offsite Power Sources SurveillanceK/A Reference: 1940002.1.18  
RO – 3.6Job Performance Measure  
No: RO Admin 1

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing: \_\_\_\_\_

Simulated Performance \_\_\_\_\_ Actual Performance XClassroom \_\_\_\_\_ Simulator X Plant \_\_\_\_\_**READ TO THE EXAMINEE**

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

**Initial Conditions:**

- Unit is in MODE 1, 100% Power.
- 6.9 KV Gas Turbine Substation Bus is tagged for an emergent maintenance issue.
- 31 EDG is scheduled to be removed from service or scheduled preventative maintenance activities within the next 4 hours.

Required Materials: 3-PT-W019; Electrical Verification – Offsite Power Sources and DC Distribution

General References: 3-PT-W019; Electrical Verification – Offsite Power Sources and DC Distribution

Initiating Cue: The CRS has requested that you complete surveillance 3-PT-W019; Electrical Verification – Offsite Power Sources and AC Distribution. All procedure precautions, limitations, and prerequisites have been reviewed and signed off. Procedure sections 4.1 and 4.2 have also been completed, including verification that all offsite power feeders are available from the Consolidated Edison District Operator.

Time Critical Task: No

Validation Time: 20 minutes

Task Standard: Using indications in the simulator and scripted evaluator cues complete procedure sections 4.3 through section 7.0, step 7.1.1.

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓1. **Performance Step:**      VERIFY 138 K.V. MO. DISC. SW BKR. 5 is Closed (Panel SHF)

Standard: Student locates and verifies breaker is closed and initials step 4.3.1

Comment: Procedure step 4.3.1.

---

✓2. **Performance Step:**      VERIFY Station Auxiliary Transformer output voltage as indicated on 6900V Bus Voltmeter (Panel SHF) is between 7.0 and 7.25 kV.

Standard:                      Student locates and verifies voltage is between 7.0 and 7.25kV. Student initials step 4.3.2.

Comment: Procedure step 4.3.2.

---

✓3. **Performance Step:**      VERIFY incoming voltage is indicated on Station Aux High Side Voltage (Panel SHF).

Standard:                      Student locates and verifies voltage. Student initials step 4.3.3.

Comment: Procedure step 4.3.3.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

4. Performance Step: VERIFY the following with Unit 2 CCR:

- Breaker GT1 at 13.8 kV Gas Turbine Bus is closed.
- Breakers GT2 at 13.8 kV Gas Turbine Bus is closed.
- Unit 2 Appendix R Diesel Generator is NOT only source of power to 13.8KV Gas Turbine Bus

Standard: Student makes contact with Unit 2 CCR (simulates), records check marks and initials step 4.4.1.

**CUE:** Cue student that both breakers (GT1 and GT2) are closed and that Unit 2 Appendix R Diesel is NOT only source of power to 13.8KV Gas Turbine Bus.

Comment: Procedure step 4.4.1.

---

✓ 5. Performance Step: VERIFY either GT-2F or GT-BT is Closed at Panel SHF and supplying Unit 3:

Standard: Student recognizes that both breakers are tagged and open. Student records the position of both as open.

Comment: Procedure step 4.4.2.

**CUE:** May need to cue student to continue.

---

6. Performance Step: VERIFY APP R DG is NOT only source of power to 6.9 kV Gas Turbine Substation Bus.

Standard: Student verifies that the APP R DG is NOT only source of power based on cue if necessary. Student initials step 4.4.3.

**CUE:** Cue student that the APP R DG is NOT only source of power to 6.9 kV Gas Turbine Substation Bus. (Could be confusing because of the bus being tagged out.) Sources are available if the tags are released.

Comment: Procedure step 4.4.3.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

**7. Performance Step:**      VERIFY 6.9kV Gas Turbine Substation Bus Voltage, as indicated at voltmeter on compartment labeled "Incoming Line from 3NBY02" at HSB 53', or at voltmeter labeled "AC Voltmeter Bus" on "Generator Bkr Compt" at Appendix R  
DG is between 6.8 and 7.2 kV.

**Standard:**                      Student dispatches an NPO to read voltage locally.  
Student acknowledges "0" volts from the field.

**CUE: Cue student that local voltage reading is zero (0) volts.**

**Comment:** Procedure step 4.4.4.

**CUE: May need to cue student to continue.**

---

**✓8. Performance Step:**      VERIFY 6.9 kV buses are aligned and energized as follows:

**Standard:**                      Student observes the control console indications and places a check mark next to the normal feeds for each of the 6.9kV buses. Student initials each for each bus.

**Comment:** Procedure step 4.5.1.

---

**✓9. Performance Step:**      IF in Modes 1, 2, 3, or 4,  
THEN VERIFY Essential Buses are aligned and energized as follows:

**Standard:**                      Student observes the control console indications and recognizes that each of the 480V Buses are energized (STA SERV. TRANS, Supply and Normal Feed Breakers closed) and each 480V bus has acceptable bus voltage. Student also recognizes that the cross-tie breakers are open in the test position.

**Comment:**                      Procedure step 4.6.1. Cue if necessary that the cross-tie breakers are in the test position.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

10. Performance Step: IF in Mode 5 or 6, THEN VERIFY the necessary Safeguards Buses (2A, 3A, 5A or 6A) required to support LCO 3.8.10 are OPERABLE, by recording energized bus voltages and breaker positions:

Standard: Student N/As the step.

Comment: Procedure step 4.6.2. Unit is in MODE 1.

---

✓ 11. Performance Step: VERIFY the following MCCs are energized (breakers closed):

Standard: Student observes the control console and determines that MCC 36A through 36E are energized. **Student may require a cue for indication of MCC 311. Student should recognize that the MFW Isolation and Bypass valves are powered from MCC 311. If student dispatches an NPO to check in the field, you may need to cue all the breakers closed locally.**

Comment: Procedure step 4.7.1. **Cue if necessary that MCC 311 is energized or all breakers if NPO dispatched.**

---

12. Performance Step: RECORD date/time test is completed:

Standard: Student records current date/time and initials step 4.8.1.

Comment: Procedure step 4.8.1.

---

13. Performance Step: Performer Prints name, initials, signs, and dates in Section 5.0.

Standard: Performer Prints name, initials, signs, and dates in Section 5.0.

Comment: Procedure step 5.0.

---



---

√**14. Performance Step:** Offsite AC electrical power sources SHALL be considered OPERABLE in Modes 1 through 4, when the following is satisfied (IF in Modes 5 or 6, THEN "N/A" this table):

Standard: Student circles acceptable YES for all sections (procedure steps) except steps 4.4.1 thru 4.4.4; 6.9kV Gas Turbine Substation Bus energized with voltage between 6.8 and 7.2 kV. Voltage was zero due to the bus being tagged. Student circles NO for steps 4.4.1 thru 4.4.4.

Comment: Procedure step 6.1.1.

---

15. Performance Step: Offsite AC electrical power sources SHALL be considered OPERABLE in Modes 5 and 6, when the following is satisfied (IF in Modes 1 through 4, THEN "N/A" this table):

Standard: Student N/As step.

Comment: Procedure step 6.1.2. Unit is in MODE 1.

---

√**16. Performance Step:** Based on the recorded data, are all Acceptance Criteria of Section 6.1 satisfied for the current plant operating Mode?

Standard: Student circles NO.

Comment: Procedure step 7.1.1. Student may complete the remainder of section 7.0 but it is not necessary.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

Any 100% IC

6.9 KV Gas Turbine Substation Bus is tagged for an emergent maintenance issue.

## Initial Conditions:

- Unit is in MODE 1, 100% Power.
- 6.9 KV Gas Turbine Substation Bus is tagged for an emergent maintenance issue.
- 31 EDG is scheduled to be removed from service or scheduled preventative maintenance activities within the next 4 hours.

## Initiating Cue:

The CRS has requested that you complete surveillance 3-PT-W019; Electrical Verification – Offsite Power Sources and AC Distribution. All procedure precautions, limitations, and prerequisites have been reviewed and signed off. Procedure sections 4.1 and 4.2 have also been completed, including verification that all offsite power feeders are available from the Consolidated Edison District Operator.

# JOB PERFORMANCE MEASURE

JPM  
R0-ADMIN #2

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Hydrogen Recombiner Operation – Determine Required Heater PowerK/A Reference: 1940002.1.25  
RO – 3.9Job Performance Measure  
No: RO Admin 2

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom X Simulator \_\_\_\_\_ 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:**

- Operators are implementing 3-ES-1.2; Post LOCA Cooldown and Depressurization step 27 and are preparing to place 31 Hydrogen Recombiner in service IAW 3-SOP-CB-007; H2 Recombiner Operation.
- 3-SOP-CB-007; H2 Recombiner Operation procedure is completed through step 4.1.4.
- Hydrogen Concentration is 2.2% by volume.
- 4 Containment FCUs are operating and have been operating throughout the accident.
- Current VC Pressure is 3.5 psig.
- Pre-LOCA VC Pressure was 0 psig.
- Pre-LOCA VC Temperature was 90°F

**Required Materials:** 3-SOP-CB-007; H2 Recombiner Operation.**General References:** 3-SOP-CB-007; H2 Recombiner Operation.**Initiating Cue:** Determine the Required Heater Power for 31 Hydrogen Recombiner IAW 3-SOP-CB-007. Calculate the value and record on Attachment 4.**Time Critical Task:** No

Validation Time: 9 minutes

Task Standard: Calculate the Required Heater Power for 31 Hydrogen Recombiner IAW  
3-SOP-CB-007, Attachment 4.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: NOTE the following parameters:

- Current VC Pressure
- Pre-LOCA VC Pressure
- Pre-LOCA VC Temperature

Standard: Operator records the above parameter values given as initial conditions.

Comment: Procedure Step 4.1.5.

---

✓2. Performance Step: DETERMINE Pressure Correction Factor (Cp) using Attachments 1, 2, or 3 as follows:

1. USE applicable attachment that is closest to the Pre-LOCA VC Temperature noted in Step 4.1.5:
  - Attachment 1 (60°F)
  - Attachment 2 (90°F)
  - Attachment 3 (120°F)
2. DETERMINE Pressure Correction factor (Cp) for Current VC Pressure noted in Step 4.1.5:
  - USE interpolation between Pre-LOCA VC Pressure curves as necessary.

Standard: Operator determines that Attachment 2 (90°F) is applicable. Using 3.5 psig for current VC pressure finds the correction factor to be 1.2 (+/- .005).

Comment: Procedure Steps 4.1.6, 4.1.6.1, and 4.1.6.2. Note that the number should be recorded in the next step.

---

✓3. Performance Step: RECORD Pressure Correction Factor (Cp) determined in Step 4.1.6.2 on Attachment 4.

Standard: Operator records the Pressure Correction Factor (Cp) as 1.2 (+/- .005) on Attachment 4.

Comment: Procedure Step 4.1.7.

---



## Performance Information

(Denote critical steps with a check mark ✓)

---

✓4. **Performance Step:** DETERMINE Required Heater Power using Attachment 4 as follows:

1. MULTIPLY Pressure Correction Factor ( $C_p$ ) (from Step 4.1.7) by Reference Power ( $P_{ref}$ ) for Recombiner to be placed in service.
2. RECORD calculation on Attachment 4.

Standard: Operator multiplies  $1.2 (+/-0.005) \times 42.3 \text{ KW}$  resulting in  $50.76 \text{ KW} (+/-0.2115)$ . Operator records Required Heater Power as  $50.76 \text{ KW} (+/-0.2115)$  on Attachment 4.

Comment: Procedure Step 4.1.8, 4.1.8.1 and 4.1.8.2.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

Classroom Admin JPM

## Initial Conditions:

- Operators are implementing 3-ES-1.2; Post LOCA Cooldown and Depressurization step 27 and are preparing to place 31 Hydrogen Recombiner in service IAW 3-SOP-CB-007; H2 Recombiner Operation.
- 3-SOP-CB-007; H2 Recombiner Operation procedure is completed through step 4.1.4.
- Hydrogen Concentration is 2.2% by volume.
- 4 Containment FCUs are operating and have been operating throughout the accident.
- Current VC Pressure is 3.5 psig.
- Pre-LOCA VC Pressure was 0 psig.
- Pre-LOCA VC Temperature was 90°F

## Initiating Cue:

Determine the Required Heater Power for 31 Hydrogen Recombiner IAW 3-SOP-CB-007. Calculate the value and record on Attachment 4.

# JOB PERFORMANCE MEASURE

## JPM RO ADMIN #3

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Determine Radiological Conditions, RWP Requirements, and Potential DoseK/A Reference: 1940002.3.7  
RO – 3.5Job Performance Measure  
No: RO Admin 3

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom X Simulator \_\_\_\_\_ 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:**

1. Unit is in MODE 1, 100% Power
2. You have been assigned to perform the 31 RHR Pump Functional Test IAW procedure 3-PT-Q134A.
3. You have been provided with a copy of the most recently completed survey of the radiological conditions in 31 RHR Cell when the pump was running for testing.
4. You have been provided with a copy of Radiological Work Permit (RWP) No: 20153002.

Required Materials: Radiological Work Permit (RWP) No; 20153002  
31 RHR Cell Radiological Survey Data  
3-PT-Q134A; 31 RHR Pump Functional Test

General References: Radiological Work Permit (RWP) No; 20153002  
31 RHR Cell Radiological Survey Data  
3-PT-Q134A; 31 RHR Pump Functional Test

Initiating Cue: In preparation for a pre-job briefing determine the following from the provided materials:

1. RWP Task Number
2. Dosimetry required
3. Dose Alarm setpoint
4. Dose Rate Alarm setpoint
5. Protective Clothing Requirements
6. Determine Low Dose Waiting Area in 31 RHR Cell
7. Determine highest contamination reading and location from survey
8. Determine your maximum possible dose using the highest general area dose rate and a stay time of 90 minutes.
9. At what accumulated dose must you leave the RCA in accordance with RWP 20153002?

Time Critical Task: NO

Validation Time: 15 minutes

Task Standard: Student uses the RWP and Radiological Survey to properly answer the above questions in preparation for a pre-job briefing.

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓1. **Performance Step:** RWP Task Number

Standard: Student determines that **Task 4** is the proper task for performing tests.

Comment:

---

✓2. **Performance Step:** Dosimetry required

Standard: Student determines that a **Whole Body DLR / Electronic Dosimeter** is required.

Comment:

---

✓3. **Performance Step:** Dose Alarm setpoint  
Dose Rate Alarm setpoint

Standard: Student determines that the dose alarm is set at **10.00 mrem** and the dose rate alarm is set at **100.00 mrem**.

Comment:

---

✓4. **Performance Step:** Protective Clothing Requirements

Standard: Student determines that a contaminated entry requires **Protective Coveralls, High and Low Shoe covers, Hood, Hard Hat Cover, Cotton Liners and Gloves**.

Comment: If asked, cue that HP approval has not been granted for reduced protective clothing requirements.

---

✓5. **Performance Step:** Determine Low Dose Waiting Area in 31 RHR Cell

Standard: Student determines from survey that the **Step off pad (SOP) areas** with 0.5 mrem/hr general area dose rates are the low dose waiting areas.

Comment:

---



## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **6. Performance Step:** Determine highest contamination reading and location from survey

Standard: Student determines that the pump pedestal area, **smear location 13 with a contamination level of 10,000 DPM/cm<sup>2</sup>** is the highest level in cell.

Comment:

---

✓ **7. Performance Step:** Determine your maximum possible dose using the highest general area dose rate and a stay time of 90 minutes.

Standard: Student determines that the highest general area radiation level is 2.5 mrem/hr and 90 minutes in that field would result in an accumulated dose of **3.75 mrem**.

Comment:

---

✓ **8. Performance Step:** At what accumulated dose must you leave the RCA in accordance with RWP 20153002?

Standard: Student determines that he must leave the RCA at 80% of the accumulated dose alarm setpoint. 80% of 10.0 mrem is **8.0 mrem**.

Comment:

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

RO Admin JPM in classroom

## Initial Conditions:

1. Unit is in MODE 1, 100% Power
2. You have been assigned to perform the 31 RHR Pump Functional Test IAW procedure 3-PT-Q134A.
3. You have been provided with a copy of the most recently completed survey of the radiological conditions in 31 RHR Cell when the pump was running for testing.
4. You have been provided with a copy of Radiological Work Permit (RWP) No: 20153002.

## Initiating Cue:

In preparation for a pre-job briefing determine the following from the provided materials:

1. RWP Task Number
2. Dosimetry required
3. Dose Alarm setpoint
4. Dose Rate Alarm setpoint
5. Protective Clothing Requirements
6. Determine Low Dose Waiting Area in 31 RHR Cell
7. Determine highest contamination reading and location from survey
8. Determine your maximum possible dose using the highest general area dose rate and a stay time of 90 minutes.
9. At what accumulated dose must you leave the RCA in accordance with RWP 20153002?



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## RADIOLOGICAL WORK PERMIT

<b>RWP Title:</b> Unit 3/NON VC-Operations tours and inspection, watch rounds, tests, surveillances, PTO's, peerchecking, training and other activities to support unit operations.			<b>RWP No.:</b> 20153002 Rev. 00	
<b>Comments:</b> Contact HP prior to start of work			<b>*20153002*</b>	
<b>RWP Type:</b> SPECIFIC		<b>RWP Status:</b> ACTIVE	<b>Begin Date:</b> 1/1/2015	<b>Close On Date:</b> 12/31/2015
<b>Prepared By:</b> WILSON, ROBERT		<b>Job Supervisor:</b>		
<b>Estimated Dose:</b> 0.0 mrem	<b>Estimated Hours:</b> 0.00	<b>Actual Dose:</b> 116.9 mrem	<b>Actual Hours:</b> 2,841.47	
<b>Locations</b>				
<b>Buildings</b>		<b>Elevations</b>		<b>Rooms</b>
All RCA Areas Non VC				All
<b>Radiological Conditions</b>				
<b>Description</b>	<b>Value</b>		<b>Unit</b>	
N/A				
<b>Tasks</b>				
<b>Task</b>	<b>Description</b>			<b>Status</b>
1	Watch NPO rounds and log readings			Active
2	COL's, PTO's, walkdowns and peerchecking			Active
3	Training & tours			Active
4	Functional tests			Active
<b>Requirements</b>				
<b>Requirement Groups</b>		<b>Requirement Descriptions</b>		
N/A				
<b>Additional Instructions</b>				
<b>Instruction 1: STOP WORK/ ABORT</b> 1. Stop work for any unbriefed ED alarms 2. Exit the RCA at 80% of the accumulated dose alarm set point. 3. >30% DAC if not posted airborne. 4. If any changes outside of the RWP requirements of job briefing occur.				
<b>Instruction 2: Job Coverage:</b> Intermittent RP coverage- Radiation oversight provided periodically as determined by RP or RWP requirements.  Continuous RP Coverage - Direct radiological surveillance by RP with the sole responsibility for providing constant monitoring during the entire period personnel are in the work area. Continuous surveillance may be provided as follows: " Locally by maintaining visual or audible contact; OR " Remotely by maintaining audible and telemetry, with visual contact, if available; OR " Remotely by using stay times, time keeping, and audible contact. IF Continuous Job Coverage by RMT is lost THEN re-establish continuous job coverage per EN-RP-141, OR, Suspend work activities and clear personnel from the work area.				
<b>Approvals</b>				
<b>Approver Title</b>	<b>Name</b>			<b>Date</b>
SUPERVISOR	TAMBURI, ROBIN			12/22/2014
TECHNICIAN	BORKOWSKI, MICHAEL			12/22/2014
<b>Attachments</b>				
N/A				



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## RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 1		<b>RWP No.:</b> 20153002 <b>Rev.:</b> 00	
<b>Task Description:</b> Watch NPO rounds and log readings		<b>Task Status:</b> Active	
<b>Estimate Dose:</b>		<b>Estimate Hours:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Dose Alarm (mrem)</b>	10.00	<b>Dose Rate (mrem/hr)</b>	100.00
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
Contamination Control	Additional Requirement: 1. Notify the RP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk at the nearest frisker station.		
Dosimetry	Additional Requirement: 1. Whole Body DLR/ Electronic Dosimeter		
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work area. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.		
Job Coverage	Additional Requirement: Intermittent		
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required.		
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm <sup>2</sup> ; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.) IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PC's become damaged exit the contaminated area and contact HP.		
RP Personnel	Additional Requirement: 1) Particulate and Iodine Air Sampling is required when breaching radioactive systems when contamination is expected to be >50,000 dpm/100cm <sup>2</sup> . 2) RP escort required for RAM >100mr/hr @ 30cm <sup>2</sup> .		
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)		
<b>Additional Instructions</b>			
<b>Instruction 1:</b>			

## RADIOLOGICAL WORK PERMIT

<b><u>Task Number:</u></b> 2		<b><u>RWP No.:</u></b> 20153002 <b><u>Rev.:</u></b> 00	
<b><u>Task Description:</u></b> COL's, PTO's, walkdowns and peerchecking		<b><u>Task Status:</u></b> Active	
<b><u>Estimate Dose:</u></b>		<b><u>Estimate Hours:</u></b>	
<b><u>Hi-Rad:</u></b> Yes	<b><u>Hot Particle:</u></b> Yes	<b><u>Locked Hi-Rad:</u></b> No	<b><u>Hi-Contamination:</u></b> Yes
<b>Alarm Settings</b>			
<b><u>Dose Alarm</u></b> (mrem)	10.00	<b><u>Dose Rate</u></b> (mrem/hr)	100.00
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
Contamination Control	Additional Requirement: 1. Notify HP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk at the nearest frisker station.		
Dosimetry	Additional Requirement: 1. Whole Body DLR/ Electronic Dosimeter		
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.		
Job Coverage	Additional Requirement: Intermittent		
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required		
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm <sup>2</sup> ; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.) IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PC's become damaged exit the contaminated area and contact HP.		
RP Personnel	Additional Requirement: 1) Particulate and Iodine Air Sampling is required when breaching radioactive systems when contamination is expected to be >50,000 dpm/100cm <sup>2</sup> . 2) RP escort for RAM <100mr/hr @ 30cm.		
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)		
<b>Additional Instructions</b>			
<b>Instruction 1:</b>			

## RADIOLOGICAL WORK PERMIT

<b><u>Task Number:</u> 3</b>		<b><u>RWP No.:</u></b> 20153002 <b><u>Rev.:</u></b> 00	
<b><u>Task Description:</u></b> Training & tours		<b><u>Task Status:</u></b> Active	
<b><u>Estimate Dose:</u></b>		<b><u>Estimate Hours:</u></b>	
<b><u>Hi-Rad:</u></b> Yes	<b><u>Hot Particle:</u></b> Yes	<b><u>Locked Hi-Rad:</u></b> No	<b><u>Hi-Contamination:</u></b> Yes
<b>Alarm Settings</b>			
<b><u>Dose Alarm</u></b> (mrem)	10.00	<b><u>Dose Rate</u></b> (mrem/hr)	100.00
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
Contamination Control	Additional Requirement: 1. Notify the RP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk as soon as practicable.		
Dosimetry	Additional Requirement: 1. Whole Body DLR/ Electronic Dosimeter		
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work area. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.		
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required		
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm <sup>2</sup> ; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.) IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PC's become damaged exit the contaminated area and contact HP.		
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)		
<b>Additional Instructions</b>			
<b>Instruction 1:</b>			
<b>Instruction 2:</b>			
<b>Instruction 4:</b>			
<b>Instruction 5:</b>			

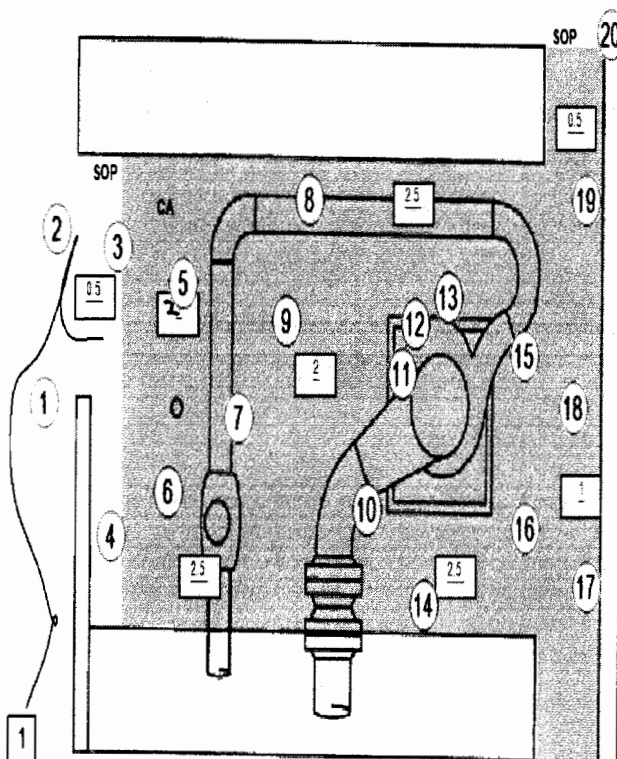




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# RADIOLOGICAL WORK PERMIT

<b>Task Number:</b> 4		<b>RWP No.:</b> 20153002 <b>Rev.:</b> 00	
<b>Task Description:</b> Functional tests		<b>Task Status:</b> Active	
<b>Estimate Dose:</b>		<b>Estimate Hours:</b>	
<b>Hi-Rad:</b> Yes	<b>Hot Particle:</b> Yes	<b>Locked Hi-Rad:</b> No	<b>Hi-Contamination:</b> Yes
<b>Alarm Settings</b>			
<b>Dose Alarm</b> (mrem)	10.00	<b>Dose Rate</b> (mrem/hr)	100.00
<b>Requirements</b>			
<b>Requirement Groups</b>	<b>Requirement Descriptions</b>		
Contamination Control	Additional Requirement: 1. Notify the RP prior to contaminated system opening. 2. Removal of tools from a contaminated area requires RP permission. 3. Notify RP prior to any work in the overhead. 4. Upon exiting Contaminated Areas, worker must perform a hand and foot frisk as soon as practicable.		
Dosimetry	Additional Requirement: 1. Whole Body DLR/ Electronic Dosimeter		
Exposure Control	Additional Requirement: 1. Monitor dosimetry frequently. 2. Utilize Low Dose Waiting Areas. 3. Workers are to be aware for the radiological conditions in their work area. 4. The use of the RP Camera system can be utilized for workers to view work to minimize dose and time in area. 5. DO NOT adjust or move shielding. RP approval required.		
Precautions & Limitations	Additional Requirement: 1) Verbal Radiological brief required for entry into HRA's 2) If dose accrued is expected to exceed 500 mRem, a Stay Time is required		
Protective Clothing	Additional Requirement: 1) Contaminated Area Entry: Protective Coveralls, High and Low Shoe Covers, Hood, Hard Hat Cover, Cotton Liners and Gloves. 2) With HP approval, workers may wear partial protective clothing consisting of: High and Low Shoe Covers, Cotton Liners and Gloves while performing work of low radiological impact. General area contamination levels must be less than 10,000 dpm/100cm <sup>2</sup> ; no climbing or ladder use. 3) High Contaminated Area Entry: Double set of PC's required. 4.)IF working on contaminated components or items that require hand entry only, THEN the RPT may allow the work to be completed with gloves and other appropriate controls. 5) If PCs become damaged exit the contaminated area and contact HP.		
RP Personnel	Additional Requirement: 1) Particulate and Iodine Air Sampling is required when breaching radioactive systems when contamination is expected to be >50,000 dpm/100cm <sup>2</sup> . 2) RP escort for RAM <100mr/hr @ 30cm.		
TRAINING REQUIREMENT	Rad Worker Training (RWTGEN - RWTSS - PRACFAC)		
<b>Additional Instructions</b>			
<b>Instruction 1:</b>			
<b>Instruction 2:</b>			



U3 PAB 15FT 31 RHR

### Smear Data (DPM/100cm2)

1	<MDA
2	<MDA
3	<MDA
SOP	
4	318.06
5	<1000
6	1000
7	<1000
8	2000
9	2000
10	3000
11	1000
SEAL	
12	3000
Pedestal	
13	10000
Leaking valve	
14	3000
15	<1000
16	<1000
17	<1000
18	<1000
19	<1000
20	<MDA
SOP	

### LAS Data (ccpm/LAS)

1	ND
---	----

### B/G to Alpha Ratio

12	NA
14	NA

### Alpha Data (DPM/100cm2)

12	ND
14	ND

### Survey Data

Unit: 3  
 Building: U3 PAB  
 Elevation: 15FT  
 Room: 31 RHR Cell  
 RxPwr: 96  
 Template: U3 PAB 15FT 31 RHR C  
 Frequency: Other  
 Survey Date: 03-01-2015  
 Survey Time: 15:04  
 Status: Archived  
 RWP: 20153001  
 Surveyed By: Delamater, Jesse  
 Badge: 1234  
 Reviewed By: Phelps, Tom  
 Notes:  
 Survey of 31 RHR following a  
 pump run. Cell posted RA

### Instruments Used

Instrument: RO-20 - 01617  
 Cal Due: 04-30-2015  
 SrcCk Date: 03-01-2015  
 D/C & Bkg: na na  
 MDA: NA  
 Instrument: BC-4 - 932  
 Cal Due: 01-31-2016  
 SrcCk Date: 03-01-2015  
 D/C & Bkg: 5.89 26  
 MDA: 116  
 Instrument: RM-14 - 5213  
 Cal Due: 10-31-2015  
 SrcCk Date: 03-01-2015  
 D/C & Bkg: 10 100  
 MDA: NA  
 Instrument: SAC-4 - 1376  
 Cal Due: 08-31-2015  
 SrcCk Date: 03-01-2015  
 D/C & Bkg: 3.99 .28  
 MDA: 18

All Radiation values are in mrem/hr unless otherwise noted

Smear contamination values in DPM/100cm2 unless otherwise noted

☐ Smear < 1000 DPM H.S. - denotes Hot Spot

\*12/13 denotes gamma contact / 30cm

\*12/13 B denotes beta contact / 30 cm

12.5 denotes gamma general area, T denotes RADS telemetry

\*75 B denotes beta contact doserate

\*12 denotes gamma contact doserate

① denotes smear locations

12 denotes large area wipe locations.

# JOB PERFORMANCE MEASURE

## JPM RO ADMIN #4

Facility: Indian Point 3 Task No: \_\_\_\_\_

Task Title: Perform Initial Unusual Event Notification

K/A Reference: 1940002.4.39 Job Performance Measure  
RO – 3.9 No: RO Admin 4

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 15 GPM UNIDENTIFIED RCS Leak exists.
- Unit Shutdown IAW Technical Specifications has been initiated.
- The Shift Manager Declared an UNUSUAL EVENT based on EAL-SU6.1 five (5) minutes ago.

Required Materials: Simulator RECS phone  
Completed NYS Radiological Data Form Part 1  
Form EP-3N; NOTICE OF UNUSUAL EVENT Notification checklist

General References: IP-EP-115 Form EP-3, NUE Notification Checklist

Initiating Cue: You are the Spare RO, and the Shift Manager has directed you to perform the duties of the Control Room Offsite Communicator.

Time Critical Task: **YES**

Validation Time: 5 minutes

Task Standard: Notification of event complete to State and Counties within 15 minutes of event declaration by Shift Manager.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Obtain the Control Room Communicator Binder

Standard: Obtains Binder from Shift Manager Office

Comment: Provide student copy of Form EP-3N; NOTICE OF UNUSUAL EVENT Notification checklist

**CUE: Provide student copy of Form EP-3N; NOTICE OF UNUSUAL EVENT Notification checklist if necessary. Includes Page 1 completed by Shift Manager. (After he finds the Binder)**

---

2. Performance Step: Inform the Shift Manager that you have assumed the duties of the Control Room Communicator.

Standard: Student informs the Shift Manager they have assumed the duties of the Control Room Communicator.

Comment: **CUE: Acknowledge communication.**

---

✓ 3. Performance Step: Obtain the completed and signed NTS Radiological Emergency Data Form Part 1 (IP-EP-115 Form EP-1)

Standard: Student requests Form from the Shift manager.

Comment: Provide completed and signed form EP-1.

**CUE: Provide Candidate the completed EP-1 Form. Mark the Emergency Declaration time on the form as present date and present time minus 5 minutes. Record Time minus 5 here: \_\_\_\_\_**

---

4. Performance Step: Review the form to ensure all required information is entered including the Shift Manager (Emergency Director) Signature.

Standard: Student determines all necessary data is correctly entered.

Comment:

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

5. Performance Step: Verify Shift Manager has sent electronic Fax and e-mail of the NYS Radiological Emergency Data Form Part 1 to the State/Counties.

Standard: Student either contacts Shift Manager or reviews page 1 of the NOTICE OF UNUSUAL EVENT Notification Checklist and observes that the Shift Manager has initialed the appropriate steps of the bottom of page 1 (Form EP-3N) indicating completion of Fax & e-mail of EP-1.

Comment: Student initials the top line of page 2 of Form EP-3N. If necessary provide cue.

**CUE: Fax and e-mail have been sent.**

---

✓ 6. Performance Step: Pick up RECS Handset.

Standard: Student picks up the RECS Handset.

Comment: Note that this is step 1 on page 2 of the NUE Notification Checklist.

---

✓ 7. Performance Step: When you hear the message **“Welcome to Wave. Please enter session ID”**, Depress the **“7”** button.

Standard: Student depresses the **“&”** button on the phone.

Comment: Step 2 on page 2 of the NUE Notification Checklist.

---

8. Performance Step: **IF** RECS is unavailable, proceed to Alternate State and County Notification on Page 4 of 6.

Standard: Step is N/A, RECS is available and functioning.

Comment: Step 3 on page 2 of the NUE Notification Checklist. **Cue that the RECS is available and functional if necessary.**

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **9. Performance Step:** You will hear multiple rising tones, indicating facilities joining the call. Wait 15 seconds and State: **"This is to report an event at Indian Point Energy Center. Standby for roll call."** Twice.

Standard: After 15 seconds, student states: **"This is to report an event at Indian Point Energy Center. Standby for roll call."** Twice.

Comment: Step 4 on page 2 of the NUE Notification Checklist.

---

✓ **10. Performance Step:** Initiate roll call by asking **"(location title) are you on the line?"** for each of the following stations, stopping after each name is read to allow station to identify itself. Check off each location as they answer the roll call:

1. New York State
2. Westchester County
3. Putnam County
4. Rockland County
5. Orange County
6. Peekskill City
7. West Point

Standard: Reads each station name, when station acknowledges, checks it on the NUE Notification Checklist.

Comment: Steps 5 and 6 on page 2 of the NUE Notification Checklist.

**CUE:** **If using the booth operator to acknowledge message, no CUE is needed (provided by booth operator). If acknowledging yourself then CUE candidate by acknowledging as each station above.**

---

✓ **11. Performance Step:** Enter time you receive the first response on the initial roll call: \_\_\_\_\_

Standard: Student enters time on step 6 of the NUE Notification Checklist. (first response)

Comment: Step 6 on page 2 of the NUE Notification Checklist.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **12. Performance Step:** State, **"This is the Indian Point Energy Center. An Unusual Event has been declared. A Part 1 Notification # 1 has been sent to you via FAX And/or Email."**

**Standard:** Student reads statement.

**Comment:** Step 7 on page 2 of the NUE Notification Checklist.

---

✓ **13. Performance Step:** Confirm the receipt of FAX or Email by asking:  
"(location Title), **do you acknowledge receipt of a FAX OR Email from IPEC?"**

1. New York State
2. Westchester County
3. Putnam County
4. Rockland County
5. Orange County
6. Peekskill City
7. West Point

**Standard:** Reads roll call list and asks for acknowledgement. Checks off each station when acknowledgement is received.

**Comment:** Step 8 on page 2 of the NUE Notification Checklist.

**CUE:** **If using the booth operator to acknowledge message, no CUE is needed (provided by booth operator). If acknowledging yourself then CUE candidate by acknowledging as each station above.**

---

14. Performance Step: **IF any of above did not receive either a FAX OR Email, THEN verbally read the entire Part 1 form. IF all locations received (or you completed reading) proceed.**

**Standard:** Student proceeds to next step, all locations received FAX and/or Email.

**Comment:** Step 9 on page 2 of the NUE Notification Checklist.

---



✓ **15. Performance Step:** End notification by saying “**Indian Point out at \_\_\_\_\_**”. Enter time. Press “End Call” button on RECS phone and hang up the handset, ensuring it is secured in the cradle.

**Standard:** Student makes above statement and enters current time on line 10. **The time entered at checklist step 10 must be within 15 minutes of the time of declaration used for the Part 1 form (EP-1).**

**Comment:** Step 10 on page 2 of the NUE Notification Checklist.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A  
RO Admin JPM

## Initial Conditions:

- A 15 GPM UNIDENTIFIED RCS Leak exists.
- Unit Shutdown IAW Technical Specifications has been initiated.
- The Shift Manager Declared an UNUSUAL EVENT based on EAL-SU6.1 five (5) minutes ago.

## Initiating Cue:

You are the Spare RO, and the Shift Manager has directed you to perform the duties of the Control Room Offsite Communicator.

**THIS IS A TIME CRITICAL JPM.**



**Control Room Shift Manager/Emergency Director  
NOTICE of UNUSUAL EVENT Notification Checklist**

**NUE DECLARED?**

**If the Shift Manager does not feel it is safe to relocate personnel at this time,  
DO NOT sound the Site Assembly Alarm or call for personnel to report to assigned facilities**

**Is this the initial NUE declaration? - YES**

**NO – update**

Time of Declaration: 5 minutes ago

Time: \_\_\_\_\_

**ONSITE NOTIFICATION**

☒ Designate **OR** Page an Offsite Communicator to the Control Room.

☒ Contact opposite unit's Control Room **AND:**

1. Inform them of NUE, time, EAL#, and brief description.
2. Activate **OR** Request opposite unit to activate Emergency Response Organization (ERO) Event Notification Only **OR** ERO mobilization by obtaining ERO Notification envelope **AND** completing steps in envelope.
3. (Both units) Direct announcement of the following message over both Unit's P.A. systems, three (3) times: (**IF** determined **SAFE** to do so)

☒ **"Attention all personnel. An NUE has been declared. Staffing of facilities (is/is not) required."**

☒ If staffing of facilities (EOF/OSC/TSC/JIC/AEOF) is required, state the following:  
**"The following facilities are required to be staffed: N/A"** (fill in with appropriate facilities.)

☒ Go to **"OFFSITE NOTIFICATION"** step

**UPDATE: (30 minutes)**

\_\_\_\_ EOF is NOT operational; go to  
**"OFFSITE NOTIFICATION"** step.

**OR**

\_\_\_\_ EOF is operational, STOP. (EOF will continue with Notifications; ensure proper turnover completed)

**OFFSITE NOTIFICATION**

VERIFY the following:

☒ NYS Part I Form is completed **AND** printed.

☒ NYS Part I Form is independently verified.

☒ NYS Part I Form is signed for approval.

☒ NYS Part I Form is electronically sent via FAX, then Email

\_\_\_\_ Offsite Agencies are being notified by the Offsite Communicator or designee using page 2 – 6 **within 15 minutes** of an initial **OR** new declaration **OR** approximately 30 minutes for an update. (see Time above)

# JOB PERFORMANCE MEASURE

## JPM SRO ADMIN #1

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Update Electrical Power Availability for Shutdown Safety AssessmentK/A Reference: 1940002.1.18  
SRO – 3.8Job Performance Measure  
No: \_\_\_\_\_SRO Admin  
1

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom X Simulator \_\_\_\_\_ Plant \_\_\_\_\_**READ TO THE EXAMINEE**

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

**Initial Conditions:**

- Unit Shutdown in progress due to 32 EDG inoperable and extensive maintenance and repair required to restore operability.
- The Unit has just entered MODE 4.
- The shift has just completed tagging out the 6.9 KV Gas Turbine Substation Bus due to an emergent issue.
- **No** Substation Work is in progress.

Required Materials: Marked up drawing 9321-F-33853  
IP-SMM-OU-104, Shutdown Risk Assessment Procedure (Att. 9.2)  
Blank IP-SMM-OU-104, Attachment 9.1

General References: Drawing 9321-F-33853, Electrical Distribution & Transmission System  
IP-SMM-OU-104, Shutdown Risk Assessment Procedure



Initiating Cue: Given the above initial conditions, the Shift Manager has requested that you update the Electrical Power Availability section of the previously completed Shiftly Shutdown Safety Assessment in accordance with IP-SMM-OU-104. You have been provided a copy of marked up drawing 9321-F-33853 indicating the breakers tagged open associated with the 6.9 KV Gas Turbine Substation Bus tagout.

Time Critical Task: No

Validation Time: 7 minutes

Task Standard: Update IP-SMM-OU-104, Attachment 9.1 to show that Electrical Power Availability is now YELLOW from a Shutdown Risk perspective. The Score should be a 5 which would constitute a YELLOW condition.

1. Number of Emergency Diesel Generators Available – (Two) – 2 pts
2. Offsite Power Sources Available – (One) - 1pt
3. Switchyard work in progress – (No) – 1pt
4. Outage Unit's Appendix R Diesel Available – (No) – 0pts
5. Severe weather OAP-008 in Effect with the potential for Loss of Offsite Power – (No) – 1 pt.

Total Points = 5 or YELLOW Condition

NOTE: The tagout for the 6.9KV Gas Turbine Substation Bus causes a loss of all available 13.8KV (credited offsite source) and the Unit 3 Appendix R Diesel.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Student reviews IP-SMM-OU-104, Attachment 9.1.

Standard: Student recognizes that per the initiating cue, that only the electrical section requires updating.

**CUE: All other aspects of the Shutdown Safety Function Assessment remain unchanged, only the electrical portion requires updating. Complete just the Electrical Power Availability section on a blank Attachment 9.1.**

Comment: Provide cue and blank form. Cue may be provided as a group in a classroom setting.

---

✓2. Performance Step: Student completes the Number of Emergency Diesel Generators Available line and assigns points per the procedure.

Standard: Student recognizes that only 32 EDG is unavailable and assigns 2 points.

Comment: >= Two Diesels Available is 2 points.

---

✓3. Performance Step: Student completes the Offsite Power Sources Available line and assigns points per the procedure.

Standard: Student recognizes that no 13.8KV Offsite sources are available and assigns 1 point.

Comment: One (1) is 1 point. Attachment 9.2 guidance states only 1 source of 138KV is credited regardless of the number of live feeders.

---

✓4. Performance Step: Student completes the Switchyard work in progress line and assigns points per the procedure

Standard: Student recognizes that **No** Switchyard work is in progress. The tagout is complete and **No** Substation work is in progress per the initial conditions. He assigns 1 point.

Comment: No switchyard work in progress results in 1 point. Attachment 9.2 guidance states: NOTE: If mitigating actions have been taken such that the work being performed can no longer be viewed as potential for inducing a LOOP event, then Attachment 1 "Switchyard Work In Progress" Power Availability Safety Function question should be recorded as a NO.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **5. Performance Step:** Student completes the Outage Unit's Appendix R Diesel Generator Available line and assigns points per the procedure.

Standard: Student recognizes that the Appendix R Diesel is unavailable and assigns zero (0) points.

Comment: Student recognizes that the tagout precludes the use of the Appendix R Diesel. No Appendix R Diesel = 0 points.

---

✓ **6. Performance Step:** Student completes the Severe weather OAP-008 in Effect with the potential for Loss of Offsite Power line and assigns points per the procedure.

Standard: Student recognizes that Severe weather OAP-008 is not in effect and assigns 1 point.

**CUE:** If requested, cue that no storms or severe weather have been reported or forecast.

Comment: Severe weather OAP-008 Not in effect = 1 point.

---

✓ **7. Performance Step:** Student completes the Electrical Power Availability Score by adding the respective points and determines the shutdown color for Electrical Power.

**Standard:** Student adds the numbers and determines a Total of 5 points and a YELLOW Condition.

**Comment:** Total should add to 5 points and a YELLOW Condition.

---

**Terminating Cue:** JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A, SRO Admin JPM

Initial Conditions:

- Unit Shutdown in progress due to 32 EDG inoperable and extensive maintenance and repair required to restore operability.
- The Unit has just entered MODE 4.
- The shift has just completed tagging out the 6.9 KV Gas Turbine Substation Bus due to an emergent issue.
- **No** Substation Work is in progress.

Initiating Cue:

Given the above initial conditions, the Shift Manager has requested that you update the Electrical Power Availability section of the previously completed Shiftly Shutdown Safety Assessment in accordance with IP-SMM-OU-104. You have been provided a copy of marked up drawing 9321-F-33853 indicating the breakers tagged open associated with the 6.9 KV Gas Turbine Substation Bus tagout.

# JOB PERFORMANCE MEASURE

JPM  
SRO ADMIN #2



Facility: Indian Point 3 Task No: \_\_\_\_\_

Task Title: Determine Isolation Boundaries for CCW Leak Using Plant Prints

K/A Reference: 1940002.1.25 Job Performance Measure No: SRO Admin 2  
SRO – 4.2

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance \_\_\_\_\_ Actual Performance X

Classroom X Simulator \_\_\_\_\_ Plant \_\_\_\_\_

#### READ TO THE EXAMINEE

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

#### Initial Conditions:

- The plant is in COLD SHUTDOWN on RHR.
- CCW Surge Tank level is lowering at approximately 0.5% per minute.
- The NPO in Containment reports a significant leak downstream of Check Valve 770; CCW Supply to RCPs.

Required Materials: Drawing 9321-F-27203  
Drawing 9321-F-27513

General References: Drawing 9321-F-27203  
Drawing 9321-F-27513

Initiating Cue: You are the FSS and the CRS has directed you to identify all valves that must be shut to isolate the leak just on Check Valve 770; CCW Supply to RCPs. Identify valves needed for isolation and list below.

Time Critical Task: No.

Validation Time: 14 minutes

Task Standard: Using appropriate plant drawings, identify and list the valves required to isolate a leak on Check Valve 770; CCW Supply to the RCPs.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Obtain Prints

Standard: Operator requests desired prints.

Comment: Plant drawings to be provided in classroom or operator may select appropriate drawings from a controlled file in simulator.

---

✓2. **Performance Step:** Determine MOV-769 and/or MOV-797 must be shut.

Standard: Identifies that MOV-769 and/or MOV-797, RCP CCW Supply Isolation must be shut.

Comment: Operator lists these valves on the cue sheet as requiring isolation.

---

✓3. **Performance Step:** Determine 734A must be shut.

Standard: Identifies 734A, Rx Vessel Support Blocks supply must be shut.

Comment: Operator lists this valve on the cue sheet as requiring isolation.

---

✓4. **Performance Step:** Determine 771A-D must be shut.

Standard: Identifies 771A-D, CC Supply (individual RCP) Inlet Isolations must be shut.

Comment: Operator lists these valves on the cue sheet as requiring isolation.

---

5. Performance Step: Operator may list drain valve 33 and vent valve 32 as requiring isolation. These valves are normally closed and capped. If the operator chose MOV-769 as the only supply isolation, they may also determine an Isolation Valve Seal Water System Valve is required to be closed.

Standard: Identifies Isolation Valve Seal Water System Valve, Vent valve 32, and Drain valve 33 as needing to be shut.

Comment: Student may or may not identify these valves for isolation. This step is NOT critical. Note that if MOV-797 is chosen as the inlet isolation, then no Isolation Valve Seal Water System Valve is required for isolation. Note also that vent (32) and drain (33) valves are normally closed and capped.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

Classroom Admin JPM

## Initial Conditions:

- The plant is in COLD SHUTDOWN on RHR.
- CCW Surge Tank level is lowering at approximately 0.5% per minute.
- The NPO in Containment reports a significant leak downstream of Check Valve 770; CCW Supply to RCPs.

## Initiating Cue:

You are the FSS and the CRS has directed you to identify all valves that must be shut to isolate the leak just on Check Valve 770; CCW Supply to RCPs. Identify valves needed for isolation and **list below**.

# JOB PERFORMANCE MEASURE

## JPM SRO ADMIN #3

Facility: Indian Point 3 Task No: \_\_\_\_\_

Task Title: Review Completed 33 Service Water Pump Surveillance

K/A Reference: 1940002.2.12 Job Performance Measure No: SRO Admin 3  
SRO – 4.1

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance \_\_\_\_\_ Actual Performance X

Classroom X Simulator \_\_\_\_\_ 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 NPO has just completed performing the 33 Service Water Pump Surveillance in accordance with 3-PT-Q092C.
- The completed surveillance has not been peer reviewed.

Required Materials: Completed 3-PT-Q092C; 33 Service Water Pump In-service Test.

General References: Completed 3-PT-Q092C; 33 Service Water Pump In-service Test.

Initiating Cue: Review the completed 33 Service Water Pump Surveillance for accuracy and then complete section 7.0, Test Acceptance. Document any discrepancies found if any.

Time Critical Task: No

Validation Time: 18 minutes

Task Standard: Student reviews the completed surveillance, notes any errors, and determines operability status.



## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Calibration due dates recorded and instruments within calibration?

Standard: Student recognizes that all required calibration due dates are recorded and the instruments used are within calibration.

Comment: Calibration data recorded in step 3.1. All dates are SAT.

---

2. Performance Step: All required procedure steps completed?

Standard: Student recognizes that all steps have been completed or properly designated N/A per procedure use guidelines.

Comment: All procedure steps completed or properly designated N/A per procedure use guidelines.

---

✓ 3. Performance Step: All calculations correct?

Standard: Student recognizes that the 33 SWP  $\Delta P$  in psid has been improperly calculated in step 4.2.17. Student recognizes that the NPO subtracted the Suction Pressure Head value recorded in step 4.2.16 instead of adding that value to the recorded pump discharge pressure recorded in step 4.2.13. NPO came up with a value of 80.56 psid instead of the correct value of 87.44 psid.

Comment: Student may realize here that this means the pump is not in alert. Student may also determine that the pump surveillance needs to be run again with supervisory oversight to ensure operability.

---

4. Performance Step: All data properly transcribed?

Standard: Student recognizes that all data has been properly transcribed, but also recognizes that the real pump  $\Delta P$  value should have been 87.44 psid.

Comment: All other data has been properly transcribed.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **5. Performance Step: Operability conclusions correct?**

Standard: **Student recognizes that the 33 SWP  $\Delta P$  in psid has been improperly calculated in step 4.2.17.** Student may realize here that this means the pump is not in alert. Student may also determine that the pump surveillance needs to be run again with supervisory oversight to ensure operability.

Comment: Key is that the student recognizes that the  $\Delta P$  has been incorrectly calculated and that action is required to correct the error. Student may just make pen & ink corrections to step 4.2.17 and the recorded values / conclusions in Section 6.0.

---

✓ **6. Performance Step: Complete Section 7.0; Test Acceptance**

Standard: Student completes Section 7.0; Test Acceptance using the corrected  $\Delta P$  value of 87.44. Student determines pump is in the acceptable range for all parameters including  $\Delta P$ . ( $80.1 \leq \text{psid} \leq 87.6$ )

Comment: Student recognizes that the pump meets the IST required values for vibration and  $\Delta P$ . If student wants to re-run surveillance, **cue the student to use the corrected  $\Delta P$  value and complete Section 7.0 of the Surveillance.**

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

SRO Admin JPM in classroom

Initial Conditions:

- An NPO has just completed performing the 33 Service Water Pump Surveillance in accordance with 3-PT-Q092C.
- The completed surveillance has not been peer reviewed.

Initiating Cue:

Review the completed 33 Service Water Pump Surveillance for accuracy and then complete section 7.0, Test Acceptance. Document any discrepancies found if any.

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Review Completed 33 Service Water Pump SurveillanceK/A Reference: 1940002.2.12  
SRO – 4.1Job Performance Measure  
No: \_\_\_\_\_SRO Admin  
3

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom X Simulator \_\_\_\_\_ 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 NPO has just completed performing the 33 Service Water Pump Surveillance in accordance with 3-PT-Q092C.
- The completed surveillance has not been peer reviewed.

**Required Materials:** Completed 3-PT-Q092C; 33 Service Water Pump In-service Test.**General References:** Completed 3-PT-Q092C; 33 Service Water Pump In-service Test.**Initiating Cue:** Review the completed 33 Service Water Pump Surveillance for accuracy and then complete section 7.0, Test Acceptance. Document any discrepancies found if any.**Time Critical Task:** NO**Validation Time:****Task Standard:** Student reviews the completed surveillance, notes any errors, and determines operability status.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Calibration due dates recorded and instruments within calibration?

Standard: Student recognizes that all required calibration due dates are recorded and the instruments used are within calibration.

Comment: Calibration data recorded in step 3.1. All dates are SAT.

---

2. Performance Step: All required procedure steps completed?

Standard: Student recognizes that all steps have been completed or properly designated N/A per procedure use guidelines.

Comment: All procedure steps completed or properly designated N/A per procedure use guidelines.

---

✓ 3. Performance Step: All calculations correct?

Standard: Student recognizes that the 33 SWP  $\Delta P$  in psid has been improperly calculated in step 4.2.17. Student recognizes that the NPO subtracted the Suction Pressure Head value recorded in step 4.2.16 instead of adding that value to the recorded pump discharge pressure recorded in step 4.2.13. NPO came up with a value of 80.56 psid instead of the correct value of 87.44 psid.

Comment: Student may realize here that this means the pump is not in alert. Student may also determine that the pump surveillance needs to be run again with supervisory oversight to ensure operability.

---

4. Performance Step: All data properly transcribed?

Standard: Student recognizes that all data has been properly transcribed, but also recognizes that the real pump  $\Delta P$  value should have been 87.44 psid.

Comment: All other data has been properly transcribed.

---

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓ **5. Performance Step: Operability conclusions correct?**

Standard: **Student recognizes that the 33 SWP  $\Delta P$  in psid has been improperly calculated in step 4.2.17.** Student may realize here that this means the pump is not in alert. Student may also determine that the pump surveillance needs to be run again with supervisory oversight to ensure operability.

Comment: Key is that the student recognizes that the  $\Delta P$  has been incorrectly calculated and that action is required to correct the error. Student may just make pen & ink corrections to step 4.2.17 and the recorded values / conclusions in Section 6.0.

---

✓ **6. Performance Step: Complete Section 7.0; Test Acceptance**

Standard: Student completes Section 7.0; Test Acceptance using the corrected  $\Delta P$  value of 87.44. Student determines pump is in the acceptable range for all parameters including  $\Delta P$ . ( $80.1 \leq \text{psid} \leq 87.6$ )

Comment: Student recognizes that the pump meets the IST required values for vibration and  $\Delta P$ . If student wants to re-run surveillance, **cue the student to use the corrected  $\Delta P$  value and complete Section 7.0 of the Surveillance.**

---

Terminating Cue: JPM Complete



## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

SRO Admin JPM in classroom

## Initial Conditions:

- An NPO has just completed performing the 33 Service Water Pump Surveillance in accordance with 3-PT-Q092C.
- The completed surveillance has not been peer reviewed.

## Initiating Cue:

Review the completed 33 Service Water Pump Surveillance for accuracy and then complete section 7.0, Test Acceptance. Document any discrepancies found if any.



**Entergy**

Nuclear Northeast



Procedure Use Is:

☒ Continuous

☐ Reference

☐ Information

Control Copy: h Jpn/Tammy RB

Effective Date: h Jpn/Tammy RB

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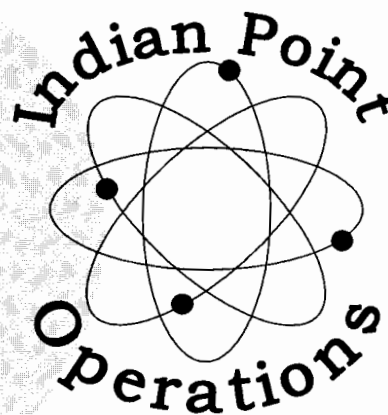
Approved By:

Tammy RB  
RPO or Designee:

h Jpn purposes  
Print Name /

RB  
Sign /

RB  
Date



Team 3D

Procedure Owner

**EDITORIAL REVISION**

## REVISION SUMMARY

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~~1.0~~ REASON FOR REVISION

- ~~1.1~~ Incorporated changes due to CR-IP3-2013-04174 [IP3-11715].

~~2.0~~ SUMMARY OF CHANGES

- ~~2.1~~ Made some wording and punctuation corrections, no rev bars [**Editorial change per IP-SMM-AD-102, step 4.6.1**].
- ~~2.2~~ Revised Acceptance Criteria values in steps 6.1.1 and 6.1.3 (from 79.1 ≤ psid ≤ 87.6 to 80.1 ≤ psid ≤ 87.6); due to IST Engineer feedback (IP3-11715) [**Editorial change per step 4.6.13**].
- ~~2.3~~ Added "Calculation No. IP-CALC-13-00063" to Development Docs step 9.2.15 [**Editorial change per IP-SMM-AD-102, step 4.6.11**].
- ~~2.4~~ Deleted 'old' step 10.2 (Documentation) since this test does not produce any documents required for the IPEC Records Retention Schedule [**Editorial change per step 4.6.12**].

Per EN-LI-100, Rev. 10, Section 5.2 [4], changes to those portions of the Inservice Inspection and Inservice Testing Programs that are controlled in accordance with 10 CFR 50.55a do not require PAD review.

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### Attachments:

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## 1.0 PURPOSE

1.1 This procedure establishes the requirements for the following:

Obtaining and analyzing data for assessment of the operational readiness of 33 Service Water Pump (33 SWP) as required by the Inservice Test (IST) Program (Group A Test).

Obtaining and analyzing data for assessment of the operational readiness of the following valves as required by the IST Program:

SWN-1-3, 33 SWP Discharge Check Valve

SWN-9-3, 33 Service Water Pump Vacuum Breaker

SWN-PCV-1207, SWP-33 Zurn Strainer Backwash Pressure Control Valve

Verifying the backwash capability of 33 Zurn Strainer.

Inspecting the material condition of SWN-PCV-1207.

1.2 This procedure applies to the following components:

COMPONENT	TESTING REQUIREMENTS <sup>(1)</sup>
33 SWP	OM ISTB
SWN-1-3	EC
SWN-9-3	EO EC
SWN-PCV-1207	EO EC FST-C
33 Zurn Strainer	FUNCTIONAL

(1) OM ISTB: IST Pump Test  
 EO: IST Exercise Open  
 EC: IST Exercise Close  
 FST-C: IST Fail Safe Test Closed

## ~~2.0~~ PRECAUTIONS AND LIMITATIONS

### ~~2.1~~ Precautions And Limitations

- ~~2.1.1~~ This test may be performed in any plant mode.
- ~~2.1.2~~ IF vibration near the top of the motor parallel and perpendicular to the discharge nozzle exceeds 0.7 in/sec, THEN 33 SWP SHALL be secured.
- ~~2.1.3~~ Technical Specification LCO 3.7.9 applies during performance of this procedure.
- ~~2.1.4~~ IF Service Water is supplied to the Component Cooling Water Heat Exchanger, THEN Service Water should be regulated to maintain component cooling water temperature above 70°F.
- ~~2.1.5~~ Pump start frequency should be in accordance with applicable limitations.
- ~~2.1.6~~ IF the actual value of 33 SWP  $\Delta P$  or an IST required vibration point falls within the alert range, THEN the test frequency SHALL be doubled until the cause of the deviation is determined and the condition is corrected (Reference: 9.2.14).

### ~~2.2~~ General Information

- ~~2.2.1~~ Personnel directing this test SHALL read it in its entirety prior to performance. Personnel otherwise involved SHALL read applicable sections.
- ~~2.2.2~~ Test personnel SHALL complete Sections 3.0, 4.0, 5.0, 6.0, and 7.0, as applicable.
- ~~2.2.3~~ Any discrepancies found SHALL be identified in Section 5.0, Comments.
- ~~2.2.4~~ Recorded data may be transposed at any time during testing.
- ~~2.2.5~~ System pressure should be maintained between 60 and 97.5 psig to minimize stress on system components.
- ~~2.2.6~~ Fail Safe Testing of SWN-PCV-1207 is verified when the valve goes fully closed during the stroke time test.
- ~~2.2.7~~ An upper case "V" used as a column header in lineup tables or beneath an initial line for a step denotes the requirement for verification by a second individual. This verification may be performed concurrently or independently at the discretion of the SM/Designee.



~~2.2.8~~

This procedure has been upgraded to the requirements of ASME OM 2001 with Addenda through 2003. If a valve fails stroke time criteria, the following corrective action guidance SHALL be used.

~~2.2.8.1~~

IF a valve fails to exhibit required change of valve position or exceeds stroke time acceptance criteria, THEN the valve SHALL be immediately declared inoperable.

~~2.2.8.2~~

WHEN a valve exceeds its stroke time criteria, THEN it can be immediately stroke timed again (3 times) in accordance with Attachment 9. During this second test the valve should be observed locally if possible.

~~2.2.8.3~~

IF the 3 additional stroke times meet stroke time acceptance criteria, THEN the cause of initial deviation SHALL be analyzed, results documented, and valve returned to service.

~~2.2.8.4~~

IF any of the 3 additional stroke times do NOT meet stroke time acceptance criteria, THEN valve SHALL remain inoperable and the following options SHALL be pursued.

~~2.2.8.4.1~~

Valve may be repaired or replaced.

**OR**

~~2.2.8.4.2~~

Second set of data may be analyzed, in accordance with Attachment 9, to verify new stroke time represents acceptable valve operation. New reference value and acceptance criteria shall be established and incorporated in the IST trending program and implementing procedure.

~~2.2.9~~

33 SWP flowrate will be adjusted to approximately 5400 gpm by a combination of valving in and throttling various service water loads.

~~2.2.10~~

The Required Ranges in Section 6.0, Acceptance Criteria, were established from the following Reference Values:

DATE	HEAD (psid)	FLOW (gpm)	VIBRATION (IPS)		
			Motor Top Horizontal North-South	Motor Top Horizontal East-West	Motor Axial
10/10/09	85	5400	0.08	0.11	0.13

- ~~2.2.11~~ Performing this test while 31 SWP is on the Essential Header during the colder months of the year is desirable due to the ease of throttling open SWN-TCV-1103, Containment Temperature Control Valve for more flow.
- ~~2.2.12~~ Pressure test gauges SHALL be calibrated to less than or equal to 1/4% accuracy. Gauge ranges may vary from those specified in Step 3.1 provided the range on the gauge does NOT exceed 3 times the expected value.
- ~~2.2.13~~ A discharge pressure Test Gauge SHALL be installed at the 2nd quarter of every odd year (2011, 2013, etc.) for the IST 2-Year Comprehensive Test. Test Gauge to be installed at the first fitting downstream of valve SWN-58-3, PI-1191 Isolation.

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Initials~~3.0~~**PREREQUISITES**~~3.1~~

Equipment required for test:

EQUIPMENT	M&TE No.	CAL DUE DATE
33 SWP Discharge Pressure Indicator	PI-1191	(4) 04-18-16
0 - 200 PSIG Test Gauge	(5) 1036A-03341	(5) 11-10-15
Vibrometer	MHA-04-10	2-24-16
Flow Indicator for 33 SWP	(1) FI-1142	(4) 10-01-15
Flow Indicator for 31 SWP	(2) FI-1144	(4) 10-01-15
Flow Indicator for 32 SWP	(3) FI-1143	(4) 10-01-15
Stopwatch	SW-004-10	11-8-15
Means of measuring from top of lower grating to river water level in inches	N/A	N/A

(i)

(1)

(1)

P.O.

- (1) FI-1142 is the normal flow indicator, for 33 SWP, but an alternate flow indicator may be used. RECORD number of flow indicator actually used.
- (2) FI-1144 is the normal flow indicator FOR 31 SWP, but an alternate flow indicator may be used. RECORD number of flow indicator actually used.
- (3) FI-1143 is the normal flow indicator for 32 SWP, but an alternate flow indicator may be used. RECORD number of flow indicator actually used. This item may be marked N/A if flow indicator is NOT required.
- (4) For installed instrumentation, this may be performed by verifying NO overdue calibration PMs or surveillances exist and documenting this in Section 5.0, Comments.
- (5) Needed only for IST 2-Year Comprehensive Test (2nd Quarter of every odd year) OR directed by Test Supervisor.

~~3.2~~

Reason for Test – CHECK applicable listing:

- ☒ Normal Surveillance WO # 5258 4033-01
- ☐ Post Maintenance Test WO # \_\_\_\_\_
- WO # \_\_\_\_\_
- WO # \_\_\_\_\_
- ☐ Increased Test Frequency WO # \_\_\_\_\_
- ☐ Other \_\_\_\_\_

P.O.

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### ~~4.0~~ PROCEDURE

#### ~~4.1~~ Initial Conditions

- ~~4.1.1~~ OBTAIN permission from SM or Designated Alternate to perform this test.

PSJ sm TODAY  
SM or Des. Alt. Signature / Date

#### ~~4.2~~ Test Of 33 Service Water Pump

- ~~4.2.1~~ IF performing the IST 2-Year Comprehensive Test for 33 SWP  
OR as directed by Test Supervisor,  
THEN INSTALL discharge pressure test gauge as follows: PS

- ~~4.2.1.1~~ CLOSE SWN-58-3, PI-1191 Isolation  
AND DISCONNECT first fitting downstream of valve. PS

- ~~4.2.1.2~~ INSTALL test gauge at test connection. PS

- ~~4.2.1.3~~ OPEN SWN-58-3. PS

- ~~4.2.2~~ IF 33 SWP is running, THEN RECORD present time as start time: N/A

Start time: N/A

N/A

- ~~4.2.3~~ IF 33 SWP is NOT in running,  
THEN COORDINATE with Control Room to ensure another  
SWP on 31, 32, 33 SW header is in operation. PS

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### NOTE

NO counter rotation demonstrates EC for SWN-1-3, 33 SWP Discharge Check Valve.

4.2.3.1

OBSERVE 33 SWP AND VERIFY EC of SWN-1-3, 33 SWP Discharge Check Valve:

Counter Rotation: (Circle one) Yes No

SWN-1-3 EC: (Circle one) Yes No

P.O.

4.2.3.2

VERIFY proper oil level in sight glass on upper portion of motor.

P.O.

### NOTE

The following alarms may be received during performance of the following step:

- ? SERVICE WTR HDR (31, 32, 33) HIGH/LOW PRESS (Panel SJF)
- ? SERVICE WATER TO LUBE OIL COOLERS HIGH/LOW PRESSURE (Panel SJF)
- ? SERVICE WATER TO H2 COOLERS HIGH/LOW PRESSURE (Panel SJF)

4.2.3.3

START 33 SWP and RECORD start time:

Start Time: (- 3 hours) from current time

P.O.

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### NOTE

Exercise Open (EO) of SWN-9-3, 33 Service Water Pump Vacuum Breaker, is verified by 33 SWP running acceptably.

~~4.2.3.4~~

VERIFY water issued from SWN-9-3, 33 Service Water Pump Vacuum Breaker, when 33 SWP was started.

SWN-9-3 EO: (Circle one)

Yes/ No

ES

~~4.2.4~~

IF FI-1142 (33 SWP Flow Indicator) is to be used, THEN PLACE in service per Attachment 1, Instructions for Placing Service Water Flow Indicator in Service.

ES

~~4.2.5~~

IF FI-1142 (33 SWP Flow Indicator) is suspected to be inaccurate or out of calibration, THEN PLACE an alternate flow indicator in service per Attachment 2, Procedure for Using an Alternate Flow Indicator

N/A

~~4.2.5.1~~

NOTE the use of alternate flow indicator in Section 5.0, Comments.

N/A

N A

### NOTE

Steps 4.2.6 through 4.2.9 are provided to allow placing the associated or alternate flow indicators in service for 31 and 33 SWPs when it is anticipated that the discharge valve of 1 or both of these pumps may need to be throttled to obtain required test flow on 32 SWP.

~~4.2.6~~

IF FI-1144 is to be used for 31 SWP, THEN PLACE in service per Attachment 3, Placing SW Flow Indicator FI-1144 in Service for 31 SWP.

N/A

✓

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~~4.2.7~~

N/A

IF FI-1144 (31 SWP Flow Indicator) is suspected of being inaccurate or is out of calibration, THEN:

~~4.2.7.1~~

PLACE an alternate flow indicator in service per Attachment 4, Placing an Alternate SW Flow Indicator in Service for 31 SWP.

N/A

~~4.2.7.2~~

NOTE use of alternate flow indicator in Section 5.0, Comments.

N/A

~~4.2.8~~

IF FI-1143 is to be used for 32 SWP, THEN PLACE in service per Attachment 5, Placing SW Flow Indicator FI-1143 in Service for 32 SWP.

N/A

~~4.2.9~~

IF FI-1143 (32 SWP Flow Indicator) is suspected of being inaccurate or is out of calibration, THEN:

~~4.2.9.1~~

PLACE an alternate flow indicator in service per Attachment 6, Placing an Alternate SW Flow Indicator in Service for 32 SWP.




N/A

~~4.2.9.2~~




NOTE use of alternate flow indicator in Section 5.0, Comments.

N/A

Initials**CAUTION**

-  Avoid running SWP for a prolonged period of time at flow rates less than 2500 gpm and NOT longer than 30 minutes at a flowrate of 2000 gpm.
-  Avoid running any SWP at a flowrate greater than 7500 gpm.
-  Throttling any SWP discharge valve will render the associated SWP inoperable.

**NOTE**

-  Attachment 7, List of Various Service Water Loads / Valves, shows SW loads and recommended valves, which may be positioned as required to obtain desired flow rate. Attachment 7 is a guide and NOT necessarily all inclusive.
-  Attachment 8, As-Found and As-Left Table, is used to track valve manipulations required to obtain desired flow rate.
-  Throttling SWN-2-3, 33 SWP Discharge Isolation, may require entry into an AOT per LCO 3.7.9.

~~4.2.10~~ ADJUST 33 SWP flow to 5292 - 5508 gpm on FI-1142 or alternate flow instrument and RECORD flow {Ref: 9.1.1}:

33 SWP Flow: 5400 gpm

P.D.

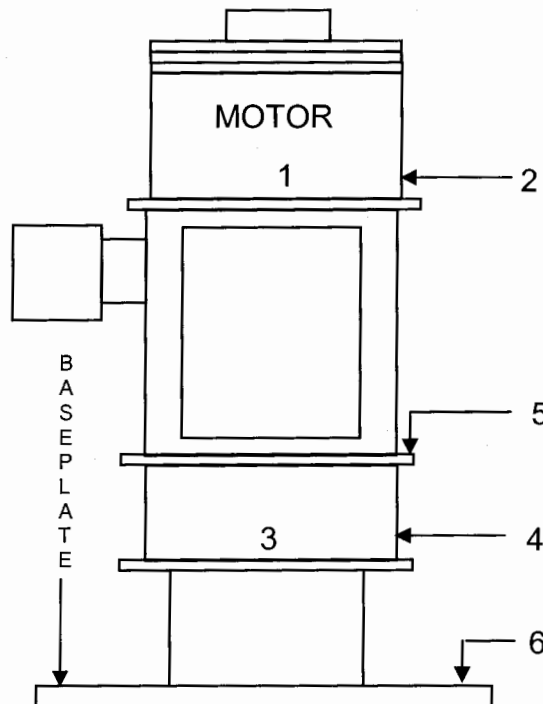


Initials

4.2.11

WHEN 33 SWP has run at least 2 minutes,  
 THEN OBTAIN vibration readings using hand-held vibrometer:

- ☉ PLACE probe on locations indicated on motor sketch.
- ☉ RECORD data in the velocity mode (in/sec) for all points.



33 SW PUMP LOCATION	ACTUAL (IN / SEC)	Acceptance Criteria	
		OPERABILITY	ALERT
1. Motor Top North-South*	0.04	≤ 0.48	≤ 0.2
2. Motor Top East-West*	0.07	≤ 0.66	≤ 0.27
3. Motor Bottom North-South	0.03	NA	NA
4. Motor Bottom East-West	0.04	NA	NA
5. Motor Axial*	0.05	≤ 0.7	≤ 0.32
6. Base Axial	0.03	NA	NA

\* Denotes IST data.

P.S.

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Initials**NOTE**Alert values are NOT used to determine operability.~~4.2.12~~ EVALUATE vibration readings recorded in Step 4.2.11:

ACCEPTANCE CRITERIA	ACTUAL	ACCEPTABLE	INITIALS
All Surveillance Operability Criteria satisfied	<u>YES</u> NO / N/A	<u>YES</u> NO / N/A	P.D.
All Surveillance Alert Criteria satisfied	<u>YES</u> / NO / N/A	<u>YES</u> / NO / N/A	P.D.

~~4.2.13~~ RECORD 33 SWP discharge pressure on PI-1191  
OR installed discharge pressure gauge (step 4.2.1.2):PI-1191: N/A psig OR 0 – 200 psig Test Gauge 84 psig P.D.**NOTE**

Zero or negligible leakage demonstrates EC for SWN-9-3, 33 Service Water Pump Vacuum Breaker.

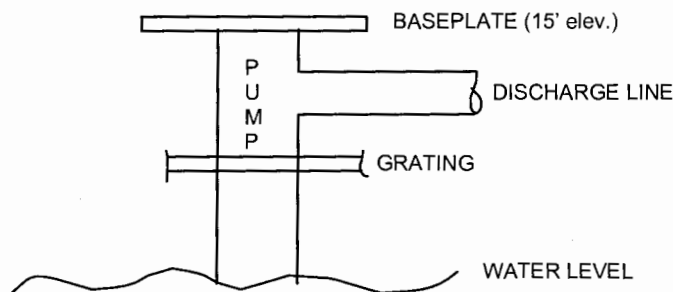
~~4.2.14~~ OBSERVE SWN-9-3 for leakage.SWN-9-3 EC: (Circle one) Yes / NoP.D.

Initials~~4.2.15~~

MEASURE AND RECORD the distance from river water to top of lower grating in inches:

66 inches

P.R.

~~4.2.16~~

CALCULATE 32 SWP Suction Pressure Head (pump lift) in psig using distance from top of lower grating to river water level recorded in Step 4.2.15 (Distance Below Grating) and distance from top of lower grating to center line of 32 SWP discharge line (Distance Above Grating):

$$SPH_{\text{psig}} = (DBG_{\text{in}} + DAG_{\text{in}})(0.083 \text{ ft/in})(0.432 \text{ psi/ft})$$

$SPH_{\text{psig}}$  = Suction Pressure Head (pump lift) in psig

$DBG_{\text{in}}$  = Distance Below Grating in inches (Step 4.2.15) (This is a variable value.)

$DAG_{\text{in}}$  = Distance Above Grating = 30 inches (This is a fixed value.)

$$SPH_{\text{psig}} = \left( \frac{66}{\text{(Step 4.2.15)}} \text{ in} + 30 \text{ in} \right) (0.083 \text{ ft/in})(0.432 \text{ psi/ft}) = \underline{3.44} \text{ psig}$$

P.R.

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- ~~4.2.17~~ CALCULATE 33 SWP  $\Delta P$  in psid using 33 SWP discharge pressure recorded in Step 4.2.13, Suction Pressure Head value recorded in Step 4.2.16:

$$\Delta P_{\text{psid}} = DP_{\text{psig}} + SPH_{\text{psig}}$$

$\Delta P_{\text{psid}}$  = Differential Pressure in psid

$DP_{\text{psig}}$  = Discharge Pressure in psig (Step 4.2.13)

$SPH_{\text{psig}}$  = Suction Pressure Head in psig (Step 4.2.16)

$$\Delta P_{\text{psid}} = \frac{84}{(\text{Step 4.2.13})} \text{ psig} + \frac{3.44}{(\text{Step 4.2.16})} \text{ psig} = 80.56 \text{ psid}$$

PS

- ~~4.2.18~~ RETURN valves identified on Attachment 8 to position required by CRS or SM.

PS

- ~~4.2.19~~ IF FI-1142 (33 SWP Flow Indicator) was used, THEN REMOVE Alternate Flow Indicator from service per Attachment 1.

PS

- ~~4.2.20~~ IF Alternate Flow Indicator was used for 33 SWP THEN REMOVE Alternate Flow Indicator from service per Attachment 2, Placing an Alternate SW Flow Indicator In-Service for 33 SWP.

N/A

- 4.2.21 IF FI-1144 was placed in service for 31 SWP in Step 4.2.6, THEN REMOVE from service per Attachment 3.

N/A

- 4.2.22 IF an Alternate Flow Indicator was placed in service for 31 SWP in Step 4.2.7.1, THEN REMOVE Alternate Flow Indicator from service per Attachment 4.

- 4.2.23 IF FI-1142 was placed in service for 32 SWP in Step 4.2.8, THEN REMOVE from service per Attachment 5.

- 4.2.24 IF an Alternate Flow Indicator was placed in service for 32 SWP in Step 4.2.9.1, THEN REMOVE Alternate Flow Indicator from service per Attachment 6.

✓

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~~4.2.25~~ IF Step 4.2.3 was NOT performed, THEN:

N/A

#### NOTE

The following alarms may be received during performance of the following step:

- SERVICE WTR HDR (31, 32, 33) HIGH/LOW PRESS (Panel SJF)
- SERVICE WATER TO LUBE OIL COOLERS HIGH/LOW PRESSURE (Panel SJF)
- SERVICE WATER TO H2 COOLERS HIGH/LOW PRESSURE (Panel SJF)

4.2.25.1 COORDINATE with Control Room to ensure another SWP on 31, 32, 33 SW header is in operation.

N/A

4.2.25.2 STOP 33 SWP.

#### NOTE

Exercise Open (EO) of SWN-9-3, 33 Service Water Pump Vacuum Breaker, is verified by an in rush of air into the vacuum breaker discharge pipe when 33 SWP is stopped.

4.2.25.3 VERIFY SWN-9-3, 33 Service Water Pump Vacuum Breaker, opened by feeling an in rush air into the vacuum breaker discharge pipe.

SWN-9-3 EO: (Circle one) Yes / No

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### NOTE

To verify EC for SWN-1-3, 33 SWP must stop and exhibit NO counter rotation. Some counter rotation may be experienced as water drains from piping between pump and check valve.

4.2.25.4

OBSERVE 33 SWP for counter rotation.

N/A

Counter Rotation: (Circle one)

Yes / No

SWN-1-3 EC: (Circle one)

Yes / No

4.2.25.5

IF EO of SWN-9-3, 33 Service Water Pump Vacuum Breaker, was NOT verified in Step 4.2.25.3, THEN:

- a) VERIFY proper oil level in sight glass on upper portion of motor.

N

A

### NOTE

The following alarms may be received during performance of the following step:

- SERVICE WTR HDR (31, 32, 33) HIGH/LOW PRESS (Panel SJF)
- SERVICE WATER TO LUBE OIL COOLERS HIGH/LOW PRESSURE (Panel SJF)
- SERVICE WATER TO H2 COOLERS HIGH/LOW PRESSURE (Panel SJF)

Allow sufficient time prior to restarting 33 SWP for SWN-9-3, 33 Service Water Pump Vacuum Breaker, to open. This will ensure water issues in Step c).

- b) START 33 SWP.

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### NOTE

Exercise Open (EO) of SWN-9-3, 33 Service Water Pump Vacuum Breaker, is verified by water issuing from the valve when 33 SWP is started.

②

N/A

VERIFY water issued from SWN-9-3, 33 Service Water Pump Vacuum Breaker, when 33 SWP was started.

SWN-9-3 EO: (Circle one) Yes / No

N/A

④ 4.2.26

NOTIFY CRS: 33 SWP may be operated as required for plant operation.

Per

## 33 SERVICE WATER PUMP

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### ~~4.3~~ Test Of Zurn Strainer and SWN-PCV-1207, 33 SWP Zurn Strainer Blowdown Valve

~~4.3.1~~ RECORD As-Found position of control switch:

Control Switch	As-Found Position	Initials
33 Zurn Strainer	HAND	P.S.

~~4.3.2~~ IF 33 Zurn Strainer control switch is in HAND,  
THEN NOTIFY CRS: 33 Zurn Strainer control switch will be  
placed in AUTO or OFF while testing.

P.S.

~~4.3.2.1~~ PLACE 33 Zurn Strainer control switch in  
AUTO OR OFF.

P.S.

~~4.3.3~~ VERIFY following conditions:

~~4.3.3.1~~ 33 Zurn Strainer is NOT backwashing.

P.S.

~~4.3.3.2~~ SWN-PCV-1207, SWP-33 Zurn Strainer Backwash Pressure  
Control Valve, is closed.

P.S.

~~4.3.3.3~~ SWN-2-3, 33 SWP Discharge Isolation, is open.

P.S.

~~4.3.3.4~~ At least 1 SWP is operating on the 31, 32, 33 SW Header.

P.S.



### 33 SERVICE WATER PUMP

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Initials**CAUTION**

Strainer backwash mechanisms are water lubricated. DO NOT operate strainer backwash motors/valves unless pressurized water is available to strainer.

**NOTE**

- SWN-PCV-1207 operation SHALL be observed locally in order to record timing.
- Opening and closing valve stroke times for SWN-PCV-1207 are taken from control switch actuation to cessation of valve stem movement.
- Zurn Strainer backwash valve position is verified by observing flat areas on valve shaft. Flats in line with piping indicate valve is open. Flats at 90 degrees to piping indicate valve is closed.

**4.3.4**

PLACE 33 Zurn Strainer Control Switch in HAND  
AND RECORD opening stroke time for SWN-PCV-1207.

VALVE STROKE TIME	ACCEPTABLE TIME LIMIT
SWN-PCV-1207 opens <u>1.45</u> sec	$\leq 2$ sec

P.S**4.3.5**

VERIFY 33 Zurn Strainer motor rotates.

33 Zurn Strainer rotates: (Circle one) Yes No

P.S**4.3.6**

PLACE 33 Zurn Strainer Control Switch in OFF and RECORD closing stroke time for SWN-PCV-1207.

VALVE STROKE TIME	ACCEPTABLE TIME LIMIT
SWN-PCV-1207 closes <u>1.49</u> sec	$\leq 2$ sec

P.S**4.3.7**

VERIFY 33 Zurn Strainer motor stops.

P.S

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Initials

~~4.3.8~~ Visually INSPECT SWN-PCV-1207 and associated SOV and air lines for the following:

- ~~4.3.8.1~~ Loose bolts
- ~~4.3.8.2~~ Corrosion
- ~~4.3.8.3~~ Leaks
- ~~4.3.8.4~~ Damaged or kinked hoses

P.D.

#### NOTE

IF 33 Zurn Strainer can NOT be backwashed in AUTO or HAND via SWN-PCV-1207 or manually per 3-SOP-RW-005, Service Water System Operation, THEN 33 Zurn Strainer SHALL be declared inoperable.

~~4.3.9~~ IF SWN-PCV-1207 fails to open, THEN PERFORM a manual backwash of 33 Zurn Strainer per 3-SOP-RW-005, Service Water System Operation.

N/A

#### ~~4.4~~ Restoration

~~4.4.1~~ RESTORE 33 Zurn Strainer Control Switch to AUTO OR as required by SM/CRS:

CONTROL SWITCH	CONTROL SWITCH NORMAL POSITION	AS-LEFT	INITIALS	V
33 Zurn Strainer	AUTO	<del>AUTO</del>	P.D.	P.D.P.

~~4.4.2~~ IF discharge pressure Test Gauge was installed (in step 4.2.1.2), THEN CLOSE SWN-58-3, PI-1191 Isolation.

P.D.

~~4.4.2.1~~ REMOVE test gauge.

P.D.

~~4.4.2.2~~ RECONNECT tubing at fitting used for test gauge.

P.D.

~~4.4.2.3~~ OPEN SWN-58-3.

P.D.

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5.0

## COMMENTS:

NONE - P.M.

## Test Performers:

Print Name:

Initials:

Signature/Date:

PLANT OPERATOR

PR

Plant Operator Today

OPERATION JUNIOR PLANT

OPP

Operation Junior Plant Today

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## 6.0 ACCEPTANCE CRITERIA

### 6.1 IST Requirements

#### 6.1.1 33 SWP Operability Requirements

Parameter	Step	Surveillance Requirement	Acceptance Criteria	Actual	Acceptable	Initials
33 SWP Flow	4.2.10	IST Program	$5292 \leq \text{gpm} \leq 5508$	5400 gpm	(YES) / NO / NA	P.R.
Motor Top Horizontal N-S Vibration	4.2.11		$\leq 0.48 \text{ in/sec}$	0.04 in/sec	(YES) / NO / NA	P.R.
Motor Top Horizontal E-W Vibration			$\leq 0.66 \text{ in/sec}$	0.07 in/sec	(YES) NO / NA	P.R.
Motor Axial Vibration			$\leq 0.7 \text{ in/sec}$	0.05 in/sec	(YES) NO / NA	P.R.
33 SWP ΔP	4.2.17		$80.1 \leq \text{psid} \leq 87.6$ * IST Surveillance	80.56 psid	(YES) / NO / NA	P.R.

\* Acceptance Criteria is based on IST 2-Year Comprehensive testing requirements, which are more restrictive than quarterly testing requirements.

#### 6.1.2 33 SWP Valves Operability Requirements

Component	Step	Surveillance Requirement	Acceptance Criteria	Actual Value	Acceptable	Initials
SWN-1-3	4.2.3.1 OR 4.2.25.4	IST Program	EC	(YES) / NO	(YES) / NO	P.R.
SWN-9-3	4.2.3.4 OR 4.2.25.3 OR 4.2.25.5c)		EO	(YES) / NO	(YES) / NO	P.R.
				(YES) / NO	(YES) / NO	P.R.
	4.2.14		EC	(YES) / NO	(YES) / NO	P.R.
SWN-PCV-1207	4.3.4		$EO \leq 2 \text{ seconds}$	1.75 sec	(YES) / NO	P.R.
	4.3.6		$EC \leq 2 \text{ seconds}$	1.49 sec	(YES) / NO	P.R.

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~~6.1.3~~ 33 SWP Alert Status Determination

Parameter	Step	Actual Value	Alert Range	Is actual value within the Alert Range?	Initials
Motor Top Horizontal N-S	4.2.11	0.04 in/sec	$0.2 < \text{in/sec} \leq 0.48$	YES <u>NO</u> NA	PS
Motor Top Horizontal E-W		0.07 in/sec	$0.27 < \text{in/sec} \leq 0.66$	YES <u>NO</u> NA	PS
Motor Axial		0.05 in/sec	$0.32 < \text{in/sec} \leq 0.7$	YES <u>NO</u> NA	PS
33 SWP $\Delta P$	4.2.17	80.56 psid	$80.1 \leq \text{psid} \leq 80.8$ IST Surveillance	<u>YES</u> NO NA	PS

~~6.2~~ Other Requirements

Zurn Strainer					
Component	Step	Surveillance Requirement	Acceptance Criteria	Acceptable	Initials
33 Zurn Strainer	4.3.5	Necessary Support Equipment	Rotates	<u>YES</u> NO	PS

**7.0 TEST ACCEPTANCE****7.1 IST Acceptance Criteria**

7.1.1 Based on the recorded data, are all IST Operability Acceptance Criteria of Section 6.1.1 and 6.1.2 satisfied?

YES

NO

N/A

**7.1.2 Actions for SWN-PCV-1207:**

7.1.2.1 IF the valve(s) failed to exhibit the required change of position, THEN:

- NOTIFY CRS/SM to declare the valve(s) inoperable.
- INITIATE a WR and CR.
- TAKE applicable action in accordance with LCO 3.7.9.

7.1.2.2 IF the valve(s) stroke time is outside the IST Acceptance Criteria Limits, THEN:

- NOTIFY CRS/SM to declare the valve(s) inoperable.
- INITIATE a CR.
- PERFORM additional stroke tests in accordance with Attachment 9, ASME OM Code Stroke Evaluation Sheet.

7.1.2.3 Based on stroke test data on Attachment 9, are stroke times within Acceptance Criteria of Section 6.1?

YES

NO

N/A

- a) IF the stroke test IST Acceptance Criteria are NOT satisfied, THEN INITIATE a WR.
- b) IF the stroke test IST Acceptance Criteria are satisfied, THEN NOTIFY CRS/SM to declare the valve(s) operable.

**7.1.3 Actions for SWN-1-3 and SWN-9-3:**

7.1.3.1 IF the valve failed to exhibit the required change of position, THEN:

- NOTIFY CRS/SM to declare the valve inoperable.
- INITIATE a WR and a CR.
- TAKE applicable action in accordance with LCO 3.7.9.

**7.1.4 Actions for 33 SWP:**

7.1.4.1 IF the pump test results are outside the IST Acceptance Criteria Limits, THEN:

- NOTIFY CRS/SM to declare the pump inoperable.
- INITIATE a WR and a CR.
- TAKE applicable action in accordance with LCO 3.7.9.

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**7.2 33 SWP Alert Status Determination**

7.2.1 IF any parameter is within the Alert Range in Section 6.1.3, THEN:

- NOTIFY CRS/SM
- INITIATE a CR

**7.3 Other Requirements Acceptance Criteria**

7.3.1 Based on the recorded data, are all Support Acceptance Criteria of Section 0 satisfied?

YES                      NO                      N/A

7.3.2 IF the 33 Zurn Strainer test results are outside the Support Acceptance Criteria of Section 0, THEN:

- NOTIFY CRS/SM to declare the 33 Zurn Strainer inoperable.
- INITIATE a WR and a CR.
- TAKE applicable action in accordance with LCO 3.7.9.

7.4 IF NO is circled in Step 7.1.1, 7.1.2.3, OR 7.3.1, THEN LIST corrective action(s) taken and comments:

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By: \_\_\_\_\_

SM or Des. Alt: **Print Name / Sign / Date**

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## 8.0 EVALUATION

### 8.1 IST EVALUATION

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By: \_\_\_\_\_

IST Engineer: **Print Name / Sign / Date**

### 8.2 SURVEILLANCE COORDINATOR REVIEW

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Surveillance Coordinator : **Print Name / Sign / Date**

## 9.0 REFERENCES

### 9.1 Commitment Documents

- 9.1.1 Design Basis Licensing Database COM-83-02582 (Old No. 83-003-C), IER 82-23, dated 01/14/83

### 9.2 Development Documents

- 9.2.1 9321-F-20333, Sheets 1 and 2, Flow Diagram Service Water System
- 9.2.2 9321-F-27223, Flow Diagram Service Water System Nuclear Steam Supply Plant
- 9.2.3 Modification Drawings: 9321-F-10063 and 871150-FS-201, Intake Structure Platform Framing Plan and Details
- 9.2.4 SEP-IST-IP3-001, Inservice Testing Program Plan (IP-RPT-09-00070)



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- 9.2.5 3-PT-V059C, 33 SWP Reference Test
- 9.2.6 Memo to 3PT-M35 file, dated January 8, 1993 (Location of Pump Suction for Determining Suction Pressure for 31-36 SW Pumps)
- 9.2.7 Memo NOS-93-140 (April 9, 1993)
- 9.2.8 Memo IP-PRF-93-257 (Timing Requirements for SWN-PCV-1205 thru 1210)
- 9.2.9 MMP 96-3-507 SWS, Main SW Pump Zurn Strainer Piping Replacement
- 9.2.10 3PT-Q82, Zurn Strainer Backwash Valve Test PCV-1205 Through PCV-1210.
- 9.2.11 Technical Manual IP3V-209-100000314 (Service Water Pumps)
- 9.2.12 Technical Manual IP3V-1158-100000844 (Service Water Strainers)
- 9.2.13 Technical Manual IP3V-1301-100001015 (Service Water Annubars)
- 9.2.14 ASME OM 2001 through 2003 Addenda
- 9.2.15 Calculation No. IP-CALC-13-00063

### **9.3 Interface Documents**

- 9.3.1 Technical Specification LCO 3.7.9
- 9.3.2 3-SOP-RW-005, Service Water System Operation

## **10.0 RECORDS AND DOCUMENTATION**

### **10.1 Records**

The following required records are generated by this procedure and SHALL be maintained in accordance with IPEC Records Retention Schedule:

- 10.1.1 This Surveillance Test becomes a Quality Record when completed.

Initials

**ATTACHMENT 1**  
**Placing SW Flow Indicator FI-1142 In-Service for 33 SWP**  
(Page 1 of 2)

**NOTE**

An annubar assembly drawing is provided on Page 2 of 2.

~~1.0~~

PLACE the Normal Flow Indicator in service as follows:

~~1.1~~

VERIFY FI-1142 Hi and Lo side isolation valves are Closed.

P.R.

~~1.2~~

OPEN SWN-143, FI-1142 Hi Side Root Isolation.

P.R.

~~1.3~~

OPEN SWN-133, FI-1142 Lo Side Root Isolation.

P.R.

~~1.4~~

VERIFY FI-1142 Hi Side Vent valve is OPEN.

P.R.

~~1.5~~

VERIFY FI-1142 Lo Side Vent valve is OPEN.

P.R.

~~1.6~~

Simultaneously OPEN Hi Side and Lo Side isolation valves for FI-1142.

P.R.

~~1.7~~

CLOSE FI-1142 Hi Side Vent valve.

P.R.

~~1.8~~

CLOSE FI-1142 Lo Side Vent valve.

P.R.

~~2.0~~

WHEN use of Normal Flow Indicator is complete,  
THEN REMOVE from service as follows:

~~2.1~~

OPEN FI-1142 Hi Side Vent.

P.R.

~~2.2~~

OPEN FI-1142 Lo Side Vent.

P.R.

~~2.3~~

Simultaneously CLOSE both Hi side and Lo side isolation valves for FI-1142.

P.R.

~~2.4~~

CLOSE SWN-143, FI-1142 Hi Side Root Isolation.

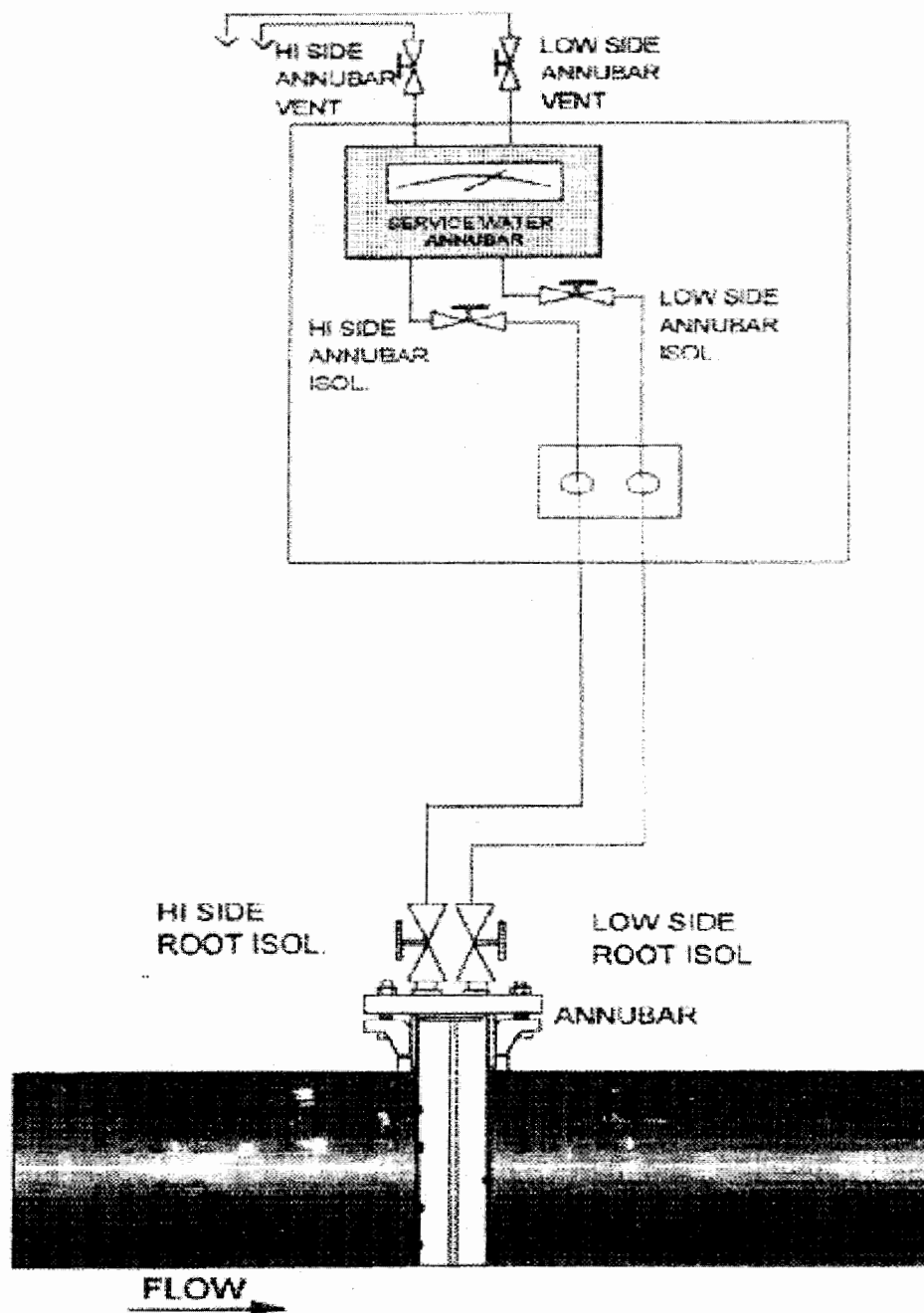
P.R.

~~2.5~~

CLOSE SWN-133, FI-1142 Lo Side Root Isolation.

P.R.

**ATTACHMENT 1**  
**Instructions for Placing Service Water Flow Indicator In-Service**  
(Page 2 of 2)  
Annubar Assembly (Typical)



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**Initials**

**ATTACHMENT 2**  
**Placing an Alternate SW Flow Indicator In-Service for 33 SWP**  
(Page 1 of 2)

3.0 CONNECT the Alternate Flow Indicator as follows:

- 3.1 RECORD Alternate Flow Indicator to be used: \_\_\_\_\_
- 3.2 VERIFY FI-1142 Hi Side and Lo Side Isolations are Closed. \_\_\_\_\_
- 3.3 VERIFY Alternate Flow Indicator Hi side and Lo side isolations are Closed. \_\_\_\_\_
- 3.4 DISCONNECT the Hi and Lo side fittings of FI-1142  
AND the Alternate Flow Indicator. \_\_\_\_\_
- 3.5 INSTALL tubing between the Hi side of FI-1142  
AND the Alternate Flow Indicator. \_\_\_\_\_
- 3.6 INSTALL tubing between the Lo side of FI-1142  
AND the Alternate Flow Indicator. \_\_\_\_\_

4.0 PLACE the Alternate Flow Indicator in service as follows:

- 4.1 VERIFY both Hi and Lo side Flow Indicator isolation valves are closed. \_\_\_\_\_
- 4.2 VERIFY SWN-143 and SWN-133, FI-1142 Hi and Lo Side Root Isolation Valves, are OPEN. \_\_\_\_\_
- 4.3 VERIFY Alternate Flow Indicator Hi side vent valve is OPEN. \_\_\_\_\_
- 4.4 VERIFY Alternate Flow Indicator Lo side vent valve is OPEN. \_\_\_\_\_
- 4.5 Simultaneously OPEN Hi side and Lo side isolation valves for FI-1142. \_\_\_\_\_
- 4.6 CLOSE Alternate Flow Indicator Lo side vent. \_\_\_\_\_
- 4.7 CLOSE Alternate Flow Indicator Hi side vent. \_\_\_\_\_

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Initials

**ATTACHMENT 2**  
**Procedure for Using an Alternate Flow Indicator**  
 (Page 2 of 2)

5.0 WHEN use of Alternate Flow Indicator is complete,  
THEN REMOVE from service as follows:

- 5.1 OPEN Alternate Flow Indicator Hi side vent. \_\_\_\_\_
- 5.2 OPEN Alternate Flow Indicator Lo side vent. \_\_\_\_\_
- 5.3 Simultaneously CLOSE Hi side and Lo side isolation valves for FI-1142. \_\_\_\_\_
- 5.4 CLOSE SWN-143, FI-1142 Hi Side Root Isolation Valve. \_\_\_\_\_
- 5.5 CLOSE SWN-133, FI-1142 Lo Side Root Isolation Valve. \_\_\_\_\_
- 5.6 DISCONNECT and REMOVE the tubing from the Hi and Lo side of  
 FI-1142 and the Alternate Flow Indicator. \_\_\_\_\_
- 5.7 CONNECT the HI and Lo side fittings of FI-1142  
AND the Alternate Flow Indicator as required. \_\_\_\_\_

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Initials

**ATTACHMENT 3**  
**Placing SW Flow Indicator FI-1144 In-Service for 31 SWP**  
(Page 1 of 1)

**NOTE**

An annubar assembly drawing is provided on Attachment 1, page 2 of 2.

1.0 PLACE the Normal Flow Indicator in service as follows:

- 1.1 VERIFY FI-1144 Hi and Lo side isolation valves are Closed. \_\_\_\_\_
- 1.2 OPEN SWN-141, FI-1144 Hi Side Root Isolation. \_\_\_\_\_
- 1.3 OPEN SWN-131, FI-1144 Lo Side Root Isolation. \_\_\_\_\_
- 1.4 VERIFY FI-1144 Hi Side Vent valve is OPEN. \_\_\_\_\_
- 1.5 VERIFY FI-1144 Lo Side Vent valve is OPEN. \_\_\_\_\_
- 1.6 Simultaneously OPEN Hi Side and Lo Side isolation valves for FI-1144. \_\_\_\_\_
- 1.7 CLOSE FI-1144 Lo Side Vent valve. \_\_\_\_\_
- 1.8 CLOSE FI-1144 Hi Side Vent valve. \_\_\_\_\_

2.0 WHEN use of Normal Flow Indicator is complete,  
THEN REMOVE from service as follows:

- 2.1 OPEN FI-1144 Hi Side Vent. \_\_\_\_\_
- 2.2 OPEN FI-1144 Lo Side Vent. \_\_\_\_\_
- 2.3 Simultaneously CLOSE both Hi side and Lo side isolation valves  
for FI-1144. \_\_\_\_\_
- 2.4 CLOSE SWN-141, FI-1144 Hi Side Root Isolation. \_\_\_\_\_
- 2.5 CLOSE SWN-131, FI-1144 Lo Side Root Isolation. \_\_\_\_\_

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Initials

**ATTACHMENT 4**  
**Placing an Alternate SW Flow Indicator In-Service For 31 SWP**  
 (Page 1 of 2)

- 1.0 CONNECT the Alternate Flow Indicator as follows:
  - 1.1 RECORD Alternate Flow Indicator to be used: \_\_\_\_\_
  - 1.2 VERFIY FI-1144 Hi Side and Lo Side Isolations are Closed. \_\_\_\_\_
  - 1.3 VERIFY Alternate Flow Indicator Hi side and Lo side isolations are closed. \_\_\_\_\_
  - 1.4 DISCONNECT the Hi and Lo side fittings of FI-1144  
AND the Alternate Flow Indicator. \_\_\_\_\_
  - 1.5 INSTALL tubing between the Hi side of FI-1144  
AND the Alternate Flow Indicator. \_\_\_\_\_
  - 1.6 INSTALL tubing between the Lo side of FI-1144  
AND the Alternate Flow Indicator. \_\_\_\_\_
- 2.0 PLACE the Alternate Flow Indicator in service as follows:
  - 2.1 VERIFY both Hi and Lo side Flow Indicator isolation valves are Closed. \_\_\_\_\_
  - 2.2 VERIFY SWN-141 and SWN-131, FI-1144 Hi and Lo Side  
 Root Isolation Valves, are OPEN. \_\_\_\_\_
  - 2.3 VERIFY Alternate Flow Indicator Hi side vent valve is OPEN. \_\_\_\_\_
  - 2.4 VERIFY Alternate Flow Indicator Lo side vent valve is OPEN. \_\_\_\_\_
  - 2.5 Simultaneously OPEN Hi side and Lo side isolation valves for FI-1144. \_\_\_\_\_
  - 2.6 CLOSE Alternate Flow Indicator Lo side vent. \_\_\_\_\_
  - 2.7 CLOSE Alternate Flow Indicator Hi side vent. \_\_\_\_\_

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Initials

**ATTACHMENT 4**  
**Placing an Alternate SW Flow Indicator In-Service For 31 SWP**  
 (Page 2 of 2)

3.0 WHEN use of Alternate Flow Indicator is complete,  
THEN REMOVE from service as follows:

- 3.1 OPEN Alternate Flow Indicator Hi side vent. \_\_\_\_\_
- 3.2 OPEN Alternate Flow Indicator Lo side vent. \_\_\_\_\_
- 3.3 Simultaneously CLOSE Hi side and Lo side isolation valves for FI-1144. \_\_\_\_\_
- 3.4 CLOSE SWN-141, FI-1144 Hi Side Root Isolation Valve. \_\_\_\_\_
- 3.5 CLOSE SWN-131, FI-1144 Lo Side Root Isolation Valve. \_\_\_\_\_
- 3.6 DISCONNECT and REMOVE the tubing from the Hi and Lo side  
 of FI-1144 and the Alternate Flow Indicator. \_\_\_\_\_
- 3.7 CONNECT the HI and Lo side fittings of FI-1144  
AND the Alternate Flow Indicator as required. \_\_\_\_\_



**ATTACHMENT 5****Placing SW Flow Indicator FI-1143 In-Service for 32 SWP**

(Page 1 of 1)

**NOTE**

An annubar assembly drawing is provided on Attachment 7.

1.0 PLACE the Normal Flow Indicator in service as follows:

- 1.1 VERIFY FI-1143 Hi and Lo side isolation valves are Closed. \_\_\_\_\_
- 1.2 OPEN SWN-142, FI-1143 Hi Side Root Isolation. \_\_\_\_\_
- 1.3 OPEN SWN-132, FI-1143 Lo Side Root Isolation. \_\_\_\_\_
- 1.4 VERIFY FI-1143 Hi Side Vent valve is OPEN. \_\_\_\_\_
- 1.5 VERIFY FI-1143 Lo Side Vent valve is OPEN. \_\_\_\_\_
- 1.6 Simultaneously OPEN Hi Side and Lo Side isolation valves for FI-1143. \_\_\_\_\_
- 1.7 CLOSE FI-1143 Lo Side Vent valve. \_\_\_\_\_
- 1.8 CLOSE FI-1143 Hi Side Vent valve. \_\_\_\_\_

2.0 WHEN use of Normal Flow Indicator is complete,  
THEN REMOVE from service as follows:

- 2.1 OPEN FI-1143 Hi Side Vent. \_\_\_\_\_
- 2.2 OPEN FI-1143 Lo Side Vent. \_\_\_\_\_
- 2.3 Simultaneously CLOSE both Hi side and Lo side isolation valves for FI-1143. \_\_\_\_\_
- 2.4 CLOSE SWN-142, FI-1143 Hi Side Root Isolation. \_\_\_\_\_
- 2.5 CLOSE SWN-132, FI-1143 Lo Side Root Isolation. \_\_\_\_\_

**ATTACHMENT 6,  
Placing an Alternate SW Flow Indicator In-Service for 32 SWP  
(Page 1 of 2)**

1.0 CONNECT the Alternate Flow Indicator as follows:

- 1.1 RECORD Alternate Flow Indicator to be used: \_\_\_\_\_
- 1.2 VERIFY FI-1143 Hi Side and Lo Side Isolations are Closed. \_\_\_\_\_
- 1.3 VERIFY Alternate Flow Indicator Hi side and Lo side isolations are Closed. \_\_\_\_\_
- 1.4 DISCONNECT the Hi and Lo side fittings of FI-1143  
AND the Alternate Flow Indicator. \_\_\_\_\_
- 1.5 INSTALL tubing between the Hi side of FI-1143  
AND the Alternate Flow Indicator. \_\_\_\_\_
- 1.6 INSTALL tubing between the Lo side of FI-1143  
AND the Alternate Flow Indicator. \_\_\_\_\_

2.0 PLACE the Alternate Flow Indicator in service as follows:

- 2.1 VERIFY both Hi and Lo side Flow Indicator isolation valves are Closed. \_\_\_\_\_
- 2.2 VERIFY SWN-142 and SWN-132, FI-1143 Hi and Lo Side Root Isolation Valves, are OPEN. \_\_\_\_\_
- 2.3 VERIFY Alternate Flow Indicator Hi side vent valve is OPEN. \_\_\_\_\_
- 2.4 VERIFY Alternate Flow Indicator Lo side vent valve is OPEN. \_\_\_\_\_
- 2.5 Simultaneously OPEN Hi side and Lo side isolation valves for FI-1143. \_\_\_\_\_
- 2.6 CLOSE Alternate Flow Indicator Lo side vent. \_\_\_\_\_
- 2.7 CLOSE Alternate Flow Indicator Hi side vent. \_\_\_\_\_

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**ATTACHMENT 6,  
Placing an Alternate SW Flow Indicator In-Service for 32 SWP  
(Page 2 of 2)**

3.0 WHEN use of Alternate Flow Indicator is complete,  
THEN REMOVE from service as follows:

- 3.1 OPEN Alternate Flow Indicator Hi side vent. \_\_\_\_\_
- 3.2 OPEN Alternate Flow Indicator Lo side vent. \_\_\_\_\_
- 3.3 Simultaneously CLOSE Hi side and Lo side isolation valves for FI-1143. \_\_\_\_\_
- 3.4 CLOSE SWN-142, FI-1143 Hi Side Root Isolation Valve. \_\_\_\_\_
- 3.5 CLOSE SWN-132, FI-1143 Lo Side Root Isolation Valve. \_\_\_\_\_
- 3.6 DISCONNECT and REMOVE the tubing from the Hi and Lo side of  
FI-1143 and the Alternate Flow Indicator. \_\_\_\_\_
- 3.7 CONNECT the HI and Lo side fittings of FI-1143  
AND the Alternate Flow Indicator as required. \_\_\_\_\_

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**ATTACHMENT 7**  
**LIST OF VARIOUS SERVICE WATER LOADS / VALVES**  
(Page 1 of 1)

**NOTE**

Below is a list of Service Water Loads, valves, and approximate flow rates expected, which may be used to throttle service water flow rates. This list is NOT all inclusive.

<b>SERVICE WATER LOAD</b>	<b>VALVE(S)</b>	<b>EXPECTED FLOW RATES (gpm)</b>
Containment FCUs	TCV-1103, 1104, 1105	570-1400 (ea)
31-33 EDG Coolers	FCV-1176, 1176A	357 (ea)
31 & 32 CCWHX <sub>3</sub>	SWN-34-1, 34-2	3500 (ea)
SWPs Strainer Back wash	PCV-1205 - 1210	300 (ea)
SWP Discharge Valves	SWN-2-1 thru SWN-2-6	N/A

**ATTACHMENT 8**  
**AS-FOUND AND AS-LEFT TABLE**  
(Page 1 of 1)

- 1.0 IDENTIFY below any valves manipulated during this test.
- 2.0 RETURN these valves to the position required by the SM/Designee.

[illegible]

**ATTACHMENT 9**  
**ASME OM Code Stroke Evaluation Sheet**  
(Page 1 of 1)

IF a stroke time is outside the limits required by section 6.0, THEN the following corrective action guidance may be initiated. Additional copies of this attachment may be made as required.

IF a valve fails to exhibit the required change of valve position or exceeds the stroke time acceptance criteria, THEN the valve SHALL be declared INOPERABLE.

IF valve stroke time exceeds its criteria, THEN PERFORM stroke time in accordance with the instructions below.

**NOTE**

During this second test the valve should be locally observed, if possible, in accordance with applicable attachment.

1.0 RECORD Valve Number: \_\_\_\_\_

2.0 STROKE/TIME the valve three times and RECORD the data below:

Timing Test	OPEN Stroke Time	Section 6.0 Criteria	CLOSED Stroke Time	Section 6.0 Criteria	Acceptable (Yes/No)
1					
2					
3					

3.0 IF the above data meets the Section 6.0 Acceptance Criteria, THEN the results SHALL be recorded below and the valve returned to an OPERABLE status.

4.0 IF the above data does NOT meet the Section 6.0 Acceptance Criteria, THEN the valve SHALL remain INOPERABLE and the following options initiated:

- Valve SHALL be repaired or replaced.
- Forward stroke time data to Performance IST Engineer to be analyzed within 96 hours. The data obtained can be analyzed to determine if it represents acceptable valve operation. IST Engineer SHALL determine if new reference values and acceptance criteria can be established.

5.0 COMMENTS: \_\_\_\_\_

Reviewed by: \_\_\_\_\_

S.M. or C.R.S. / Date

6.0 IST Review: \_\_\_\_\_

Reviewed by: \_\_\_\_\_

IST ENGINEER / Date

# JOB PERFORMANCE MEASURE

## JPM SRO ADMIN #4

Facility: Indian Point 3

Task No: \_\_\_\_\_

Task Title: Review / Authorize a Liquid Waste ReleaseK/A Reference: 1940002.3.6  
SRO – 3.8Job Performance Measure  
No: \_\_\_\_\_SRO Admin  
4

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance \_\_\_\_\_ Actual Performance XClassroom X Simulator \_\_\_\_\_ Plant \_\_\_\_\_**READ TO THE EXAMINEE**

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

**Initial Conditions:**

- Unit is in MODE 5 for a forced outage.
- Circulating Water Pumps Status:
  - 31, 33, and 35 in service at 215 RPM each.
  - No other dilution flow sources are available or authorized.
- A Liquid Radioactive Waste Release Permit Form has been completed manually IAW Section 4.1 of 3-SOP-WDS-014; Liquid Waste Releases for the release of 32 Monitor Tank.
- R-18 is operable and has been appropriately source checked.
  - R-18 average value on recirculation =  $1.2\text{E-}5$   $\mu\text{Ci/ml}$
- 32 Monitor Tank has been properly recirculated and sampled by Chemistry.
- Chemistry sample results have been obtained as follows:
  - Total Gamma Activity =  $1.74\text{E-}5$   $\mu\text{Ci/ml}$
  - Allowable Diluted Concentration =  $1.74\text{E-}7$   $\mu\text{Ci/ml}$
  - Boron Concentration = 1700 ppm
  - Boron pounds = 145 lbs
- Release valve alignment has been reviewed SAT.

Required Materials: 3-SOP-WDS-014; Liquid Waste Releases  
Completed Liquid Radioactive Waste Release Permit Form for 32  
Monitor Tank



General References: 3-SOP-WDS-014; Liquid Waste Releases  
Completed Liquid Radioactive Waste Release Permit Form for 32  
Monitor Tank

Initiating Cue: Review the provided manually calculated Liquid Radioactive Waste  
Release Permit Form for the release of 32 Monitor Tank and authorize the  
release as the CRS.

Time Critical Task: No

Validation Time: 29 minutes

Task Standard: Student reviews the manually calculated Liquid radioactive Waste  
Release Permit Form and determines that the calculations for most restrictive discharge  
rate are incorrect based on an incorrect available dilution flow used in the calculations.

## Performance Information

(Denote critical steps with a check mark ✓)

---

✓1. **Performance Step:**      **DETERMINE Available Dilution Flow (B) per Attachment 7 and RECORD result on permit:**

Standard: Student determines that the recorded available dilution flow for release (B) is incorrect. Permit has recorded 399,000 gpm, **however with only three circulating water pumps operating at 215 RPM the flow should be only 199,500 gpm +/-500 gpm.** This is determined by using Attachment 7.  
(66.5 kgpm x 3 = 199.5 kgpm)

Comment: If student reports this discrepancy to you as the evaluator, **cue him to continue to review the calculations on the permit and update the results if necessary using the correct dilution flow rate.**

- 
2. Performance Step:      Determine that Chemistry sample results have been properly transcribed on the permit:
- Total Gamma Activity = 1.74E-5 µCi/ml
  - Allowable Diluted Concentration = 1.74E-7 µCi/ml
  - Boron Concentration = 1700 ppm
  - Boron pounds = 145 lbs

Standard:      Student recognizes that the Chemistry sample results have been properly transcribed on the permit

Comment: All chemistry sample results have been properly recorded on the permit.

---

## Performance Information

(Denote critical steps with a check mark ✓)

- 
- ✓ **3. Performance Step:** DETERMINE Most Restrictive Discharge Rate (**D**) as follows:
1. CALCULATE the permissible Radioactive Discharge Rate (**Dr**) per Attachment 8.
  2. CALCULATE Permissible (Maximum Boron) Chemistry Discharge Rate (**Dc**) per Attachment 8.
  3. SELECT a Most Restrictive Discharge rate (**D**) per Attachment 8.

Standard: Student determines that the Most Restrictive Discharge Rate of 150 gpm is too high based on only having 199,500 gpm dilution flow. Correct numbers are as follows:

1. **Permissible Radioactive Discharge Rate (**Dr**) = 1995 +/- 50 gpm** instead of previous calculated value of 3990 gpm.
2. **Permissible Chemistry Discharge Rate (**Dc**) = 117 +/- 2 gpm** instead of the previously calculated 235 gpm.
3. **Most Restrictive Discharge Rate (**D**) = 117 +/- 2 gpm** instead of the previously selected value of 150 gpm.

Comment: Attachment 8 calculations and directions.

- 
4. Performance Step: IF R-18 is in service, THEN CALCULATE Alert setpoint for R-18 Channel 1 using Attachment 9  
AND RECORD result on permit.

Standard: Student calculates new alarm and alert setpoints for R-18 IAW Attachment 9. New calculated alarm setpoint is higher, so previous incorrect alarm setpoint is conservative and may be left at the previously calculated setpoint. Previous setpoint should have been 4.5E-4 µCi/ml instead of 4.5E-5 µCi/ml as recorded. **New Alarm setpoint is 2.9E-4 µCi/ml.** Alert value is based on recirculation value of 1.2E-5 µCi/ml from the initial conditions and remains the same.

Comment: Attachment 9 calculations and directions.

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

SRO Admin JPM in classroom

## Initial Conditions:

- Unit is in MODE 5 for a forced outage.
- Circulating Water Pumps Status:
  - 31, 33, and 35 in service at 215 RPM each.
  - No other dilution flow sources are available or authorized.
- A Liquid Radioactive Waste Release Permit Form has been completed manually IAW Section 4.1 of 3-SOP-WDS-014; Liquid Waste Releases for the release of 32 Monitor Tank.
- R-18 is operable and has been appropriately source checked.
  - R-18 average value on recirculation =  $1.2\text{E-}5$   $\mu\text{Ci/ml}$
- 32 Monitor Tank has been properly recirculated and sampled by Chemistry.
- Chemistry sample results have been obtained as follows:
  - Total Gamma Activity =  $1.74\text{E-}5$   $\mu\text{Ci/ml}$
  - Allowable Diluted Concentration =  $1.74\text{E-}7$   $\mu\text{Ci/ml}$
  - Boron Concentration = 1700 ppm
  - Boron pounds = 145 lbs
- Release valve alignment has been reviewed SAT.

## Initiating Cue:

Review the provided manually calculated Liquid Radioactive Waste Release Permit Form for the release of 32 Monitor Tank and authorize the release as the CRS.

## LIQUID RADIOACTIVE WASTE RELEASE PERMIT FORM

Release ID: 32 Mon Tank		Volume: 10228 gal. Or Flow rate		Permit #: Next Number
Recirc. Started - Date: Today Time: 0200		Min. Recirc. Time (T): 4 hr.	Earliest Sample: Date: Today Time: 0600	
Radiation Monitor #: R-18	In Service YES	Rad Monitor Source Check: SAT	Available dilution flow for release (B): 399,000 gpm	
Chemistry analysis Sample #: Next Number Boron ppm: 1700		Date: Today Time: 0615 Boron pounds: 145	Total Gamma Activity (C): 1.74 E-5 $\mu\text{Ci/ml}$	
Allowable Diluted Concentration (ADC) in discharge canal: 1.74 E-7 $\mu\text{Ci/ml}$		Permissible Chemistry Discharge Rate (Dc): 235 gpm		
Permissible Radioactive Discharge Rate (Dr): 3990 gpm		Most Restrictive Discharge Rate (D): 150 gpm	From: <input checked="" type="checkbox"/> Waste Chemistry (Check one) <input type="checkbox"/> Radioactivity	
Radiation Monitor:	Alert Setpoint: 1.5 E-5 $\mu\text{Ci/ml}$	Calculated Alarm Setpoint (R): 4.63 E-5 $\mu\text{Ci/ml}$	Actual Alarm Setpoint: 4.63 E-5	
IF Rad Monitor is Out Of Service	Monitor taken out of service on: (Max. 30 days) Date: Time:		2nd sample obtained and analyzed by:	
	Release calculations performed by:		Release calculations verified by:	
Release Authorization	(1) Release valve alignment reviewed (if applicable) SAT today checked by another operator (2) Release calculations reviewed (3) Release authorized by:			
	Release initiated: Date: Time:		Rad Monitor reading during release:	
Discharge flow meter operable: (Circle one) YES NO*		* IF flow meter is OOS, THEN RECORD estimate approx 1hr into release and then every 4 hours (required by IP-SMM-CY-001, Radioactive Effluents Control Program): 1 hr 4 hr 8 hr		
Post-Release Section	Release terminated: Date: Time:		Actual volume released:	
Alert and Alarm setpoints reset per 3-SOP-RM-010: YES			Performed By: Another operator	
COMMENTS:				

## Key

## LIQUID RADIOACTIVE WASTE RELEASE PERMIT FORM

Release ID: 32 Mon Tank		Volume: 10228 gal. Or Flow rate	Permit #: Next Number
Recirc. Started - Date: Today Time: 0200		Min. Recirc. Time (T): 4 hr.	Earliest Sample: Date: Today Time: 0600
Radiation Monitor #: R-18	In Service YES	Rad Monitor Source Check: SAT	Available dilution flow for release (B):  199500 gpm
Chemistry analysis Sample #: Next Number Boron ppm: 1700		Date: Today Time: 0615 Boron pounds: 145	Total Gamma Activity (C): 1.74 E-5 $\mu$ C
Allowable Diluted Concentration (ADC) in discharge canal: 1.74 E-7 $\mu$ C/ml		Permissible Chemistry Discharge Rate (Dc): 117 gpm	
Permissible Radioactive Discharge Rate (Dr): 1995 gpm		Most Restrictive Discharge Rate (D): 117 gpm	From: <input checked="" type="checkbox"/> Waste Chemistry (Check one) <input type="checkbox"/> Radioactivity
Radiation Monitor:	Alert Setpoint: 1.5 E-5 $\mu$ C/ml	Calculated Alarm Setpoint (R): 2.97 E-4 $\mu$ C/ml	Actual Alarm Setpoint: Can be left or 2.97 E-4 $\mu$ C/ml
IF Rad Monitor is Out Of Service	Monitor taken out of service on: (Max. 30 days) Date: Time:		2nd sample obtained and analyzed by:
	Release calculations performed by:		Release calculations verified by:
Release Authorization	(1) Release valve alignment reviewed (if applicable) SAT today checked by another operator (2) Release calculations reviewed (3) Release authorized by: (SM/		
	Release initiated: Date: Time:		Rad Monitor reading during release:
Discharge flow meter operable: (Circle one) YES NO*		* IF flow meter is OOS, THEN RECORD estimate approx 1hr into release and then every 4 hours (required by IP-SMM-CY-001, Radioactive Effluents Control Program): 1 hr 4 hr 8 hr	
Post-Release Section	Release terminated: Date: Time:		Actual volume released:
Alert and Alarm setpoints reset per 3-SOP-RM-010: YES			Performed By: Another operator
COMMENTS:			



# JOB PERFORMANCE MEASURE

## JPM SRO ADMIN #5

Facility: Indian Point 3 Task No: \_\_\_\_\_

Task Title: Classify Event and Complete Form EP-1, Part 1

K/A Reference: 1940002.4.41 Job Performance Measure No: SRO Admin  
SRO – 4.6 5

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance \_\_\_\_\_ Actual Performance X

Classroom X Simulator \_\_\_\_\_ 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.

**This is a TIME CRITICAL Job Performance Measure from the time you are told to begin until the time you classify the event. Also, from the time you classify the event until you complete the Radiological Emergency Data Form (EP-1, Part 1).**

You will be allowed sufficient time to read the initial conditions and cue. You will then be allowed to ask questions about the conditions. However, once you review the E-Plan EALs, your clock starts.

Required Materials: IP-EP-120, Emergency Classification  
IPEC Emergency Action Level Charts / EAL Book  
Appropriate E-Plan Forms (EP-1, Part 1)

General References: IP-EP-120, Emergency Classification  
IPEC Emergency Action Level Charts / EAL Book  
Appropriate E-Plan Forms (EP-1, Part 1)

## Initial Conditions:

A Reactor Trip occurred approximately 15 minutes ago after 135 days @ 100% reactor power due to a major steam break on 31 SG in the Turbine Building. The MSIVs had to be closed manually from the Control Room, however, 31 MSIV did not close and cannot be closed remotely. 32 AFW Pump is tagged out.

The CRS has just informed you that he is transitioning from E-0 to FR-H.1 due to a RED condition on Heat Sink. The following conditions also exist:

- 31 SG is approaching dryout
- 31 RCP has been tripped due to high vibrations
- 33 ABFP is operating but has no flow indicated
- RCS pressure is 1550 psig and increasing
- RCS cold legs are 450°F and stable
- High Head Safety Injection Pumps are operating
- 32 RHR pump is operating
- All EDGs are operating
- 480V Bus 3A normal feeder has tripped and the 2AT3A bus-tie breaker will not close.
- All Containment conditions are normal.
- The Turbine Building north end is not accessible but conditions are improving according to the Conventional NPO
- I&C is investigating the cause of the 3A Bus problem and lack of 33 ABFP flow. A cutback controller problem is not suspected for the lack of 33 ABFP flow.
- All SG WR levels are decreasing and below 20%.
- There is **no** radiological release in progress.

Unit 2 remains stable at 100% power.

**METEOROLOGICAL CONDITIONS:**

Wind Speed: 0.9 meters/second  
Wind Direction: 285 degrees @ 10 meters  
Stability Class: C

## Initiating Cue:

The Shift Manager has become ill. You are the CRS and you must perform the duties of the Emergency Director until a replacement Shift Manager can arrive on site. You must Classify the event and Complete the NYS Radiological Emergency Data Form, Part 1.

- **This is a TIME CRITICAL JPM**
- **Inform the examiner when you have classified the event.**
- **Inform the examiner when you have completed the EP-1, Part 1 Form.**

Time Critical Task: **YES**

Validation Time: 13 minutes total (6min / 7min)

Task Standard: Event properly classified and EP-1, Part 1 Form completed within the required times.

## Performance Information

(Denote critical steps with a check mark ✓)

---

1. Performance Step: Candidates review initial conditions and the initiating cue. They ask questions if necessary and then obtain the correct procedures.

Standard: Obtains IP-EP-120, Emergency Classification

Comment: Allow up to 15 minutes for students to fully understand the initial conditions and requested time critical task. Allow questions as a group and/or individual. Once the student understands the task and has been given the appropriate procedures, the JPM is started. Provide the student with the JPM start time.

**Record JPM Start Time here: \_\_\_\_\_**

**CUE: Provide the student with the JPM start time.**

---

✓2. Performance Step: Evaluate Plant Status to determine if GE, SAE, Alert, or NUE applies. Determines the highest classification and makes declaration.

Standard: Determines Event is a SAE per EAL FS-1.1, Loss or potential loss of any two barriers (Table F-1). Fuel Clad – Heat Sink – RED entry conditions met and heat sink is required and RCS - RED entry conditions met and heat sink is required. Must be determined within 15 minutes.

**TIME CRITICAL – Must complete this step within 15 minutes of start of JPM.**

Comment: **Record the Time Declaration Made: \_\_\_\_\_**

---

✓3. Performance Step: Completes and approves “New York State Radiological Emergency Data Form, Part 1” (IP-EP-115-EP-1).

Standard: Completes all necessary information on the form and signs the form.

**TIME CRITICAL – Must complete this step within 15 minutes of Time of Declaration (JPM Step 2)**

Comment: **Record the Time Form is completed: \_\_\_\_\_**

---

Terminating Cue: JPM Complete

## VERIFICATION OF COMPLETION

Job Performance Measure No.

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

N/A

SRO Admin JPM in classroom

**Initial Conditions:**

A Reactor Trip occurred approximately 15 minutes ago after 135 days @ 100% reactor power due to a major steam break on 31 SG in the Turbine Building. The MSIVs had to be closed manually from the Control Room, however, 31 MSIV did not close and cannot be closed remotely. 32 AFW Pump is tagged out.

The CRS has just informed you that he is transitioning from E-0 to FR-H.1 due to a RED condition on Heat Sink. The following conditions also exist:

- 31 SG is approaching dryout
- 31 RCP has been tripped due to high vibrations
- 33 ABFP is operating but has no flow indicated
- RCS pressure is 1550 psig and increasing
- RCS cold legs are 450°F and stable
- High Head Safety Injection Pumps are operating
- 32 RHR pump is operating
- All EDGs are operating
- 480V Bus 3A normal feeder has tripped and the 2AT3A bus-tie breaker will not close.
- All Containment conditions are normal.
- The Turbine Building north end is not accessible but conditions are improving according to the Conventional NPO
- I&C is investigating the cause of the 3A Bus problem and lack of 33 ABFP flow. A cutback controller problem is not suspected for the lack of 33 ABFP flow.
- All SG WR levels are decreasing and below 20%.
- There is **no** radiological release in progress.

Unit 2 remains stable at 100% power.

**METEOROLOGICAL CONDITIONS:**

Wind Speed: 0.9 meters/second  
Wind Direction: 285 degrees @ 10 meters  
Stability Class: C

**Initiating Cue:**

The Shift Manager has become ill. You are the CRS and you must perform the duties of the Emergency Director until a replacement Shift Manager can arrive on site. You must Classify the event and Complete the NYS Radiological Emergency Data Form, Part 1.

- **This is a TIME CRITICAL JPM**
- **Inform the examiner when you have classified the event.**
- **Inform the examiner when you have completed the EP-1, Part 1 Form.**

You will be allowed sufficient time to read the initial conditions and cue. You will then be allowed to ask questions about the conditions. However, once you review the E-Plan EALs, your clock starts.



# SIMULATOR SCENARIO # 1

Facility: Indian Point 3 Scenario No.: 1 Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: Approx. 75% Power, power ascension in progress to 100% power IAW 3-POP-2.1, Attachment 2. 2 Condensate Pumps are in service. Fuel is Conditioned.

Turnover: Continue power ascension to 100% IAW 3-POP-2.1, Attachment 2 Returning from maintenance on 32 MBFP (oil leak). 32 Charging Pump is out of service, tagged due to a packing leak (maintenance has pump disassembled).

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (ATC) N (BOP) N (CRS)	Raise load IAW 3-POP-2.1
2	MAL-SGN002B	I (BOP) I (ATC) TS (CRS)	31 Steam Generator Pressure (PT-419B) Channel fails high.
3	MAL-SIS003C	I (BOP) TS (CRS)	33 Accumulator Low Pressure Alarm actuates.
4	MAL-ATS004B	C (ALL)	32 MBFP trips.
5	MAL-GEN001 MAL-GEN002	C(ALL)*	IF crew does not trip reactor due to 32 MBFP trip, insert MTG Voltage Regulator Failure and within 3 minutes a direct MTG Trip from Buchanan.*
6	MAL-SGN004A MAL-SGN004B	M(ALL)	Automatic Turbine / Reactor Trip / Safety Injection. Coincident with the Reactor Trip, #31 SG Safety Valve will fail open.
7	MAL-SIS004A	C (CRS) C(BOP)	31 Safety Injection Pump fails to auto start.
8	MAL-SGN005A	M(ALL)	31 SG Tube Rupture
(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

## **Simulator Exam Scenario # 1 Summary**

The evaluation begins with the plant at 75% power and power ascension in progress to 100% power IAW 3-POP-2.1, Attachment 2. 2 Condensate Pumps are in service. Fuel is conditioned. The plant is returning from maintenance on 32 MBFP (oil leak). 32 Charging Pump is out of service, tagged due to a packing leak (maintenance has pump disassembled).

After starting the 3<sup>rd</sup> Condensate Pump and raising power approximately 3-5%, 31 Steam Generator Pressure (PT-419B) Channel fails high. The team will take actions in accordance with AOP-INST-1, "Instrument / Controller Failures".

After selecting the NON-affected channel for both SG Transfer Switches and tripping the appropriate bistables, an "ACCUMULATOR #33 PRESS" on Panel SBF-1 will annunciate. The crew will respond IAW 3-ARP-004 and restore 33 accumulator pressure to within technical specification limits.

Once the CRS has identified the appropriate technical specification and action requirements, the scenario will continue with a trip of the 32 MBFP. Crew responds IAW 3-AOP-FW-1, reduces power if necessary to stabilize and match steam flow / feed flow. The crew may trip the reactor depending on current power level (i.e. > 80% per AOP).

If the crew doesn't trip the reactor, an MTG Voltage Regulator failure will occur following plant stabilization. The team will take actions to stabilize the plant per ARP-8 or may manually trip the unit and enter E-0. They may place the voltage regulator in manual (test). If the team does not trip the unit, 3 minutes after regulator failure, a direct MTG trip from Buchanan will occur. The team will implement E-0, "Reactor Trip or Safety Injection".

Coincident with the reactor trip, #31 SG Safety valve will fail open. The team will respond per E-2, "Faulted Steam Generator Isolation". While in E-0, the BOP should recognize that 31 Safety Injection Pump failed to start. The BOP operator manually starts 31 SI Pump IAW 3-RO-1. After the team identifies and attempts to isolate the faulted SG in E-2, they should transition to E-3, "SGTR" due to a faulted / ruptured SG. The team will then transition to and take actions per ECA-3.1, "SGTR with Loss of Reactor Coolant - Subcooled Recovery Desired" at either Step 5 (SG pressure < 400#) or at Step 16. The event will be terminated once a cooldown to cold shutdown conditions at the highest achievable rate but < 100°F/hr is initiated.

Procedure flow path: POP-2.1, AOP-INST-1, ARP-4, AOP-FW-1, ARP-8, E-0, E-2, E-3, ECA-3.1

At Time	On Event	Action	Description
00:00:00	None	Insert malfunction MAL-SGN002B to 1400.00000 in 5 on event 2	STEAM GENERATOR PRESSURE TRANSMITTER FAILURE (PT-419B)
00:00:00	None	Insert malfunction MAL-ATS004B on event 4	MAIN FEEDWATER PUMP 32 TRIP
00:00:00	None	Insert malfunction MAL-GEN001 to 30.00000 in 5 on event 5	MAIN GENERATOR VOLTAGE REGULATOR FAILURE
00:00:00	None	Insert malfunction MAL-GEN002 after 180 on event 5	MAIN GENERATOR TRIP
00:00:00	None	Insert malfunction MAL-SGN004A after 20 to 0 on event 30	STEAM GENERATOR SAFETY VALVE FAILURE (MS-45A)
00:00:00	None	Insert malfunction MAL-SGN004B to 0 on event 9	STEAM GENERATOR SAFETY VALVE FAILURE (MS-46A)
None	None	Insert malfunction MAL-SIS003C to 20.00000 on event 3	ACCUMULATOR 33 NITROGEN LEAKAGE
00:00:00	None	Insert malfunction MAL-SIS004A to FAILURE_TO_AUTOSTART	SAFETY INJECTION PUMP 31 FAILURES
00:00:00	None	Create Event 30 JPPLP4(1)==1 -desc Set Trigger 30 to actuate after Reactor Trip	
00:00:00	None	Insert malfunction MAL-SGN005A after 10 to 30.00000 on event 8	STEAM GENERATOR 31 TUBE LEAK

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 1 Page 1 of 12Event Description: Raise load to 100% Power IAW 3-POP-2.1, Attachment 2

Time	Position	Applicant's Actions or Behavior
	ATC / BOP	<p>Raise Load IAW 3-POP-2.1, Attachments 1 and 2.</p> <ul style="list-style-type: none"> <li>• ADJUST governor control and/or load limits to desired load</li> <li>• ADJUST <math>T_{avg}</math> using Control Rods <u>AND</u> Boron concentration changes as required. (Follow Reactivity Plan with Rods in Auto) <ul style="list-style-type: none"> <li>○ MAINTAIN <math>T_{avg}</math> <u>AND</u> <math>T_{ref}</math> within +/- 0.5°F</li> <li>○ <math>T_{avg}</math> <u>AND</u> <math>T_{ref}</math> <u>NOT</u> to exceed +/- 4.0°F</li> </ul> </li> <li>• MAINTAIN PRZR Pressure</li> <li>• MAINTAIN PRZR Level</li> <li>• MAINTAIN SG narrow range levels</li> </ul>
	ATC / BOP	<p><u>WHEN</u> Turbine power is approximately 800 Mwe, <u>THEN</u> PERFORM the following:</p> <ul style="list-style-type: none"> <li>• NOTIFY Watch Chemist to verify secondary chemistry is satisfactory, PRIOR to starting third condensate pump per 3-SOP-C-002, Condensate System Operation.</li> <li>• <u>NOTE</u>: Normal MBFP Suction Pressure for starting the third condensate pump is approximately 400 psig.</li> </ul>
Booth Instructor		<i>When contacted, inform the crew that Secondary Chemistry conditions are satisfactory.</i>
	ATC / BOP	<p><u>WHEN</u> secondary chemistry conditions are satisfactory, <u>THEN</u> START third condensate pump per 3-SOP-C-002. Condensate Pump Operation.</p> <ul style="list-style-type: none"> <li>• <u>NOTE</u>: Seal injection booster pumps may restart if Seal Water Drain temperature is 180°F or greater.</li> </ul> <p><u>WHEN</u> THIRD CONDENSATE PUMP IS RUNNING <u>AND</u> Seal Water Drain temperature is less than 180°F, <u>THEN</u> PERFORM the following:</p> <ul style="list-style-type: none"> <li>• SHUTDOWN MBFP seal injection booster pumps (one at a time) <u>AND</u> PLACE control switches in AUTO.</li> </ul>
		<b><i>NOTE: Evaluator may move on to the next event once the 3<sup>d</sup> Condensate Pump is started and/or power has been raised approximately 3-5%.</i></b>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 2 Page 2 of 12Event Description: 31 Steam Generator Loop 1B (419B) Steam Flow Channel fails high.

<i>Booth Instructor</i>		<i>When directed by the lead evaluator, activate 31 Steam Generator Pressure (PT-419B) Channel fails high malfunction.</i>
Time	Position	Applicant's Actions or Behavior
	ATC	1. Recognize 31 SG Pressure Channel (PT-419B) has failed high, take immediate actions to stabilize plant, and recommend entry into 3-AOP-INST-1; Instrument/Controller Failures.
		2. Are both SG Transfer Switches selected to the <u>NON</u> affected channel? <ul style="list-style-type: none"> <li>a. Select both SG Transfer Switches to the <u>NON</u> affected channel.</li> </ul>
	CRS	3. Enter the following Technical Specifications for required actions: <ul style="list-style-type: none"> <li>a. 3.3.1, Table 3.3.1-1 Function 14             <ul style="list-style-type: none"> <li>i. LCO 3.3.1 Condition A</li> <li>ii. LCO 3.3.1 Condition E</li> </ul> </li> <li>b. 3.3.2, Table 3.3.2-1 Function 1.e             <ul style="list-style-type: none"> <li>i. LCO 3.3.2 Condition A</li> <li>ii. LCO 3.3.2 Condition D</li> </ul> </li> </ul>
	BOP	4. Are <u>all</u> redundant bistable status lights for failed instrument listed in Attachment 2 (Steam Line Pressure Tables) Table 1 (Page 93) extinguished? (PI-419B – Ch. II – White) <ul style="list-style-type: none"> <li>a. H-13: SG 31 LO LEVEL LC417G</li> <li>b. I-12: LO STM PRS LP31 PC419A</li> <li>c. L-12: LO STM PRS LP31 PC419C</li> <li>d. I-14: LO STM PRS LP33 PC439C</li> <li>e. K-14: LO STM PRS LP33 PC429H</li> </ul>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 2 cont. Page 3 of 12Event Description: 31 Steam Generator Loop 1B (419B) Steam Flow Channel fails high.

Time	Position	Applicant's Actions or Behavior
	BOP	5. Trip bistables for failed instrument listed in Attachment 2 (Steam Line Pressure Tables) Table 2 (Page 101) <b>Protection Rack White A-9</b> <ol style="list-style-type: none"> <li>Loop 1B, SF &gt; FWF</li> <li>Loop 1B, P1 &lt; P3 – A SI</li> <li>Loop 3B, P3 &lt; P1 – A SI</li> </ol>
	ATC	6. Are <u>all</u> bistable lights for failed instrument listed in Attachment 2 (Steam Line Pressure Tables) Table 3 (Page 105) illuminated? <ol style="list-style-type: none"> <li>F-12: STM-FW FL DEV LP31 FC418F</li> <li>J-12: LO STM PRES LP31 PC419B</li> <li>J-14: LO STM PRES LP33 PC419E</li> </ol>
		7. Return controls for unaffected equipment used to stabilize plant conditions to auto as desired.
Booth Instructor		When directed by the lead evaluator, continue to the next event.

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 3 Page 4 of 12Event Description: 33 Accumulator Low Pressure Alarm actuates.

Time	Position	Applicant's Actions or Behavior
Booth Operator		When directed by lead evaluator, insert the 33 Accumulator Low Pressure Alarm malfunction. (leak - lowers to less than 600#)
	ATC/ BOP	<p>Operator responds to the annunciator alarm or "ACCUMULATOR #33 PRESS" on Panel SBF-1 IAW 3-ARP-004.</p> <ul style="list-style-type: none"> <li>• VERIFY alarm by observing both pressure channels.</li> <li>• IF channel failure has occurred, <u>THEN</u> NOTIFY I&amp;C of failure.</li> <li>• <u>CHECK</u> Accumulator #33 level to see if pressure change was caused by a level change.</li> <li>• <b>IF pressure is above the high <u>OR</u> low Technical Specification limit, <u>THEN</u> ENTER Technical Specifications LCO 3.5.1, Action B.</b></li> <li>• RETURN accumulator pressure to within operating band using 3-SOP-SI-001, Safety Injection System Operation. <ul style="list-style-type: none"> <li>○ VERIFY SI-HCV-943 is closed.</li> <li>○ OPEN NNE-AOV-863, PORV's &amp; Accumulators N2 Supply Containment Isolation.</li> <li>○ OPEN applicable supply isolation: <ul style="list-style-type: none"> <li>▪ SI-AOV-891C, 33 Accumulator N<sub>2</sub> Supply Isolation</li> </ul> </li> <li>○ ADJUST NNE-PCV-942, PORV's and Accumulators N<sub>2</sub> Supply Pressure Control Valve, as necessary, to VERIFY outlet pressure is between 660 and 700 psig <u>AND</u> NOTE the number of turns.</li> </ul> </li> <li>• <u>WHEN</u> SI accumulator reaches desired pressure, <u>THEN</u>: <ul style="list-style-type: none"> <li>○ IF no additional accumulators are to be pressurized, <u>THEN</u> ADJUST NNE-PCV-942, PORVs &amp; Accumulators N<sub>2</sub> Supply Pressure Control Valve, as necessary, to the number of turns noted above.</li> <li>○ CLOSE applicable supply isolation: SI-AOV-891C, 33 Accumulator N<sub>2</sub> Supply Isolation</li> <li>○ CLOSE NNE-AOV-863, PORVs &amp; Accumulator N2 Containment Isolation.</li> </ul> </li> </ul>
	CRS	
	ATC/ BOP	
Booth Instructor		Lead Evaluator may move on to the next event when the CRS identifies the required Technical Specification Action.



Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 4 Page 5 of 12

Event Description: 32 MBFP trips. Crew responds IAW 3-AOP-FW-1. Reduces power if necessary to stabilize & match steam flow/feed flow. (May trip reactor depending on power level, i.e.>80%)

Booth Instructor

When directed by lead evaluator, insert 32 MBFP trip malfunction.

Time

Position

Applicant's Actions or Behavior

ALL

1. Are both MBFPs operating? No
  - a. If reactor power is >80%, then trip the reactor and go to E-0.
2. Is a MBFP running? Yes
3. Are steam flow and feed flow matched? No
  - a. Initiate load reduction as necessary per Attachment 1  
(Approximate Unit Load With Various Pump Configurations)

Main Boiler Feed  
Pumps<sup>(1)</sup>Condensate  
PumpsHeater Drain  
PumpsApproximate  
Allowable MWE

2

3

2

Full Load

2

2

2

900 MWE<sup>(2)</sup>

2

3

1

700 MWE<sup>(2)</sup>

1

3

2

650 MWE<sup>(2)</sup>

1

2

2

600MWE<sup>(2)</sup>

2

2

1

550 MWE<sup>(2)</sup>

1

2

1

500 MWE<sup>(2)</sup>

2

2

0

400 MWE<sup>(2)</sup>

- b. Adjust running MBFP speed as necessary to accomplish the following:
  - i. Match steam flow and feed flow
  - ii. Maintain MBFP suction pressure > 350 psig
  - iii. Maintain MBFP discharge pressure < 1390 psig
  - iv. Refer to Attachment 5 (Main Feedwater Regulating Valves Program ΔP) (Page 55)

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 4 cont. Page 6 of 12

Event Description: 32 MBFP trips. Crew responds IAW 3-AOP-FW-1. Reduces power if necessary to stabilize & match steam flow/feed flow. (May trip reactor depending on power level, i.e.>80%)

Time	Position	Applicant's Actions or Behavior
	ALL	<ol style="list-style-type: none"> <li>4. Are <u>all</u> available condensate pumps running?               <ol style="list-style-type: none"> <li>a. Start <u>all</u> available condensate pumps as necessary to maintain MBFP suction &gt; 350 psig.</li> </ol> </li> <li>5. Are 31 and 33 ABFP running?</li> <li>6. Start 31 and 33 ABFPs Are <u>all</u> SGBD isolation valves closed?               <ol style="list-style-type: none"> <li>a. Close <u>all</u> SGBD isolation valves</li> </ol> </li> <li>7. Is recirculation valve for tripped MBFP closed?               <ol style="list-style-type: none"> <li>a. Close recirculation valve for the tripped MBFP.</li> </ol> </li> <li>8. Maintain SG levels on program by performing the following as necessary:               <ol style="list-style-type: none"> <li>a. Adjusting turbine load or steam dumps (as applicable)</li> <li>b. Placing MBFP control in manual and adjusting speed</li> <li>c. Placing MFRVs in manual and adjusting flow</li> <li>d. Refer to Attachment 5 (Main Feedwater Regulating Valves Program ΔP) (Page 55)</li> </ol> </li> </ol>
Booth Instructor		IF crew does not trip reactor due to 32 MBFP trip (Plant should not trip if power remained less than 80%), insert MTG Voltage Regulator Failure and within 3 minutes a direct MTG Trip from Buchanan.

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 5 Page 7 of 12

Event Description: As necessary: MTG Voltage Regulator Failure and within 3 minutes a direct MTG trip from Buchannan.

Time	Position	Applicant's Actions or Behavior
	(All)	<p><b>IF crew does not trip reactor due to 32 MBFP trip, insert MTG Voltage Regulator Failure and within 3 minutes a direct MTG Trip from Buchanan.</b></p> <ol style="list-style-type: none"><li>1. Crew responds to the alarm response procedure</li><li>2. Possibly places voltage regulator in manual</li></ol>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 6 Page 8 of 12

Event Description: Automatic Turbine Trip / Reactor Trip / Safety Injection. Coincident with the Reactor Trip #31 SG Safety Valve will fail open.

<i>Booth Instructor</i>		<i>Coincident with the Reactor Trip, 1<sup>st</sup> #31 SG Safety failure is inserted. Use 2 SG Safeties, 2<sup>nd</sup> one to differentiate SG pressure. One (1) safety for SI, after SI put second safety in.</i>
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>
	All	<ol style="list-style-type: none"> <li>1. Crew enters E-0, Reactor Trip or Safety Injection and performs immediate actions</li> <li>2. Crew determines that Safety Injection is required if not automatically initiated.</li> <li>3. Crew progresses through E-0 to step 15:               <ol style="list-style-type: none"> <li>a. Determine if SGs are Faulted                   <ol style="list-style-type: none"> <li>i. Any SG Pressures decreasing in an uncontrolled manner? Yes</li> <li>ii. Any completely depressurized?</li> </ol> </li> </ol> </li> <li>4. Go to 3-E-2, Faulted Steam Generator Isolation</li> </ol>
	BOP	While in E-0, the BOP should recognize that 31 Safety Injection Pump fails to auto start. The operator manually starts 31 SI Pump IAW 3-RO-1. (Step 2)
	<b>Critical Task (CT)</b>	<b>E-2 - - A; Isolate the faulted SG before transition out of E-2.</b>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 7 Page 9 of 12Event Description: 31 Safety Injection Pump fails to auto start

Time	Position	Applicant's Actions or Behavior
	(CRS) (BOP)	<p>While in E-0, the BOP should recognize that 31 Safety Injection Pump fails to auto start.</p> <p>The operator manually starts 31 SI Pump IAW 3-RO-1.</p> <p>Step 2 – Verify SI pumps – Running</p> <ul style="list-style-type: none"><li>• Three HHSI pumps (only 2)</li><li>• Two RHR pumps</li></ul> <p>RNO – Manually START pumps</p>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 8 Page 10 of 12Event Description: Rupture on #31 SG*Booth Instructor*

*At E-2 transition, insert SGTR malfunction on #31 SG. NOTE: Crew should see Rad Monitor R62A rising. Subcooling should drop significantly as well. If crew doesn't recognize the rising trend on R-62A and they have contacted HP to perform contact radiation readings, then inform them that 31 SG is ruptured.*

Time	Position	Applicant's Actions or Behavior
	(ALL)	<ol style="list-style-type: none"> <li>1. Crew transitions to E-2; Faulted Steam Generator Isolation</li> <li>2. Main Steam Line Isolation Check               <ol style="list-style-type: none"> <li>a. MSIVs and Bypasses closed</li> </ol> </li> <li>3. Identify faulted SG - #31 (Stuck Open Safety or Safeties - 2)</li> <li>4. <b>Isolate Faulted SG - #31</b> (Stuck Open Safety)               <ul style="list-style-type: none"> <li>• <b>ISOLATE Main Feedwater FRVs or MOVs</b></li> <li>• <b>ISOLATE Bypass Feedwater FRVs or MOVs</b></li> <li>• <b>ISOLATE AFW flow</b></li> <li>• <b>VERIFY SG atmospherics – CLOSED</b></li> <li>• <b>CLOSE SG blowdown isolation valves</b></li> <li>• <b>CLOSE SG sample valves</b></li> <li>• <b>ISOLATE MSIV upstream traps using posted operator aid</b></li> </ul> </li> <li>5. Check Secondary Radiation?               <ol style="list-style-type: none"> <li>a. R-15</li> <li>b. R-19</li> <li>c. <b>R-62A-D</b> <ol style="list-style-type: none"> <li>i. <b>GO To 3-E-3, Steam Generator Tube Rupture</b></li> </ol> </li> <li>d. Check SG levels – STABLE                   <ol style="list-style-type: none"> <li>i. If level in any SG is increasing in an uncontrolled manner, then GO To 3-E-3, Steam Generator Tube Rupture</li> </ol> </li> </ol> </li> <li>6. <b>GO To 3-E-3, Steam Generator Tube Rupture</b></li> </ol>
	<b>Critical Task (CT)</b>	<p><b>E-2 - - A; Isolate the faulted SG before transition out of E-2.</b></p> <p><b>(see step 4 above, step 4b of 3-E-2)</b></p>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 8 cont Page 11 of 12

Event Description: Rupture on #31 SG

Time	Position	Applicant's Actions or Behavior
	(ALL)	<ol style="list-style-type: none"> <li>1. Determine if RCPs should be stopped.</li> <li>2. Identify Ruptured SG</li> <li>3. Isolate Flow from Ruptured SG</li> <li>4. Check Ruptured SG Level               <ol style="list-style-type: none"> <li>a. Caution – If any Ruptured SG is Faulted, Feed Flow to the SG should remain isolated during subsequent recovery actions unless needed for RCS cooldown.</li> </ol> </li> <li>5. Check Ruptured SG Pressure – Greater than 400 psig               <ol style="list-style-type: none"> <li>a. If pressure less than 400#, Go to 3-ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.</li> </ol> </li> <li>6. Go to 3-ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.</li> <li>7. OR</li> <li>8. Step 16 – Check Ruptured SG Pressure – Stable or Increasing?               <ol style="list-style-type: none"> <li>a. If ruptured SG pressure can <u>NOT</u> be maintained at least 250 psi above the pressure of the intact SG used for cooldown, Then GO to 3-ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.</li> </ol> </li> <li>9. <b>Transition to ECA-3.1 at Step 5 OR Step 16 depending on plant conditions.</b></li> </ol>

Op-Test No.: 5/11/15 Scenario No.: 1 Event No.: 8 cont Page 12 of 12Event Description: Rupture on #31 SG

Time	Position	Applicant's Actions or Behavior
	CRS	<ol style="list-style-type: none"> <li>1. Direct actions of ECA-3.1, SGTR w / Loss of Reactor Coolant – Subcooled Recovery Desired: <ol style="list-style-type: none"> <li>a. Initiate Attachment 1, Plant Equipment Status Evaluation</li> <li>b. Commence C/D to CSD</li> </ol> </li> </ol>
	ATC	<ol style="list-style-type: none"> <li>1. Place Pressurizer Modulating Heaters to TPO</li> <li>2. Place Pressurizer backup Heaters to OFF</li> <li>3. Start all Charging pumps and establish maximum charging flow</li> <li>4. Establish plant C/D to CSD at less than 100°F / hr using Atmospherics</li> </ol>
	BOP	<ol style="list-style-type: none"> <li>1. Stop RHR pumps and place in Auto</li> <li>2. Perform Attachment 1, Plant Equipment Status Evaluation</li> </ol>
	<b>Critical Task (CT)</b>	<b>ECA-3.1 - - B; Cool down the RCS to cold shutdown conditions at the highest achievable rate but less than 100°F per hour in all RCS cold legs.</b>
		<b>Terminate scenario when RCS C/D established</b>



# SIMULATOR SCENARIO #3

Facility: Indian Point 3 Scenario No.: 3 Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: 100% Power, # 32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement)

Turnover: 100% Power, # 32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement) . Maintain 100%

Event No.	Malf. No.	Event Type*	Event Description
1	MAL-CFW005C	C BOP/CRS R (ATC) TS (CRS)	#33 Condensate Pump Trips, crew responds IAW 3-AOP-FW-1.  Technical Specification for delta I (discuss at minimum after scenario)
2	MAL-SGN001F	I (ATC or BOP) TS (CRS)	32 SG Controlling level channel fails low (LT427B).
3	MAL-MSS009A	M (ALL)	Steam Leak in Turbine Building.
4	MAL-RPS002A MAL-RPS002B	C/M (ALL)	The reactor will not trip from the control room and the crew responds per FR-S-1, ATWS
5	MAL-RHR001B MAL-SIS004C	C (BOP)	Following SI actuation, #32 RHR Pump and #33 SI did not start. BOP starts pumps per 3-RO-1 RNO.
6	MAL-MSS013A MAL-MSS013B MAL-MSS013C MAL-MSS013D	M (ALL)	Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1).

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

### **Simulator Exam Scenario # 3 Summary**

The evaluation begins with the plant at 100% power. Fuel is conditioned. 32 Component Cooling Water Pump is out of service for Maintenance (Motor replacement).

After taking the watch, #33 Condensate Pump will trip. The crew will take actions in accordance with AOP-AOP-FW-1. Operators will initiate a load reduction as necessary to maintain FW Flow > STM Flow and SGFP Suction pressure > 265#.

Once the plant is stable, 32 Steam Generator controlling level channel fails low (LT-427B). The crew responds IAW AOP-INST-1 to again stabilize the plant and trip bistables.

Following the tripping of bistables for the SG level channel failure, a steam break will occur in the Turbine Building. The crew will attempt to manually trip the plant, close MSIVs, and perform actions of E-0, Reactor Trip or Safety Injection.

The reactor will not trip from the Control Room and the team will respond per FR-S.1, Response to Nuclear Power Generation / ATWS and will S/D the reactor by manually inserting control rods and initiating Emergency Boration. The reactor trip breakers will be locally opened and the team will transition to E-0, Reactor Trip or Safety Injection. Following SI actuation, 32 RHR Pump and 33 SI pump do not auto start. BOP starts pumps per RO-1 RNO.

The MSIVs will fail to auto close and cannot be closed from the control room. The team will take actions per ECA-2.1, Uncontrolled Depressurization of All Steam Generators. When at least one MSIV is closed locally, the team will transition to E-2, Faulted Steam Generator Isolation. The team will complete E-2 and transition to E-1, Loss of Reactor or Secondary Coolant.

Procedure flow path: AOP-FW-1, AOP-INST-1, AOP-UC-1, E-0, FR-S.1, E-0, E-2, ECA-2.1, E-2, E-1.

At Time	On Event	Action	Description
00:00:00	None	Insert malfunction MAL-CFW005C to 0 on event 1	CONDENSATE PUMP 33 TRIP DUE TO BRG FAILURE
00:00:00	None	Insert malfunction MAL-SGN001F to 0 on event 2	STEAM GENERATOR LEVEL TRANSMITTER FAILURE (LT-427B)
00:00:00	None	Insert malfunction MAL-RHR001B to FAILURE_TO_AUTOSTART	RHR PUMP 32 FAILURES
00:00:00	None	Insert malfunction MAL-SIS004C to FAILURE_TO_AUTOSTART	SAFETY INJECTION PUMP 33 FAILURES
00:00:00	None	Insert malfunction MAL-RPS002A to ALL_FAIL	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO FAILURE)
00:00:00	None	Insert malfunction MAL-RPS002B	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO & MANUAL)
00:00:00	None	Insert malfunction MAL-MSS009A to 1000000.43750 in 300 on event 3	MAIN STEAM HEADER BREAK (EAST HEADER)
00:00:00	None	Insert malfunction MAL-MSS013A to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 1
00:00:00	None	Insert malfunction MAL-MSS013B to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 2
00:00:00	None	Insert malfunction MAL-MSS013C to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 3
00:00:00	None	Insert malfunction MAL-MSS013D to FAIL_OPEN on event 3	MAIN STEAM ISOLATION VALVE FAILURES LOOP 4

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 1 Page 1 of 10Event Description: #33 Condensate Pump trips, crew responds IAW 3-AOP-FW-1.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		Insert malfunction MAL-CFW005C to 0 on event 1; 33 Condensate Pump Trip due to bearing failure.
	ATC	<p>RO responds IAW 3-AOP-FW-1, step 4.39.</p> <ol style="list-style-type: none"> <li><b>INITIATE</b> load reduction as necessary to maintain the following: <ol style="list-style-type: none"> <li>Feed flow <math>\geq</math> steam flow</li> <li>MBFP suction pressure &gt; 265 psig.</li> </ol> </li> <li><b>IAAT</b> MBFP suction pressure cutback actuates, <b>THEN</b> perform steps 4.42-4.43 if directed by CRS <ol style="list-style-type: none"> <li>Take manual control of MBFP speed to maintain suction pressure &gt; 265 psig.</li> </ol> </li> <li><b>IAAT</b> Loss of Load Interlock is NOT reset, <b>THEN</b> reset Loss of Load Interlock for Condenser Steam Dumps.</li> </ol> <p>NOTE: Per Attachment 1 of procedure, load reduction to approximately 900 MW(e) should be necessary. Load will be limited by MBFP suction pressure. Per 3-SOP-FW-001, the suction pressure lower limit is 350 psig during normal operation. At 310 psig, the Standby Condensate Booster Pumps will automatically start (if in AUTO) and CD-AOV-521 (POLISHER VESSELS AND POST FILTERS BYPASS) automatically opens. An automatic low suction pressure cutback actuates at 265 psig to lower MBFP speed.</p> <ol style="list-style-type: none"> <li><b>IAAT</b> level in any SG is &gt; 60%, <b>THEN</b> perform one of the following: <ol style="list-style-type: none"> <li>Place MFRV for affected SGs in manual <u>and</u> reduce feed flow below steam flow.</li> <li>Place MBFP speed control in manual <u>and</u> reduce feed flow below steam flow.</li> </ol> </li> <li>Adjust Tave within 1.5°F of program using boration and /or rod insertion.</li> <li>Is <math>\Delta</math> Flux in target band? <ol style="list-style-type: none"> <li>Borate RCS as necessary to restore <math>\Delta</math> Flux to target band.</li> </ol> </li> </ol>
	CRS	Refer to TS 3.2.3, Axial Flux Difference – AFD) <i>This discussion can occur after the scenario, especially if AFD stays in band during load reduction. <b>CRS determines LCO 3.2.3 entry is not required, but notes that penalty minutes are being accumulated.</b></i>
Booth Instructor		<b>NOTE: Evaluator may move on to the next event once the CRS identifies the Technical Specification for AFD or evaluator discretion.</b>

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 2 Page 2 of 10

Event Description: 32 SG Controlling level channel fails low. Team responds per AOP-INST-1 to stabilize the plant and trip bistables.

Time	Position	Applicant's Actions or Behavior	
Booth Instructor		Insert malfunction MAL-SGN001F to 0 on event 2	STEAM GENERATOR LEVEL TRANSMITTER FAILURE (LT-427B)
		<ul style="list-style-type: none"> <li>SG Low Level Alarms</li> <li>Channel 427 indicates downscale</li> <li>32 SG Feedwater flow increase</li> <li>Actual level increases</li> </ul>	
	ATC	<ol style="list-style-type: none"> <li>Diagnose SG level instrument failure</li> <li>Take manual actions as necessary to control parameters and stabilize the plant.               <ol style="list-style-type: none"> <li>Place 32 SG FRV in Manual and match 32 SG feed and steam flows.</li> <li>Control 32 SG FRV position to maintain 32 SG level on program.</li> </ol> </li> </ol>	
	CRS	<p>Direct the team during performance of AOP-INST-1</p> <ul style="list-style-type: none"> <li>Directs RO to perform immediate actions and verifies completion of the immediate actions using the procedure</li> <li>Supervise actions of the team during subsequent actions.</li> <li><b>Reviews Technical Specifications and enters the following:</b> <ul style="list-style-type: none"> <li>TS 3.3.1, Table 3.3.1-1 Function 13               <ul style="list-style-type: none"> <li>LCO 3.3.1 Condition A</li> <li>LCO 3.3.1 Condition E</li> </ul> </li> <li>TS 3.3.2, Table 3.3.2-1 Function 5.b               <ul style="list-style-type: none"> <li>LCO 3.3.2 Condition D</li> </ul> </li> <li>TS 3.3.2, Table 3.3.2-1 Function 6.b               <ul style="list-style-type: none"> <li>LCO 3.3.2 Condition D</li> </ul> </li> </ul> </li> <li><b>Determines bistables require tripping within 6 hours</b></li> <li>Directs BOP to trip bistables.</li> </ul>	

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 3 Page 4 of 10

Event Description: Steam Header Leak in Turbine Building. Team diagnoses steam leak and initiates reactor trip per AOP-UC-1, Uncontrolled Cooldown.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		<p><i>Insert malfunction MAL-MSS009A to 1000000.43750 in 300 on event 2</i></p> <p><b>MAIN STEAM HEADER BREAK (EAST HEADER)</b></p> <p><i>Crew should see rising reactor power, loss of 10-30 MWe load, small Tave reduction. Fire alarms will sound indicating issue in Turbine Building.</i></p> <p><b><i>If necessary call as NPO and state a large steam leak exists in the turbine building.</i></b></p>
	ALL	Diagnose steam leak.
	CRS	<ol style="list-style-type: none"> <li>Implement AOP-UC-1; Uncontrolled Cooldown. <ul style="list-style-type: none"> <li>Determine continued operation is unsafe</li> <li>Perform a crew update</li> </ul> </li> <li>Direct RO/BOP to trip reactor and close MSIVs</li> </ol>
	ATC	<ol style="list-style-type: none"> <li>Manually actuate reactor trip <ul style="list-style-type: none"> <li>Diagnose reactor did not trip</li> <li>Attempt to trip reactor from supervisory panel</li> </ul> </li> </ol>
	CRS	Direct team to perform immediate actions of E-0, Reactor Trip or Safety Injection.
	ATC	<p>Attempt to initiate reactor trip</p> <ul style="list-style-type: none"> <li>Diagnose reactor is not tripped</li> <li>Manually trip the reactor</li> <li>Observe both reactor trip breakers are closed</li> <li>Dispatch NPO to trip reactor using posted operator aid</li> <li>Observe reactor power greater than 5%</li> </ul> <p>Inform crew that entry into FR-S.1 is required.</p>
	CRS	Direct team to perform 3-FR-S.1; Response to Nuclear Power Generation / ATWS.
Booth Instructor		<b><i>Scenario continues based on ATWS. Do not locally trip the reactor until ATC inserts control rods manually and the crew is implementing 3-FR-S.1.</i></b>

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 2 cont Page 3 of 10

Event Description: 32 SG Controlling level channel fails low. Team responds per AOP-INST-1 to stabilize the plant and trip bistables.

Time	Position	Applicant's Actions or Behavior
	BOP	<ol style="list-style-type: none"> <li>1. Are <u>all</u> redundant bistable status lights for failed instrument listed in Attachment 1 (Steam Generator Level Tables) Table 1 (Page 79) extinguished?               <ol style="list-style-type: none"> <li>a. E-8; SG 32 LO-LO LVL LC427D</li> <li>b. H-8; SG 32 LO-LO LVL LC427B</li> <li>c. I-4; SG 32 HI LEVEL LC427C</li> <li>d. L-4; SG 32 HI LEVEL LC427A</li> </ol> </li> <li>2. Trip bistables for failed instrument listed in Attachment 1 (Steam Generator Level Tables) Table 2 (Page 83). <b>Protection Rack Blue B-2)</b> <ol style="list-style-type: none"> <li>a. Loop 2B, High Level</li> <li>b. Loop 2B, Low Level</li> </ol> </li> </ol>
	BOP	<ol style="list-style-type: none"> <li>3. Are <u>all</u> bistable status lights for failed instrument listed in Attachment 1 (Steam Generator Level tables) Table 3 (Page 87) illuminated?               <ol style="list-style-type: none"> <li>a. G-8; SG 32 LO-LO LVL LC427F</li> <li>b. K-4; SG 32 HI LEVEL LC427E</li> </ol> </li> </ol>
Booth Instructor		<b>Scenario may continue after CRS completes Technical Specification determination.</b>



Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 4 Page 5 of 10Event Description: The reactor will not trip from the control room and the crew responds per FR-S-1, ATWS.

Time	Position	Applicant's Actions or Behavior				
Booth Instructor		<b>Entered in setup:</b> <table><tr><td>Insert malfunction MAL-RPS002A to ALL_FAIL</td><td>REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO FAILURE)</td></tr><tr><td>Insert malfunction MAL-RPS002B</td><td>REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO &amp; MANUAL)</td></tr></table>	Insert malfunction MAL-RPS002A to ALL_FAIL	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO FAILURE)	Insert malfunction MAL-RPS002B	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO & MANUAL)
Insert malfunction MAL-RPS002A to ALL_FAIL	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO FAILURE)					
Insert malfunction MAL-RPS002B	REACTOR TRIP BREAKERS FAIL TO OPEN (AUTO & MANUAL)					
	CRS	Direct actions of the crew IAW 3-FR-S.1.				
	ATC	Manually insert control rods.				
Booth Instructor		<b>Trip the reactor trip breakers locally once the ATC has established manual control rod insertion IAW 3-FR-S.1 and NPO has been dispatched.</b>				
	BOP	<ol style="list-style-type: none"><li>1. Dispatch NPO to locally trip the reactor.</li><li>2. Manually TRIP Turbine.</li><li>3. Establish greater than 686 gpm total AFW flow.</li><li>4. Initiate Emergency Boration of RCS<ol style="list-style-type: none"><li>a. Check a charging pump running*</li><li>b. Open MOV-333, Emergency Boration valve</li><li>c. Close BAST recirc control valves<ol style="list-style-type: none"><li>i. HCV-104</li><li>ii. HCV-105</li></ol></li></ol></li></ol>				
	ATC/ BOP	<ol style="list-style-type: none"><li>5. Start both boric acid pumps in high speed:<ol style="list-style-type: none"><li>a. PLACE switches in FAST</li><li>b. RESTART pumps</li></ol></li><li>6. Transfer operating Charging pump to manual control and increase speed to maximum.*</li><li>7. Check Pressurizer Pressure &lt; 2235 psig.</li></ol> <p><i>*NOTE: Depending on timing of Safety Injection, they may need to start a Charging Pump.</i></p>				
	Critical Task (CT)	<b>FR.S-1—C; Insert negative reactivity into the core by inserting rods and / or emergency boration.</b>				

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 4 cont Page 6 of 10

Event Description: The reactor will not trip from the control room and the crew responds per FR-S-1, ATWS.

Time	Position	Applicant's Actions or Behavior
	CRS ATC BOP	<p>Continue with FR-S.1 actions:</p> <ul style="list-style-type: none"> <li>○ Verify Containment ventilation isolation</li> <li>○ Check SI status</li> <li>○ Check is reactor is subcritical <ul style="list-style-type: none"> <li>• Power Range &lt; 5%</li> <li>• Intermediate Range – zero or negative SUR</li> <li>• All control rods &lt; 20 steps</li> </ul> </li> <li>○ Secure Emergency Boration <ul style="list-style-type: none"> <li>• Close CH-MOV-333</li> <li>• Place both BATPs in Slow</li> <li>• Open HCV-104 and 105 to 25% open</li> </ul> </li> <li>○ Verify RCP seal cooling established</li> <li>○ Control Charging pump speed to maintain seal injection</li> <li>○ Verify adequate S/D margin <ul style="list-style-type: none"> <li>• All control rods &lt; 20 steps</li> <li>• Direct watch chemist to sample RCS</li> <li>• Adjust RCS M/U to establish &gt; CSD boron per graph RCS-4</li> </ul> </li> </ul> <p>Transition to E-0</p>
	Booth Instructor	<p><i>Event continues based on earlier failures included in simulator scenario setup (following SI actuation, #32 RHR Pump and #33 SI Pump did not start.) (MSIVs failed to close as well).</i></p> <p><b><i>BOP may start the 32 RHR and 33 SI Pumps during the implementation of FR-S.1, step 6; CHECK SI – ACTUATED by performing step 35 of 3-E-0.</i></b></p>

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 5 Page 7 of 10

Event Description: Following SI actuation, #32 RHR Pump and #33 SI did not start. BOP starts pumps per 3-RO-1 RNO.

Time	Position	Applicant's Actions or Behavior
	Booth Instructor	<p><i>Inserted during initial simulator setup:</i></p> <p><i>MAL-RHR001B to FAILURE_TO_AUTOSTART</i></p> <p><i>MAL-SIS004C to FAILURE_TO_AUTOSTART</i></p> <p><b><i>BOP may start the 32 RHR and 33 SI Pumps during the implementation of FR-S.1, step 6; CHECK SI – ACTUATED by performing step 35 of 3-E-0.</i></b></p> <p><b><i>OR</i></b></p> <p><b><i>BOP may start the pumps during the implementation of 3-RO-1 RNO.</i></b></p>
	CRS BOP	<p>BOP will recognize that 32 RHR Pump and 33 SI Pumps have not started in Auto following the SI actuation.</p> <p>VERIFY SI Pumps – RUNNING</p> <ul style="list-style-type: none"> <li>• Three HHSI pumps</li> <li>• Two RHR pumps</li> </ul> <p>RNO</p> <ul style="list-style-type: none"> <li>• Manually START pump(s).</li> </ul>
	Booth Instructor	<p><i>Event continues based on earlier failures included in simulator scenario setup (MSIVs fail to close).</i></p>

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 6 Page 8 of 10

Event Description: Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1)

Time	Position	Applicant's Actions or Behavior
	Booth Instructor	<p><b>Entered when Event 3 was actuated or during initial simulator setup:</b></p> <p>MAL-MSS013A to FAIL_OPEN on event 3</p> <p>MAL-MSS013B to FAIL_OPEN on event 3</p> <p>MAL-MSS013C to FAIL_OPEN on event 3</p> <p>MAL-MSS013D to FAIL_OPEN on event 3</p>
	CRS	Supervise the actions of the crew during E-0
	CRS ATC	<p>Perform E-0 subsequent actions</p> <ul style="list-style-type: none"> <li>• Try to stop the RCS Cooldown</li> <li>• Attempt to close MSIVs</li> <li>• Dispatch NPOs to locally close MSIVs and bypass valves</li> <li>• Diagnose all SGs are faulted.</li> <li>• Go to 3-E-2, Faulted Steam Generator Isolation</li> </ul>
	Booth Instructor	<p>Event continues based on transition to 3-E-2, Faulted Steam Generator Isolation. (Step 15 of 3-E-0, Reactor Trip or Safety Injection)</p>

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 6 cont Page 9 of 10

Event Description: Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1)

Time	Position	Applicant's Actions or Behavior
	CRS	Supervise the actions of the crew during E-2
	ATC	Diagnose all SGs are faulted <ul style="list-style-type: none"> <li>• Checks MSIVs cannot be closed from the CCR</li> <li>• Diagnose none of the SGs are intact</li> </ul>
	CRS	Transition to ECA-2.1
	ALL	Check secondary pressure boundary: <ul style="list-style-type: none"> <li>• MSIVs</li> <li>• MSIV bypass valves</li> <li>• Main Feed Reg valves</li> <li>• Bypass FRVs</li> <li>• MS-41 and 42</li> <li>• SG atmospheric steam dumps</li> <li>• SG blowdown isolation valves</li> <li>• SG sample valves</li> <li>• Steam traps</li> </ul>
	ALL	Control AFW Flow to minimize RCS cooldown <ul style="list-style-type: none"> <li>• Verify control rods inserted</li> <li>• Check cooldown rate &lt; 100°F / hr</li> <li>• Decrease AFW flow to 100 gpm per SG</li> </ul>
	<b>Critical Task (CT)</b>	<b>ECA-2.1 – A, Control AFW flow to not less than 100 gpm per SG to minimize RCS cooldown rate before a severe (orange path) challenge develops to the integrity CSF.</b>
<i>Booth Instructor</i>		<i>After AFW flow has been reduced, close 31 and 32 MSIVs locally.</i>
	ALL	Observe MSIVs closed <ul style="list-style-type: none"> <li>• Observe rising pressure in 31 and 32 SGs</li> <li>• Transition to E-2, Faulted SG Isolation</li> </ul>

Op-Test No.: 5/11/15 Scenario No.: 3 Event No.: 6 cont Page 10 of 10

Event Description: Failure of MSIVs to close from Control Room. (2 will be closed locally after AFW is throttled to 100 gpm per ECA-2.1)

Time	Position	Applicant's Actions or Behavior
	CRS	Supervise the actions of the crew during E-2
	CRS ATC BOP	Check MSIVs for 31 and 32 SGs closed Determine 31 and 32 SGs are intact Identify 33 and 34 SGs are faulted Isolate Faulted SGs <ul style="list-style-type: none"> <li>• <b>Dispatch NPO to close MS-42</b></li> <li>• <b>Isolate MFW FRVs or MOVs</b></li> <li>• <b>Isolate Bypass FRVs or MOVs</b></li> <li>• <b>Isolate AFW flow</b></li> <li>• <b>Verify SG Atmospheric closed</b></li> <li>• <b>Verify SG Blowdown valves closed</b></li> <li>• <b>Close SG sample valves</b></li> <li>• <b>Isolate upstream traps on faulted SGs</b></li> <li>• Reestablish SG sampling:               <ul style="list-style-type: none"> <li>○ Reset Phase A</li> <li>○ Depress pushbuttons 17 thru 24</li> </ul> </li> </ul>
	<b>Critical Task (CT)</b>	<b>E-2 – A, Isolate the faulted SG before transition out of E-2 (see bolded steps above, 3-E-2, steps 4a &amp; 4b)</b>
	CRS	Determine E-3 is not required
	CRS	Go to E-1, Loss of Reactor or Secondary Coolant
<i>Booth Instructor</i>		<b>Terminate scenario at this point or at Lead Evaluator's discretion.</b>

# SIMULATOR SCENARIO #4

Facility: Indian Point 3 Scenario No.: 4 Op-Test No.: 1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: 100% Power with 31 EDG out of service due to malfunctioning governor. 31 Charging Pump I/S, 35 Service Water Pump I/S

Turnover: 100% Power with 31 EDG out of service due to malfunctioning governor. Maintain 100% power. 31 Charging Pump I/S, 35 Service Water Pump I/S.

Event No.	Malf. No.	Event Type*	Event Description
1	MAL-SWS001E	C (BOP) TS (CRS)	35 SWP trips
2	MAL-NIS006A	C (ATS) C (CRS) TS (CRS)	Power Range Channel 41 Upper Detector Fails High
3	MAL-EPS005C	C (ALL) TS (CRS)	480V Bus 5A Fault
4	N/A	R (ATC)	Tech Spec required plant shutdown
5	MAL-EPS001	M(ALL)	Station Blackout
6	MAL-DSG001B	C (BOP)	32 EDG fail to start
7	MAL-PRS003C	C (ATC)	PZR PORV Fails Open (455C fails open after loss of all AC, we need to isolate block valve later)
8	MAL-SWS001F	C (BOP)	SW pump does not auto start after bus energized 32 EDG comes back, 6A bus back. Failure of 36 SW pump to auto start.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			



### **Simulator Exam Scenario # 4 Summary**

The scenario begins with the plant at 100% power. Fuel is conditioned. 31 EDG is out of service due to a malfunctioning governor. 31 Charging Pump is in service.

After taking the watch, #35 Service Water Pump will trip. The crew will take actions in accordance with ARP-012 and start another Service Water Pump (34 or 36). Once the service water system is restored and the CRS makes the appropriate technical specification entry, a failure of Power Range channel N41 upper detector occurs. Control rods auto insert until the ATC places rods in manual. The CRS implements AOP-NI-1, Nuclear Instrument Failure to stabilize the plant and perform required actions.

Once the plant is stable and the CRS identifies the applicable technical specification requirements for the failed Power Range Nuclear Instrument (*if the CRS determines the NI should be removed from service, inform him that the extra 3<sup>rd</sup> NCO will be assigned to remove channel from service*), 480V Bus 5A then faults. Crew enters AOP-480V-1 to stabilize the plant. The CRS evaluates technical specifications following feedback from the field that there is significant damage to the 5A Bus. CRS determines that a shutdown must commence. The CRS should identify that TS 3.0.3 applies for the inoperability of two essential service water pumps (34 & 35).

During performance of the plant shutdown, a loss of grid and loss of offsite power occur. The unit trips and the crew respond per E-0. 33 EDG is the only diesel running (without service water cooling), but the 5A bus is faulted and cannot be energized. 31 EDG is tagged and 32 EDG fails to start or tripped. Crew diagnoses that no 480V bus is energized and transitions to ECA-0.0, Loss of All AC.

PRZR PORV 455C fails open and cannot be isolated due to the loss of all AC. PORV block valve will need to be isolated when power is restored to the 6A bus with 32 EDG. Operators will be dispatched to attempt to emergency start the 32 EDG IAW SOP-EL-1.

BOP operator manually aligns 32 ABFP to supply AFW to the SGs.

Operators implement ECA-0.0 and depressurize intact SGs to 275 psig at maximum rate. Once the SGs are depressurized at a maximum rate to less than 275 psig, then the field NPO will be able to emergency start 32 EDG and supply power to the 6A 480V Bus. However, 36 Service Water Pump will not automatically start to provide cooling for the 32 EDG. Crew manually starts the 36 SWP and manually closes the PORV block valve.

Procedure flow path: ARP-012, AOP-NI-1, AOP-480V-1, POP-2.1, E-0, ECA-0.0.

At Time	On Event	Action	Description
00:00:00	1	Insert malfunction MAL-SWS001E to TRIP on event 1	SERVICE WATER PUMP 35 FAILURES
00:00:00	3	Insert malfunction MAL-EPS005C on event 3	LOSS OF 480 V BUS 5A
00:00:00	None	Insert remote LOA-DSG031 to OFF	D/G #31 MAN/OFF/AUTO MODE SWITCH
00:00:00	5	Insert malfunction MAL-EPS001 on event 5	STATION BLACKOUT
00:00:00	5	Insert malfunction MAL-DSG001B on event 5	DIESEL 32 GENERATOR FAILURE
00:00:00	5	Insert malfunction MAL-PRS003C to 100.00000 on event 5	PRESSURIZER RELIEF VALVE 455C VALVE POSITION FAILURE
00:00:00	None	Insert malfunction MAL-SWS001F to FAILURE_TO_AUTOSTART	SERVICE WATER PUMP 36 FAILURES
00:00:00	2	Insert malfunction MAL-NIS006A to 5.00000 on event 2	POWER RANGE CHANNEL 41 DETECTOR A FAILURE
None	9	Delete malfunction MAL-DSG001B	DIESEL 32 GENERATOR FAILURE
None	9	Insert remote LOA-DSG029 to RESET	D/G #32 TRIP RESET
None	9	Insert remote LOA-DSG032 after 15 to MAN	D/G #32 MAN/OFF/AUTO MODE SWITCH
None	9	Insert remote LOA-DSG045 after 20 to ACTIVE_LOA	D/G #32 MANUAL START PUSHBUTTON

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 1 Page 1 of 9

Event Description: 35 Service Water Pump Trips. Team responds per ARP and starts a SWP.

Time	Position	Applicant's Actions or Behavior
<i>Booth Instructor</i>		<i>Insert malfunction MAL-SWS001E to TRIP on event 1, 35 SWP Failure</i>
	BOP	Diagnose trip of 33 Service Water Pump <ul style="list-style-type: none"> <li>• Perform ARP-012 for alarm "Service Water Header (34,35,36) High Low Pressure"</li> <li>• May refer to SOP-RW-5.</li> <li>• Starts 34 or 36 Service Water Pump</li> <li>• Dispatch NPO to investigate 35 SWP.</li> <li>• Operator may take 35 SWP Switch to "pull to lock" to clear "480V SWGR Motor Trip (COMMON)" Alarm.</li> </ul>
	CRS	Direct BOP operator response to service water transient. The CRS will evaluate TS 3.7.9 Service Water System: <ul style="list-style-type: none"> <li>• LCO 3.7.9 is entered due to less than 3 pumps and required flow path for the essential SWS header operable.</li> <li>• 72 hour action to restore 3 operable essential service water pumps.</li> </ul>
<i>Booth Instructor</i>		<b><i>Continue to the next event at the discretion of the Lead Evaluator.</i></b>

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 2 Page 2 of 9Event Description: Power Range Channel 41 Upper Detector Fails High.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		<i>Insert malfunction MAL-NIS006A to 5.00000 on event 4, POWER RANGE CHANNEL 41 DETECTOR A FAILURE.</i>
	ATC	Diagnose failed nuclear instrument. Place Control Rods in manual to stop auto rod insertion.
	CRS	Direct actions of the team during AOP-NI-1, Nuclear Instrument Failure.
	BOP	Perform ARPs for alarms associated with the failed instrument.
	CRS/ ATC	Adjust control rods, boron concentration, or turbine load as necessary to Maintain Tavg at programmed Tref.
	CRS	<p>Evaluate and enter the following Technical Specifications</p> <ul style="list-style-type: none"> <li>• TS 3.3.1 Function 2a, Condition D, (6 hours to place in trip)</li> <li>• TS 3.3.1 Function 2b, Condition E, (6 hours to place in trip)</li> <li>• TS 3.3.1 Function 5, Condition E, (6 hours to place in trip)</li> <li>• TS 3.3.1 Function 17.b, Condition N, (1 hour to verify interlock in required state for exiting plant conditions - P-7)</li> <li>• TS 3.3.1 Function 17.c, Condition N, (1 hour to verify interlock in required state for exiting plant conditions - P-8)</li> <li>• TS 3.3.1 Function 17.d, Condition M, (1 hour to verify interlock in required state for exiting plant conditions - P-10)</li> </ul> <p>NOTE that the permissive interlock actions are 1 hour to verify interlock is in the required state for existing plant conditions. With 1 PR NI inoperable due to failing high, the increasing power 2/4 PR NIs interlocks are in their required state. The decreasing power 3/4 PR NIs interlocks can also still be met by the remaining channels.</p> <p>3-AOP-NI-1 sends the crew to 3-SOP-NI-001, Excore Nuclear Instrumentation System Operation to remove N41 PR from service. It will trip all NIS bistables associated with the failed channel by removing both the control and instrument power fuses.</p>
Booth Instructor		<p><b>Scenario continues to next event once CRS determines the applicable Technical Specifications.</b></p> <p><b>If the CRS determines the NI should be removed from service, inform him that the extra 3<sup>rd</sup> NCO will be assigned to remove channel from service.</b></p>

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 3 Page 3 of 9Event Description: 480V Bus 5A Fault.

Time	Position	Applicant's Actions or Behavior
Booth Instructor		Insert malfunction MAL-EPS005C on event 2, LOSS OF 480 V BUS 5A.
	ATC	Diagnose bus 5A de-energized <ul style="list-style-type: none"> <li>Start Charging Pump due to the loss of 31 Charging Pump on the 5A bus fault.</li> </ul>
	BOP	Diagnose bus 5A de-energized <ul style="list-style-type: none"> <li>Perform ARPs</li> <li>Dispatch NPO to investigate</li> </ul>
	CRS	Implement 3-AOP-480V-1, Loss of 480V Bus <ul style="list-style-type: none"> <li>Direct crew actions of AOP-480V-1.</li> </ul>
	ATC / BOP	Verify Charging pump running Verify CCW pumps running Check SW essential and non-essential headers > 60 psig Perform ARPs Verify IRPIs energized Verify condenser vacuum stable Dispatch an NPO to monitor the EDGs
Booth Operator		NPO reports back <b>significant damage</b> to the 5A bus.
	CRS	Evaluate Technical Specifications <ul style="list-style-type: none"> <li>TS 3.7.9, Service Water System</li> <li>TS 3.8.1, AC Sources – Operating</li> <li>TS 3.8.9, Distribution Systems - Operating</li> <li>CRS determines that with a fault on 5A 480V Bus (34 Essential SW Pump) and 35 Essential SW Pump inoperable due to earlier trip &amp; 31 EDG tagged <b>Tech Spec 3.0.3 is applicable.</b></li> <li>LCO 3.8.1 and LCO 3.8.9 are applicable but 3.0.3 is the most limiting due to Service Water inoperability.</li> </ul>
Booth Operator		Proceed to next event once the CRS has determined Tech Spec applicability and initiated a shutdown. Shutdown requirement may be called in by Operation Manager if necessary.

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 4 Page 4 of 9Event Description: Technical Specification required shutdown.

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Refers to POP-2.1, Operation at Greater than 45% Power</p> <ul style="list-style-type: none"> <li>• Implements Attachment 3, Reactor Power Reduction Checklist</li> <li>• Perform a brief with the crew</li> <li>• Directs reactivity changes</li> <li>• Directs load changes</li> </ul>
	ATC	<ul style="list-style-type: none"> <li>• Energize all pressurizer backup heaters</li> <li>• Dispatch NPO to swap boric acid transfer pumps <ul style="list-style-type: none"> <li>○ 31 BA transfer pump is de-energized due to loss of bus 5A</li> <li>○ Ensures 32 BA Transfer Pump aligned to blender</li> </ul> </li> <li>• Commence Boration per 3-SOP-CVCS-003, Reactor Coolant System Boron Concentration Control</li> <li>• Monitor Tavg, rod position, delta flux, and RCP seal injection <ul style="list-style-type: none"> <li>○ Maintain Tavg on Program</li> <li>○ Maintain <math>\Delta I</math> within target band</li> </ul> </li> </ul>
	BOP	<p>Initiate generator load reduction at rate directed by CRS</p> <p>Maintain SG Level on Program</p> <p>Coordinate load reductions with the ATC</p>
Booth Instructor		<b><i>Proceed to the next event when sufficient load reduction has been observed per the lead evaluator.</i></b>

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 5 Page 5 of 9Event Description: Station Blackout.

Time	Position	Applicant's Actions or Behavior
	Booth Instructor	<p><b>Ensure simulator initial setup included the following malfunctions:</b></p> <p>Remote LOA-DSG031 to OFF, D/G #31 MAN/OFF/AUTO MODE SWITCH</p> <p>MAL-SWS001F to FAILURE_TO_AUTOSTART, SERVICE WATER PUMP 36 FAILURES</p> <p><b>Insert the following malfunctions for event 5:</b></p> <p>MAL-EPS001 on event 5, STATION BLACKOUT</p> <p>MAL-DSG001B on event 5, DIESEL 32 GENERATOR FAILURE</p> <p>MAL-PRS003C to 100.00000 on event 5, PRESSURIZER RELIEF VALVE 455C VALVE POSITION FAILURE</p>
	CRS	Direct crew to perform immediate actions of E-0, Reactor Trip or Safety Injection.
	ATC	<p>Verifies reactor is tripped</p> <p>Verifies turbine is tripped</p>
	BOP	<p>Diagnose none of the 480V buses are energized.</p> <ul style="list-style-type: none"> <li>Observe that the only EDG running is 33 EDG and bus 5A cannot be energized due to the fault. 31 and 32 EDGs are not running. 31 EDG is tagged. 32 EDG tripped.</li> <li>Informs CRS that transition to ECA-0.0, Loss of All AC Power is required.</li> </ul>
	CRS	<p>Transitions to ECA-0.0, Loss of All AC Power and directs crew actions during implementation of ECA-0.0.</p> <p>NOTE: Crew may have directly entered ECA-0.0.</p>
	Booth Instructor	Event continues based on earlier failures included in simulator scenario setup (32 EDG fails to start/trips, PORV 455C fails open)

Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 6 Page 6 of 9Event Description: 32 EDG fails to start / trips.

Time	Position	Applicant's Actions or Behavior
	ALL	<p>Crew recognizes that the only EDG running is 33 EDG and bus 5A cannot be energized due to the fault. 31 and 32 EDGs are not running. 31 EDG is tagged. 32 EDG tripped.</p> <ul style="list-style-type: none"><li>• Crew shuts down 33 EDG because it has no Service Water Cooling,</li><li>• Crew dispatches an NPO to investigate the loss of 32 EDG and attempt to emergency start it per SOP-EL-1.</li></ul>
Booth Instructor		<i>Event continues based on earlier failures included in simulator scenario setup (PORV 455C fails open).</i>



Op-Test No.: 5/11/15 Scenario No.: 4 Event No.: 7 Page 7 of 9

Event Description: PZR PORV Fails Open (455C fails open after loss of all AC, we need to isolate block valve later when power is restored).

Time	Position	Applicant's Actions or Behavior
	ATC/ BOP	Operator recognizes that the PORV (455C) is failed open <ul style="list-style-type: none"><li>• Recognizes also that the block valve has no power.</li><li>• Operator may place the block valve (535) in the "pull to lock close" position.<ul style="list-style-type: none"><li>○ This will ensure it goes closed when power is restored to the block valve.</li><li>○ If not the crew needs to remember to close the block valve once power is restored.</li><li>○ Power to the block valve can be restored via the restoration of 32 EDG.</li></ul></li></ul>
	<b>Critical Task (CT)</b>	<b>ECA-0.0 - - B; manually close the open PORV or associated block valve upon restoration of power to block valve before exiting ECA-0.0.</b>
<i>Booth Instructor</i>		<i>Event continues based on earlier failures included in simulator scenario setup (Station Blackout) and continued implementation of ECA-0.0.</i>

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Event Description: Depressurization of intact SGs at maximum rate. 32 EDG comes back energizing 6A bus, but 36 SW Pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
	CRS ATC BOP	Crews implements ECA-0.0, Loss of All AC Power <ul style="list-style-type: none"> <li>• Verify Reactor Trip</li> <li>• Close all MSIVs</li> <li>• Close Letdown Isolation Valves</li> <li>• Maintain SG levels using Turbine-Driven AFW Pump (32)               <ul style="list-style-type: none"> <li>○ Adjust 32 ABFP FCV-405A, B, C, and D as necessary to maintain total feed flow &gt; 365 gpm.</li> <li>○ Preferentially feed 32 or 33 SG (selects one and feeds at a higher rate).</li> <li>○ Maintain feed flow in all other SGs at ≤ 100 gpm.</li> </ul> </li> <li>• Try to restore power to any 480V AC Safeguards Bus               <ul style="list-style-type: none"> <li>○ Dispatch NPO to investigate and attempt to emergency start 32 EDG per SOP-EL-1.</li> </ul> </li> </ul>
	<b>Critical Task (CT)</b>	<b>ECA-0.0 - - B; establish at least 365 gpm AFW flow to SGs before SG WR level decreases to below 16%.</b>
<b>Booth Instructor</b>		<b><i>Do not allow 32 EDG to start until the crew has initiated SG depressurization.</i></b>
	CRS ATC BOP	Crews continues to implement ECA-0.0, Loss of All AC Power <ul style="list-style-type: none"> <li>• Place Control Switches on De-energized buses in TRIP / PULLOUT / OFF,               <ul style="list-style-type: none"> <li>○ PRZR Heaters</li> <li>○ Containment Spray Pumps</li> <li>○ FCUs</li> <li>○ SI Pumps</li> <li>○ Motor-driven AFW Pumps</li> <li>○ RHR Pumps</li> <li>○ CCW Pumps</li> </ul> </li> <li>• Isolate RCP Seals (NPO dispatched)</li> <li>• Check DC Bus Loads</li> <li>• <b>Depressurize Intact SGs to 275 psig</b></li> </ul>
	<b>Critical Task (CT)</b>	<b>ECA-0.0 - - G; depressurize intact SGs Manually dump steam using SG atmospherics to maintain cooldown rate in RCS Cold Legs – LESS THAN 100°F/HR.</b>

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Event Description: Depressurization of intact SGs at maximum rate. 32 EDG comes back energizing 6A bus, but 36 SW Pump fails to auto start.

Time	Position	Applicant's Actions or Behavior
	Booth Operator	<p><b>Once the SG depressurization is started, then allow the NPO to emergency start 32 EDG.</b></p> <p>Insert remote LOA-DSG029 to RESET, D/G #32 TRIP RESET</p> <p>Insert remote LOA-DSG032 after 15 to MAN, D/G #32</p> <p>MAN/OFF/AUTO MODE SWITCH</p> <p>Insert remote LOA-DSG045 after 20 to ACTIVE_LOA, D/G #32</p> <p>MANUAL START PUSHBUTTON</p>
	ALL	<p>Crew recognizes that the 32 EDG has been restarted and aligned to the 6A 480V bus.</p> <p>They also recognize that 36 Service Water Pump has not started to provide cooling.</p> <p><b>Crew manually starts 36 SWP and also potentially starts 39 Backup SW Pump as well.</b></p>
	Critical Tasks (CT)	<p><b>ECA-0.0; Start 36 Service Water Pump to provide cooling for 32 EDG.</b></p> <p><b>ECA-0.0 - - B; manually close the open PORV or associated block valve upon restoration of power to block valve before exiting ECA-0.0.</b></p>
	Booth Instructor	<b>Terminate scenario at this point or at Lead Evaluator's discretion.</b>