

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Post surveillance board walkdown  
Failure Mode: Valve and flow controller out of position  
Reference: OP 2120, HPCI System , Rev. 62  
Task Number: 2060010101

**Task Performance:** AO/RO/SRO \_\_\_\_ RO/SRO X SRO Only \_\_\_\_

Time Critical: Yes \_\_\_\_ No X

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_\_ Performance X Discuss \_\_\_\_

Setting: Classroom \_\_\_\_ Simulator X Plant \_\_\_\_

Performance Expected Completion Time: 12 minutes

Evaluation Results:

Performance: PASS \_\_\_\_ FAIL \_\_\_\_ Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
Operations Training Instructor

\_\_\_\_\_  
Date

Reviewed by: \_\_\_\_\_  
SRO Licensed /Certified Reviewer

\_\_\_\_\_  
Date

Approved by: \_\_\_\_\_  
Operations Training Superintendent

\_\_\_\_\_  
Date

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

- The plant is at 100% power
- OPST-HPCI-4120-02, HPCI Pump Operability Test (quarterly) and OPST-HPCI-4120-04, HPCI Valve Operability Test (quarterly) for were both completed last shift.

**Initiating Cues:**

CRS directs you to walk down the HPCI system components to verify proper alignment using OP 2120 High Pressure Coolant Injection System, APPENDIX A, HPCI System Valve Lineup for components on CRP 9-3. When complete, report status to the CRS.

**Task Standards:**

HPCI-15 is identified as out of position, HPCI Flow Controller is identified in MANUAL.

**Required Materials:**

OP 2120, HPCI System Rev. 62  
VY Technical Specifications

**Simulator Setup:**

Any 100% power IC  
Close HPCI-15  
HPCI Flow Controller in MANUAL

**Evaluation**

**Performance Steps**

TIME START: \_\_\_\_\_

**SAT/UNSAT**      **Step 1:**      **Refer to procedure OP 2120, HPCI System Appendix A, HPCI System Valve lineup for reference.**

Standard:      Operator obtains OP 2120, Appendix A for guidance.

---

Interim Cue:      If the operator requests the completed surveillances, inform the operator that they are in the process of being turned over and are unavailable at this time.

---

**SAT/UNSAT**      **\*Step 2:**      **Operator walks down CRP 9-3 and identifies HPCI-15 closed.**

Standard:      Operator identifies HPCI-15 in the closed position.

---

Interim Cue:      If operator informs shift manager, acknowledge communication.

---

Evaluator Note:      The intent of this step is that HPCI-15 was incorrectly positioned. It is not the intent to assume it was tampered with.

---

**SAT/UNSAT**      **\*Step 3:**      **Operator walks down CRP 9-3 and identifies HPCI Flow Controller in MANUAL.**

Standard:      Operator identifies that the controller mode selector is in MANUAL.

---

Interim Cue:      If operator informs shift manager, acknowledge communication.

---

Interim Cue:      If necessary cue operator to identify required technical specification actions, if any.

---

**Evaluation**

**Performance Steps**

**SAT/UNSAT**

**\*Step 4:      Determines that HPCI is inoperable.**

Standard:      Operator may refer to OP 2120, precaution 1.

---

Interim Cue:

If operator informs shift manager, acknowledge communication.

---

**SAT/UNSAT**

**\*Step 5:      Identifies HPCI TS LCO and status.**

Standard:      Operator refers to Technical Specifications and identifies entry into LCO  
3.5.E.2

---

Interim Cue:

If operator informs shift manager, acknowledge communication.

---

**\*Critical Step**

TIME FINISH: \_\_\_\_\_

**Terminating Cue: HPCI declared inoperable.**

**Evaluators Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2.0 GENERIC KNOWLEDGES AND ABILITIES

2.1 Conduct of Operations

2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup. (4.6 / 4.3)

## EXAMINEE HANDOUT

### Initial Conditions:

- The plant is at 100% power
- OPST-HPCI-4120-02, HPCI Pump Operability Test (quarterly) and OPST-HPCI-4120-04, HPCI Valve Operability Test (quarterly) for were both completed last shift.

### Initiating Cues:

CRS directs you to walk down the HPCI system components to verify proper alignment using OP 2120 High Pressure Coolant Injection System, APPENDIX A, HPCI System Valve Lineup for components on CRP 9-3. When complete, report status to the CRS.

**VERMONT YANKEE NUCLEAR POWER CORPORATION  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Review Daily SRM Response Check prior to Conducting Core Alteration  
Failure Mode: N/A  
Reference: OPST-4102 REFUEL OUTAGE/FUEL MOVEMENT PERIODIC TESTS, Rev. 0  
OP 2130 SOURCE Range Monitoring System, Rev. 19  
Task Number: 2157160101

**Task Performance:**

AO/RO/SRO \_\_\_\_\_ RO/ SRO Only X SE Only \_\_\_

Time Critical: Yes \_\_\_ No X

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_\_\_ Performance X Discuss \_\_\_\_\_

Setting: Classroom X Simulator \_\_\_\_\_ Plant \_\_\_\_\_

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS \_\_\_\_\_ FAIL \_\_\_\_\_

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

Prepared by: \_\_\_\_\_

Operations Training Instructor

\_\_\_\_\_ Date

Reviewed by: \_\_\_\_\_

SRO Licensed /Certified Reviewer

\_\_\_\_\_ Date

Approved by: \_\_\_\_\_

Operations Training Superintendent

\_\_\_\_\_ Date

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **Classroom** and you are to **perform** all actions.

You are requested to **"talk-through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

- The plant is refueling
- Core Alterations commenced 4 days ago
- SRM "B" is out of service for detector replacement
- The Daily Neutron Response Check required by OPST-4102 REFUEL OUTAGE/FUEL MOVEMENT PERIODIC TESTS, Section 8.3, Attachment 7 (Section C) has just been completed.
- The next scheduled core alteration is to remove the blade for control rod 26-27

**Initiating Cues:**

Review the results of the Daily Neutron Response Check provided

- Determine which SRMs are operable
- Determine if the scheduled Core Alteration can commence.

Justify your responses.

**Task Standards:**

SRO concludes SRMs "B" and "D" are inoperable and that the scheduled activity cannot commence. (SRM "A" and "C" quadrants are operable but are not adjacent.)



**Required Materials:**

- OPST-4102 REFUEL OUTAGE/FUEL MOVEMENT PERIODIC TESTS, Rev. 0
- OP 2130 SOURCE Range Monitoring System, Rev. 19
- Technical Specifications Section 3.12
- Examinee Handout to this JPM, (Attachment 7 - SRM Response Check with section C filled out)

**Simulator Set-Up:**

- NA

**Evaluation****Performance Steps**

TIME START: \_\_\_\_\_

SAT/UNSAT

**Step 1:**      **Obtain procedure OP 4102 REFUEL OUTAGE/FUEL MOVEMENT PERIODIC TESTS and review the surveillance that was just performed. (Examinee handout)**

Standard:      Procedure Section 8.3, SRM Response Check (ATT.7) (Provided to operator) reviewed.

Evaluator Note:

The detector map located on page 8 of 9 is for the evaluator only. Do not give to the examinee.

SAT/UNSAT

**\*Step 2:**      **Compares the completed Attachment 7 – SRM Response Check with the Acceptance Criteria**

Standard:      Determines that:  
 SRM "A" Passed its response check as indicated because the detector responded as the detector moved.  
 SRM "C" Passed its response check as indicated because the detector responded as the detector moved.  
 SRM "D" Failed its response check as indicated because it did not show any response as the detector was moved.

Interim Cue:

If asked, respond as the CRS, that the final SRM readings (SRM Reading) were all taken after the detector was fully withdrawn.

SAT/UNSAT

**\*Step 3:**      **Determines operability of SRM "D"**

Standard:      Determines that SRM "D" has failed the acceptance criteria of Attachment 7 and is inoperable, leaving only two operable SRMs.

Evaluator Note:

Operability requirements are contained within Tec Spec Section 3.12.B and also in OP 2130 SOURCE Range Monitoring System.

**Evaluation****Performance Steps****SAT/UNSAT****\*Step 4:**      **Determines SRM requirements for Core Alterations**

Standard:      Determines that Technical Specifications require that one operable SRM be located in the quadrant where fuel movement, control rod withdrawal, or control rod removal is to be performed and one operable SRM be located in an adjacent quadrant.

Evaluator Note:

OP 2130, Figure 4 defines the primary definition Control Rod Quadrants. The next scheduled core alteration is to remove the blade for control rod 26-27 (Initial Conditions)  
 Control Rod 26-27 is in Quadrant "A". (Operable)  
 Quadrant "B". (Adjacent but Inoperable)  
 Quadrant "C". (Opposite and Operable)  
 Quadrant "D". (Adjacent but Inoperable)  
 Attachment 2, of this JPM is provided as an aid to the evaluator

**SAT/UNSAT****\*Step 5:**      **Determines whether minimum requirements are met using the Primary Quadrant definition.**

Standard:      Refers to OP 2130, Step D. SRM Refueling Requirements, step 2 along with Figure 4, SOURCE Range Monitoring System and determines that requirements are NOT met using the Primary Quadrant Definitions.

**SAT/UNSAT****Step 6:**      **Informs SM that the requirements for the next core alteration is NOT met and cannot proceed.**

Standard:      Notifies the SM.

Interim Cue:

Acknowledge communication as SM, and inform examinee that the task is complete.

TIME FINISH: \_\_\_\_\_

**Terminating Cue:**

**SRM "D" declared INOP. Determination made that the scheduled control rod blade may NOT proceed as planned.**

**Evaluator Comments:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SYSTEM: 215004 Source Range Monitor (SRM) System  
A4. Ability to manually operate and/or monitor in the  
control room: A4.07 Verification of proper functioning/ operability (3.4/ 3.6)

## **EXAMINEE HANDOUT**

### **Initial Conditions:**

- The plant is refueling
- Core Alterations commenced 4 days ago
- SRM "B" is out of service for detector replacement
- The Daily Neutron Response Check required by OPST-4102 REFUEL OUTAGE/FUEL MOVEMENT PERIODIC TESTS, Section 8.3, Attachment 7 (Section C) has just been completed.
- The next scheduled core alteration is to remove the blade for control rod 26-27

### **Initiating Cues:**

Review the results of the Daily Neutron Response Check provided

- Determine which SRMs are operable
- Determine if the scheduled Core Alteration can commence.
- Justify your responses.

**ATTACHMENT 7- SRM RESPONSE CHECK**

**SECTION A**

SRM Channel	Detector Core Position	DETECTOR TYPE (Indicate One Per SRM Channel)	
		Dunking Chamber	Standard SRM Detector
A			
B			
C			
D			

**SECTION B** (Fill out: Prior to initiating core alterations or following movement of dunking chambers or following a change in input to an SRM channel.)

SRM Channel	(1) Detector IN-CORE [Counts/sec]	(2) Detector OUT-OF-CORE [Counts/Sec]	(3) S/N Ratio S/N = $\frac{\text{Item}(1)-\text{Item}(2)}{\text{Item}(2)}$	CHANNEL OPERABILITY (Yes or No)
A				
B				
C				
D				

**SECTION C** (Fill out daily during core alterations).

SRM Channel	Initial Reading	Selected Control Rod	Two Rod Interlock Test Done	SRM Reading	Rod/Detector Out or Assembly In/Out	Channel Response (Yes or No)
A	20 CPS	-----	-----	12 CPS	Rod/Detector/Assembly	YES
C	18 CPS	-----	-----	6 CPS	Rod/Detector/Assembly	YES
B	OOS	-----	-----	OOS	Rod/Detector/Assembly	NO
D	18 CPS	-----	-----	18 CPS	Rod/Detector/Assembly	NO

**ACCEPTANCE CRITERIA:**

1. The SRM reads a minimum of 3 counts per second. (Section B)
2. The signal to noise ratio of the SRM is at least 3.0. (Section B)
3. Response in each channel (by movement of an adjacent control rod, a nearby fuel assembly, or detector) verified. (Section C)

Performed By: \_\_\_\_\_ / Today \_\_\_\_\_  
Operator (Print/Sign) Date

S/N Ratio independently verified by: \_\_\_\_\_ / \_\_\_\_\_  
[PS 5.2.6] Operator (Print/Sign) Date

Evaluated By: \_\_\_\_\_ / \_\_\_\_\_  
Shift Technical Advisor (Print/Sign) Date

Reviewed By: \_\_\_\_\_ / \_\_\_\_\_  
Shift Manager (Print/Sign) Date

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Review Completed Surveillance and Take Action for Out of Spec Data  
Failure Mode: N/A  
Reference: OPST-RHR-4124-09A, "RHR Loop A Valve Operability Test," Rev. 03  
Task Number: 3420260302/3

**Task Performance:**

AO/RO/SRO \_\_\_ RO/SRO Only \_\_\_ SRO Only X

Time Critical: Yes \_\_\_ No X

Individual Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_ Performance X Discuss \_\_\_

Setting: Classroom X Simulator \_\_\_ Plant \_\_\_

Performance Expected Completion Time: 18 minutes

Evaluation Results:

Performance: PASS \_\_\_ FAIL \_\_\_ Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_ Date \_\_\_\_\_  
Operations Training Instructor

Reviewed by: \_\_\_\_\_ Date \_\_\_\_\_  
SRO Licensed/Certified Reviewer

Approved by: \_\_\_\_\_ Date \_\_\_\_\_  
Operations Training Supervisor

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

After providing the initiating cue, ask the individual "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **Plant** and you are to **simulate** the actions.

You are requested to **"talk-through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

The "RHR Loop A Valve Operability Test," has been submitted to you for review and signature.

**Initiating Cues:**

Perform SRO Review per section 12.4.

**Task Standards:**

OOS open and closure time for RHR-65A and open time for RHR-27A valve noted on surveillance;  
7-day LCO identified per TS 3.5.A.4

**Required Materials:**

- OPST-RHR-4124-09A, "RHR Loop A Valve Operability Test," Rev. 03 (with sections 8.0 - 12.3 filled out with initials and signatures)
- OPST-RHR-4124-09A, Attachment 1 – RHR LOOP A VALVE TEST RESULTS (Student Hand out filled in with time data and visual Observations filled out)
- VY Technical Specifications

**Simulator Setup: N/A**



**Evaluation**

**Performance Steps**

TIME START: \_\_\_\_\_

**SAT/UNSAT**      **Step 1:**      **Obtain completed procedure OPST-RHR-4124-09A, "RHR Loop A Valve Operability Test," Rev. 03 (with attachment 1)**

Standard:      Filled out OPST-RHR-4124-09A, obtained and reviewed

---

Interim Cue:      Provide completed OPST-RHR-4124-09A, "RHR Loop A Valve Operability Test," Rev. 03 (with sections 8.0 - 12.3 filled out)  
Provide completed OPST-RHR-4124-09A, Attachment 1 – RHR LOOP A VALVE TEST RESULTS (Hand out)

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**SAT/UNSAT**      **Step 2:**      **Verify all data, initial and signature blocks are complete.**

Standard:      Reviews body of procedure as well as attachment 1- test results.

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**SAT/UNSAT**      **Step 3:**      **Verifies personal performing activities are recorded.**

Standard:      Reviews section 12.1.1

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**SAT/UNSAT**      **\*Step 4:**      **Reviews Acceptance Criteria met in Section 11.0**

Standard:      RHR-65A slow open time fails Acceptance Criteria 11.1

---

**SAT/UNSAT**      **\*Step 5:**      **Reviews Acceptance Criteria met in Section 11.0**

Standard:      RHR-65A slow closure time fails Acceptance Criteria 11.1

---

**SAT/UNSAT**      **\*Step 6:**      **Reviews Acceptance Criteria met in Section 11.0**

Standard:      RHR-27A slow open time fails Acceptance Criteria 11.1

---

**SAT/UNSAT**      **Step 7:**      **Notify SM**

Standard:      Informs SM that RHR-65A exceeded maximum open and closure time, RHR-27A has exceeded its maximum open time.

---

Interim Cue:      Acknowledge communication as SM.

---

**SAT/UNSAT**      **Step 8:**      **Initiate a CR and WR**

Standard:      Operator informs SM of the need to initiate a CR and WR

---

Interim Cue:      Acknowledge communication as SM. If necessary, cue the operator that another person will initiate the CR and WR

---

**SAT/UNSAT**      **Step 9:**      **Record in section 12.3, remarks.**

Standard:      Operator documents in section 12.3 that RHR – 65A has exceeded its maximum open and closing time, RHR-27A has exceeded its maximum open time.

---

**SAT/UNSAT**      **Step 10:**      **Refer to Technical Specifications Section 3.5**

Standard:      Locates 3.5.A.4 as the applicable specification.

---

Interim Cue:      If necessary, cue operator to identify any applicable Technical Specifications and LCO's

**Evaluation**      **Performance Steps**

**SAT/UNSAT**      **\*Step 11:**      **Identifies 7-day LCO**

Standard:      Seven-day LCO per TS 3.5.A.4 identified

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Interim Cue:      If the candidate states that a Condition Report will determine operability, CUE the candidate that Engineering has responded that RHR-27A will NOT pass full flow within 24 seconds and will not meet its design function.

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**SAT/UNSAT      Step 12:      Ensure results are entered in control room log book.**

Standard:      Operator informs SM of the need to enter information in control room logbook.

---

Interim Cue:      Acknowledge communication as SM. If necessary, cue the operator that another person will initiate enter the information and the control room logbook.

---

**SAT/UNSAT      Step 13:      Record date and time SRO review complete.**

Standard:      Operator completes step 12.4.7

TIME FINISH: \_\_\_\_\_

**Terminating Cue:      RHR-65A open and closure time and RHR-27A open time identified as OOS and correct LCO entered.**

**Evaluator Comments:** \_\_\_\_\_

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## EXAMINEE HANDOUT

### **Initial Conditions:**

The “RHR Loop A Valve Operability Test,” has been submitted to you for review and signature.

### **Initiating Cues:**

Perform the IST per section 12.2 and SRO Review per section 12.4.

VERMONT YANKEE NUCLEAR POWER CORPORATION  
JOB PERFORMANCE MEASURE  
WORKSHEET

**Task Identification:**

Title: Determine the Radiological Protection Requirements for Entering a Locked High Radiation Area.  
Failure Mode: N/A  
Reference: EN-RP-101, "Access Control for Radiologically Controlled Areas"  
Task Number: 2990100301

**Task Performance:** AO/RO/SRO \_\_\_\_\_ RO/SRO X SRO Only \_\_\_\_\_

Time Critical: Yes \_\_\_ No X

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_\_\_ Performance X Discuss \_\_\_\_\_

Setting: Classroom X Simulator \_\_\_\_\_ Plant \_\_\_\_\_

Performance Expected Completion Time: 9 minutes

Evaluation Results:

Performance: PASS \_\_\_\_\_ FAIL \_\_\_\_\_ Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
NRC Exam Lead Developer Date

Reviewed by: \_\_\_\_\_  
Operations Representative Date

Approved by: \_\_\_\_\_  
Facility Reviewer Date

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "SAT" or "UNSAT". Comments are required for any "UNSAT" classification. If a step is preceded by an asterisk (\*), it is a critical step. **If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.**

After providing the initiating cue, ask the operator "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **classroom** and you are to **perform** the actions.

You are requested to **"talk through"** the JPM, stating the indications/parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

- The plant is at 100% power.
- HPCI-16 is closed and needs to be manually re-opened

**Initiating Cues:**

- For the given scenario and RWP Index provided, determine the following:
  - Which type of radiologically controlled area entry is required?
  - Which RWP is to be used for the entry
  - Which RWP task is to be used for the entry?
  - What are the dose alarm setpoint for the entry?
  - What is the dose rate alarm setpoint for the entry?

**Task Standards:**

- The answers to the initiating cues have been provided.

**Required Materials:**

- RWP Index
- RWP 2013-0053, all tasks
- RWP 2013-0002, all tasks
- Survey map of the Steam Tunnel.

**Simulator Set-Up:**

- N/A

**Provide operator with Initial Conditions/Cue (Last Page of this JPM).**



**Evaluation**                      **Performance Steps**

TIME START: \_\_\_\_\_

**SAT/UNSAT**                      **\* Step 1:**                      **Operator reviews Steam Tunnel radiological survey map to determine the type of radiologically controlled area.**

Standard:                      The operator reviews the radiological survey map of the Steam Tunnel and determines an entry in the Locked High Radiation Area (LHRA).

**SAT/UNSAT**                      **\* Step 2:**                      **Operator reviews RWP Index to determine the required RWP.**

Standard:                      The operator reviews the index and determines that the Steam Tunnel is listed under RWP 2013-0053.

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Evaluator Cue:                      When asked, provide the Operator with a copy the RWP Index.

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Evaluator Cue:                      When asked, provide the Operator with a copy RWP 2013-0053.  
**IF RWP 2013-0002 (Operations Activities) is requested, provide RWP 2012-0002**

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**SAT/UNSAT**                      **\*Step 3:**                      **Operator reviews the RWP and determines the task number for which he/she will enter under.**

Standard:                      The operator reviews the RWP and determines that task number 207 applies to the Steam Tunnel entry.

**SAT/UNSAT**                      **\*Step 4:**                      **Operator reviews the RWP and task and determines Dose Alarm setpoint**

Standard:                      The operator determines that the ED dose alarm setpoint is 80 mrem

**SAT/UNSAT**                      **\*Step 5:**                      **Operator reviews the RWP and task and determines Dose Rate alarm setpoint**

Standard:                      The operator determines that the dose rate alarm setpoint is 1,500 mrem/hr.

TIME FINISH: \_\_\_\_\_

**Terminating Cue:                      Answers to the questions have been provided to the evaluator.**

**Evaluator Comments:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**EXAMINEE HANDOUT**

**Initial Conditions:**

- The plant is at 100% power.
- HPCI-16 is closed and needs to be manually re-opened

**Initiating Cues:**

- For the given scenario and RWP Index provided, determine the following:
  - Which type of radiologically controlled area entry is required?
  - Which RWP is to be used for the entry
  - Which RWP task is to be used for the entry?
  - What are the dose alarm setpoint for the entry?
  - What is the dose rate alarm setpoint for the entry?

1. Which type of radiologically controlled area entry is required: \_\_\_\_\_
2. Which RWP is the operator entering under? **RWP #:** \_\_\_\_\_
3. Which RWP task number is the operator entering under? **Task #:** \_\_\_\_\_
4. Electronic Dosimeter (ED) Dose Alarm setpoint: \_\_\_\_\_
5. Electronic Dosimeter (ED) Dose Rate alarm setpoint: \_\_\_\_\_

VERMONT YANKEE NUCLEAR POWER CORPORATION  
JOB PERFORMANCE MEASURE  
WORKSHEET

**Task Identification:**

Title: Classify an event and complete event notification form.  
Failure Mode: N/A  
Reference: AP 3125, Emergency Plan Classification and Action Level Scheme, rev. 23  
Task Number: 3447040302/03

**Task Performance:**

AO/RO/SRO \_\_\_\_\_ RO/SRO \_\_\_\_\_ SRO Only X

Time Critical: Yes X No \_\_\_\_\_

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_\_\_ Performance X Discuss \_\_\_\_\_

Setting: Classroom \_\_\_\_\_ Simulator \_\_\_\_\_ Plant X

Performance Expected Completion Time: 20 minutes

Evaluation Results:

Performance: PASS \_\_\_\_\_ FAIL \_\_\_\_\_

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

Prepared by: \_\_\_\_\_  
NRC Exam Lead Developer

\_\_\_\_\_  
Date

Reviewed by: \_\_\_\_\_  
Operations Representative

\_\_\_\_\_  
Date

Approved by: \_\_\_\_\_  
Facility Reviewer

\_\_\_\_\_  
Date

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for them to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "SAT" or "UNSAT". Comments are required for any "UNSAT" classification. If a step is preceded by an asterisk (\*), it is a critical step. **If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.**

After providing the initiating cue, ask the operator "Do you understand the task?" State to the candidate: **THIS JPM IS TIME CRITICAL**

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **classroom** and you are to **perform** the actions.

You are requested to **"talk through"** the JPM, stating the indications/parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

- The plant is shutdown in mode 4, preparing for a refueling outage.
- A loss of all on-site and all off-site AC power has just occurred.
- The operating crew is taking actions to mitigate the event.
- The first power source is not expected to be available for another 20 minutes.

**Initiating Cues:**

The Shift Manager has assigned you to classify the event IAW AP 3125, Emergency Plan Classification and Action level scheme and fill out Attachment 9 of EPOP-CR-3540 'Emergency Classification and PAR Notification / Upgrade Instructions and Form'

State to the candidate: **THIS JPM IS TIME CRITICAL**

**Task Standards:**

- The operator has classified an Alert within 15 minutes from initial conditions and completes the event notification form within the next subsequent 13 minutes.

**Required Materials:**

- AP 3125, Emergency Plan Classification and Action level scheme, Rev. 23
- EPOP-CR-3540, Control Room Actions during an Emergency, Rev. 00

**Evaluation**

**Performance Steps**

Provide operator with Initial Conditions/Cue (Last Page of this JPM).

TIME START: \_\_\_\_\_

**SAT/UNSAT**      **Step 1:**      **Obtain AP 3125, Emergency Plan Classification and Action Level Scheme.**

Standard:      Obtains AP 3125 and reviews step 4.1

---

Interim Cue:      Provide the operator with a copy of AP 3125, Emergency Plan Classification and Action Level Scheme.

---

**SAT/UNSAT**      **Step 2:**      **Operator refers to Appendix A for Cold Conditions.**

Standard:      The operator refers to Appendix A. (Page 2 of 2)

---

Evaluator Note:      Appendix "A", Page 1 of 2 is for hot conditions.

---

**SAT/UNSAT**      **\* Step 3:**      **Operator Classifies event.**

Standard:      The operator identifies an Alert, code CA1.1 within 15 minutes of being provided initial conditions.

TIME : \_\_\_\_\_

---

**SAT/UNSAT**      **Step 4:**      **Operator Implements EPOP-CR-3540, Attachment 9.**

Standard:      The operator refers to Attachment 9.

---

---

**SAT/UNSAT**      **\*Step 5:**      **Operator records time of EAL declaration and EAL on Attachment 9 Form, Section A1.**

Standard:      Operator records EAL declaration time and EAL on Notification Form Block A1.

---

**SAT/UNSAT**      **\*Step 7:**      **Operator records Plant Conditions in Section B**

Standard:      Operator checks 'shut down' box in Section B.

---

**SAT/UNSAT**      **\*Step 8:**      **Operator records Radiological Conditions in Section C.**

Standard:      Operator checks 'Has not occurred' box in Section C

---

**SAT/UNSAT**      **\*Step 9:**      **Operator records Meteorological Conditions in Section D.**

Standard:      Operator determines 12.61 mph and 1.7 degrees using met data handout and records in Section D.

---

**SAT/UNSAT**      **\*Step 10:**      **Operator records PAR recommendations in Section E.**

Standard:      Operator checks 'None' box in Section E.

---

**SAT/UNSAT**      **\*Step 10:**      **Operator signs as preparer in Section II.**

Standard:      Operator signs in Section II.

TIME: \_\_\_\_\_ (form to be completed < 13 minutes from event classification)

---

**\*Critical Step**

TIME FINISH: \_\_\_\_\_

**Terminating Cue:**      **The event has been classified and the Event Notification Form has been completed.**

**Evaluator Comments:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**EXAMINEE HANDOUT**

**Initial Conditions:**

- The plant is shutdown in mode 4, preparing for a refueling outage.
- A loss of all on-site and all off-site AC power has just occurred.
- The operating crew is taking actions to mitigate the event.
- The first power source is not expected to be available for another 20 minutes.

**Initiating Cues:**

The Shift Manager has assigned you to classify the event IAW AP 3125, Emergency Plan Classification and Action level scheme and fill out Attachment 9 of EPOP-CR-3540 'Emergency Classification and PAR Notification / Upgrade Instructions and Form'

**THIS JPM IS TIME CRITICAL**

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Startup the Turbine to Rated Speed  
Failure Mode: Turbine develops Hi Vibration during startup  
Reference: OP 0105 Reactor Operations  
Task Number: 2450020101

**Task Performance:**

AO/RO/SRO \_\_\_ RO/SRO X SRO Only

Time Critical: Yes \_\_\_ No X

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_ Performance X Discuss \_\_\_

Setting: Classroom \_\_\_ Simulator X Plant \_\_\_

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS \_\_\_ FAIL \_\_\_ Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
Operations Training Instructor Date

Reviewed by: \_\_\_\_\_  
SRO Licensed/Certified Reviewer Date

Approved by: \_\_\_\_\_  
Operations Training Supervisor Date

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for the candidate to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

A Plant Startup in progress. Reactor pressure is 950 psig. Main Turbine is on the Turning Gear. OP 0105 Phase 3, actions have been completed satisfactorily through Phase B, step 6. Generator H<sub>2</sub> pressure is normal and does not need charging. The Generator Core Monitor is in service. The turbine is "hot" with 1<sup>st</sup> stage shell temperature > 350°F.

**Initiating Cues:**

The CRS directs you to startup the Main Turbine to rated speed in preparation for synchronization in accordance with OP 0105 Phase 3B starting at step 7.

**Task Standards:**

The Main Turbine has been tripped following a Hi Vibration IAW ARS 7-F-2.

**Required Materials:**

OP 0105 Reactor Operations, Revision 96, Phase 3 completed thru step 3B 6

VYOPF 0105.05, Reactor and Generation Systems Heatup to Low Power Check Sheet completed through end of Phase 3 Phase B, step 6. (Examinee Handout)

ARS 21005, CRP 9-7 Alarm Response Sheets, Revision 23. (7-F-2)

**Simulator Setup:**

IC-827, Plant at power with 1 ½ bypass valves open, Turbine on jacking gear, chest warming complete, ready to bring the turbine up to speed.  
OP 0105 completed through Phase 3 B step 6.

MALF Bearing 5, 6, 7 VIB 100%, 300SEC Ramp (mFTU\_03E-G; Key 1)

The Simulator malfunction for Main Turbine Hi Vibration is on standby waiting for cue from evaluator or trigger when Main Turbine Reaches 200 and 300 RPM. Malfunction must have severity to exceed 10 mils on bearings 5, 6 and 7.

Post turbine trip enter mFTU 03E-G at 0%; Key 2

Ensure the following:

- Open 1T ATB and 81-1T ATB and close T1-MOD
- Select and display or trend computer point ID T039 and T040
- On CRP 9-7 bypass vibration trips by placing TURBINE VIB BYP SW-110-10 switch to the BYPASS position.
- Place the manual selector for EXH HOOD SPRAY C-FCV-5 in the AUTO position (9-23).
- Ensure annunciator STOP/CTRL VLV FAST CLOSURE BYP (5-K-8) is alarmed.

**Evaluation**

**Performance Steps**

TIME START: \_\_\_\_\_

---

NOTE: All actions performed at CRP 9-7 unless otherwise noted.

---

**SAT/UNSAT**

**Step 1:** **Obtain Procedure OP 0105 Phase 3.**

Standard: OP 0105 Phase 3 obtained, admin limits and precautions reviewed.

---

Examiner note:

Give the operator VYOPF 0105.05 at this time.

---

**SAT/UNSAT**

**\*Step 2:** **Slowly open control valves with the LOAD LIMITER to roll unit off the turning gear.**

Standard: LOAD LIMITER control is slowly increased until TURNING GEAR ENGAGED alarm clears, RPMs increase as indicated on CRP 9-7 display.

---

**SAT/UNSAT**

**Step 3:** **As soon as the unit rolls off turning gear: close the load limit Control to keep the speed from rising too fast.**

Standard: LOAD LIMITER control is decreased to close the control valves as indicated by control valve green lights on and red lights off.

---

**SAT/UNSAT**

**Step 4:** **Carefully listen for rubs or unusual noises.**

Standard: Operator directs the floor operator stationed at the turbine operating floor to listen for rubs or unusual noises.

---

Interim Cue:

Floor operator reports no unusual noises.

---

**SAT/UNSAT**

**Step 5:** **Correct any unstable intercept valve performance.**

Standard: Operator determines no unstable valve performance correction required by observing steady position indication.

---

**SAT/UNSAT**

**\*Step 6:** **Reopen load limit.**

Standard: LOAD LIMITER control is slowly increased to raise turbine speed.

**Evaluation**

**Performance Steps**

---

SAT/UNSAT

**\*Step 7:**      **Maintain the appropriate acceleration rate and load limit control position**

Standard:      Acceleration rate of 180 RPM per minute is not exceeded and load limit control position of 40% is not exceeded on POI-110-25.

---

SAT/UNSAT

**Step 8:**      **Monitor bearing temperatures periodically.**

Standard:      Operator periodically monitors turbine bearing temperatures during the startup on Recorder R 110-5/R-1 on CRP 9-23.

---

Evaluators Note:

At approximately 200 to 300 RPM (or when ready) cue simulator instructor to insert **MALF Bearing 5, 6, 7 VIB 100%, 300SEC Ramp.**

The operator may continue with the procedure until alarm 7-F-2 is received at which point the operator should stop the turbine startup and address the Hi Vibration Alarm.

---

SAT/UNSAT

**Step 9:**      **Obtain Procedure ARS 21005, Alarm 7-F-2, Hi Vibration Alarm**

Standard:      Procedure ARS 21005, Window 7-F-2, TURB EXCESSIVE VIBRATION is obtained.

---

SAT/UNSAT

**Step 10:**      **Check for causes and correct if possible.**

Standard:      Operator checks ERFIS Turbine Bearing Data display, Computer points W110 through W131, and Computer point T000. Operator may ask for local verification of vibration. Operator identifies cause #1 as Excessive vibration on main Turbine bearings 5, 6, and 7 exceeding the alarm setpoint.

---

Interim Cue:

If asked, the floor operator reports Hi vibration from the main turbine.

---

SAT/UNSAT

**Step 11:**      **Reduce Reactor power if approaching 10 mils.**

Interim Cue:      If the operator attempts to reduce reactor power, inform the operator that another operator will address lowering reactor power.

---

**Evaluation**

**Performance Steps**

---

**SAT/UNSAT**

**Step 12:**     **Determine if turbine trip criteria is present for > 25% RTP.**

Standard:     Operator determines that trip criteria are NOT met. Power is <25% and annunciator STOP/CTRL VLV FAST CLOSURE BYP (5-K-8) is alarmed.

---

**SAT/UNSAT**

**Step 13:**     **Determine if turbine trip criteria is present for < 25% RTP.**

Standard:     Operator determines that trip criteria are IS met. Power is <25%, annunciator STOP/CTRL VLV FAST CLOSURE BYP (5-K-8) is alarmed.

---

**SAT/UNSAT**

**\*Step 14:**     **Trip the Main Turbine.**

Standard:     Operator initiates a turbine trip by depressing the MTS-1 and MTS-2 pushbuttons. The Main Turbine indicates tripped.

---

Interim Cue:

Post trip actions will be performed by other operators. This concludes this JPM.

---

TIME FINISH: \_\_\_\_\_

**Terminating Cue:**

**The main turbine is tripped. Post trip actions will be performed by another operator.**

**Evaluators Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## EXAMINEE HANDOUT

### **Initial Conditions:**

A Plant Startup in progress. Reactor pressure is 950 psig. Main Turbine is on the Turning Gear. OP 0105 Phase 3, actions have been completed satisfactorily through Phase B, step 6. Generator H<sub>2</sub> pressure is normal and does not need charging. The Generator Core Monitor is in service. The turbine is "hot" with 1<sup>st</sup> stage shell temperature > 350°F.

### **Initiating Cues:**

The CRS directs you to startup the Main Turbine to rated speed in preparation for synchronization in accordance with OP 0105 Phase 3B starting at step 7.

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Open the MSIVs after a Group I Isolation  
Failure Mode: N/A  
Reference: OP 2113, "Main and Auxiliary Steam," Rev. 34  
Task Number: 2000030501

**Task Performance:**

AO/RO/SRO \_\_\_ RO/SRO Only X STA Only \_\_\_

Time Critical: Yes \_\_\_ No X

Individual Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_ Performance X Discuss

Setting: Classroom \_\_\_ Simulator X Plant \_\_\_

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS \_\_\_ FAIL \_\_\_ Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_ Date \_\_\_\_\_  
Operations Training Instructor

Reviewed by: \_\_\_\_\_ Date \_\_\_\_\_  
SRO Licensed/Certified Reviewer

Approved by: \_\_\_\_\_ Date \_\_\_\_\_  
Operations Training Superintendent

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for the candidate to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

After providing the initiating cue, ask the individual "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **Simulator** and you are to **perform** the actions.

You are requested to **"talk-through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

A Group 1 isolation occurred five minutes ago, due to early rolling of the mode switch. OT 3100, Scram procedure has been carried out, mode switch is in shutdown. The Group 1 ISOL has been reset. Initiating signals are clear.

**Initiating Cues:**

The Shift Manager has determined that the MSIVs need to be reopened. The CRS has directed you to re-open the MSIVs in accordance with OP 2113, Main and Auxiliary Steam, starting at step 5.i. Steps 5a through 5h were successfully performed by another operator. RPV pressure is being controlled with the SRVs between 800 and 1000 psig by another operator.

**Task Standards:**

MSIVs reopened in accordance with OP 2113, "Main and Auxiliary Steam"

**Required Materials:**

OP 2113, "Main and Auxiliary Steam" Revision 34

**Simulator Setup:**

IC 828

Complete OT 3100 actions including the MODE Switch to SHUTDOWN

Control pressure using SRVs 800-900 psig using the simulator soft panels.

Place each MSIV control switch to the CLOSE position.

Place Sample Isolation RV-39 control switch to CLOSE.

Place Sample Isolation RV-40 control switch to CLOSE.

Ensure condenser vacuum has recovered to > 12 HgA

On CRP 9-5, verify PCIS SYS 1 and SYS 2 RESET PERMISSIVE lights are energized.

Reset the Group 1 isolation by positioning the GRP 1 ISOL RESET switch (CRP 9-5) to the INBD and OUTBD positions.

**Evaluation**

**Performance Steps**

TIME START: \_\_\_\_\_

**SAT/UNSAT**

**Step 1:**      **Obtain Procedure OP 2113 and review Admin Limits, Precautions, and Prerequisites**

Standard:      OP 2113 obtained, Admin Limits, Precautions, and Prerequisites reviewed

Interim Cue:

Inform Operator that all prerequisites are completed satisfactory.

NOTE:

Operator should begin at step 5.i, Re-opening the MSIVs following a PCIS Group 1 Isolation

**SAT/UNSAT**

**\*Step 2:**      **Open the outboard MSIVs by placing their control switched to the AUTO OPEN position.**

Standard:      On CRP 9-3, places the following control switches to AUTO/OPEN:

\_\_\_\_\_ MS-86A  
\_\_\_\_\_ MS-86B  
\_\_\_\_\_ MS-86C  
\_\_\_\_\_ MS-86D

On CRP 9-3, verifies MS-86A through 86D are open by observing red light ON, green light OFF

**SAT/UNSAT**

**\*Step 3:**      **To equalize the upstream and downstream pressures:**  
**1) Open Stm Line Drain MS-74**

Standard:      On CRP 9-3, places MS-74 control switch to OPEN and observes MS-74, red light ON, green light OFF

**SAT/UNSAT**

**\*Step 4:**      **2) Open Stm Line Drain MS-77**

Standard:      On CRP 9-3, places MS-77 control switch to OPEN and observes MS-77, red light ON, green light OFF

Evaluation

Performance Steps

---

SAT/UNSAT

**\*Step 5:**      **3) Open Stm Line Drain MS-78**

Standard:      On CRP 9-3, places MS-78 control switch to OPEN and observes MS-78 red light ON, green light OFF

---

SAT/UNSAT

**Step 6:**      **If the bypass valves open, raise the setpoint of the turbine pressure regulator which is in service until the bypass valves shut.**

Standard:      On CRP 9-7, verifies bypass valves BV1 - BV10 indicate shut, by verifying green lights ON, red lights OFF for the ten bypass valves or observing the position meter for bypass valve number 1, or the white lights on for all three pressure regulators.

---

SAT/UNSAT

**Step 7:**      **If the MSIVs have been closed for 30 minutes or more:**

Standard:      Determines how long the MSIVs have been closed by asking the SM/CRS.

---

Interim Cue:

If asked, the MSIVs have been shut for only 10 minutes

---

SAT/UNSAT

**\*Step 8:**      **When RX PRESS PI 2-3-56A(B) and MAIN STEAM PRESSURE PI-101-2 pressures are within 50 psig, open the inboard MSIVs.**

Standard:      Using PI-2-3-56A or B (on CRP 9-5), and PI-101-2 (on CRP 9-7), monitors steam pressure indications and determines when they are within 50 PSIG.

At CRP 9-3, Operator places the following control switches to AUTO-OPEN:

\_\_\_\_\_ MS-80A  
\_\_\_\_\_ MS-80B  
\_\_\_\_\_ MS-80C  
\_\_\_\_\_ MS-80D

Operator observes red light ON, green light OFF for MS-80A through 80D

---

**Evaluation**

**Performance Steps**

---

**SAT/UNSAT**

**Step 9:**

**When the inboard MSIVs are open:**

**1) Close Stm Line Drain MS-74**

Standard:

On CRP 9-3, places MS-74 control switch to CLOSE and observes MS-74 red light OFF, green light ON

---

**SAT/UNSAT**

**Step 10:**

**2) Close Stm Line Drain MS-77**

Standard:

On CRP 9-3, places MS-77 control switch to CLOSE and observes MS-77 red light OFF, green light ON

---

**SAT/UNSAT**

**Step 11:**

**3) Close Stm Line Drain MS-78**

Standard:

On CRP 9-3, places MS-78 control switch to CLOSE and observes MS-78 red light OFF, green light ON

---

TIME FINISH: \_\_\_\_\_

**Terminating Cue: Inboard and Outboard MSIVs Open**

**Evaluators Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## EXAMINEE HANDOUT

### **Initial Conditions:**

A Group 1 isolation occurred five minutes ago, due to early rolling of the mode switch. OT 3100, Scram procedure has been carried out, mode switch is in shutdown. The Group 1 ISOL has been reset. Initiating signals are clear.

### **Initiating Cues:**

The Shift Manager has determined that the MSIVs need to be reopened. The CRS has directed you to re-open the MSIVs in accordance with OP 2113, Main and Auxiliary Steam, starting at step 5.i. Steps 5a through 5h were successfully performed by another operator. RPV pressure is being controlled with the SRVs between 800 and 1000 psig by another operator.

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Manually Start HPCI and Inject to the Vessel  
Failure Mode: Failure of Automatic Flow Controller  
Reference: OP 2120, High Pressure Coolant Injection System, Rev. 62  
Task Number: 2060050101

**Task Performance:**

AO/RO/SRO \_\_\_ RO/SRO Only X SRO Only \_\_\_

Time Critical: Yes \_\_\_ No X

Individual Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation \_\_\_ Performance X Discuss \_\_\_

Setting: Classroom \_\_\_ Simulator X Plant \_\_\_

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS \_\_\_ FAIL \_\_\_ Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
Operations Training Instructor

\_\_\_\_\_  
Date

Reviewed by: \_\_\_\_\_  
SRO Licensed/Certified Reviewer

\_\_\_\_\_  
Date

Approved by: \_\_\_\_\_  
Operations Training Superintendent

\_\_\_\_\_  
Date

### **Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for the candidate to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

After providing the initiating cue, ask the individual "Do you understand the task?"

### **Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **Simulator** and you are to **perform** all actions.

You are requested to **"talk-through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.  
Inform me upon completion of this task.

### **Initial Conditions:**

A malfunction has occurred in the Feedwater System, resulting in a reactor scram on low level. Plant parameters are being controlled IAW EOP-1.

### **Initiating Cues:**

The CRS has directed you to place HPCI in pressure control and inject with HPCI to restore / maintain RPV level 127 to 177 inches IAW OP 2120, Appendix D.

### **Task Standards:**

HPCI is started and injecting with level control in MANUAL.

### **Required Materials:**

OP 2120, High Pressure Coolant Injection System, revision 62

### **Simulator Setup:**

- IC 829
- Secure feedwater pumps at time of scram
- Take initial actions for scram at CRP 9-5
- Allow plant conditions to stabilize below 127 and above 90 inches.
- Insert mfHP\_04 to 0% (HPCI Flow Controller failure) when the AUX OIL PUMP, P-85-1A, is started in step #10.

**Evaluation**

**Performance Steps**

TIME START: \_\_\_\_\_

**SAT/UNSAT**

**Step 1:**      **Obtain OP 2120 Appendix D and review procedure**

Standard:      Operator obtains Appendix D and reviews requirements

---

Interim Cue:

If asked, all pre-requisites are met.

---

**SAT/UNSAT**

**\*Step 2:**      **Open TEST RETURN HPCI-24**

Standard:      Operator opens HPCI-24 fully.

---

**SAT/UNSAT**

**Step 3:**      **Close/check closed PUMP DISCHARGE HPCI-19**

Standard:      Operator verifies using valve light indication that HPCI-19 is closed.

---

**SAT/UNSAT**

**Step 4:**      **Throttle open FULL FLOW TEST HPCI 21 8-10 seconds**

Standard:      Operator holds the control switch for HPCI-21 to OPEN for 8-10 seconds.

---

**SAT/UNSAT**

**Step 5:**      **Start HPCI GL SL VAC FN-2-1A**

Standard:      Operator takes HPCI Gland Seal Vacuum Pump control switch to START and observes Red light ON, Green light OFF above HPCI Gland Seal Vacuum Pump control switch.

---

**SAT/UNSAT**

**Step 6:**      **Verify both trains of SBT start**

Standard:      Operator checks SBT fan and flow indication to verify both SBTs are running.

**Evaluation**

**Performance Steps**

---

SAT/UNSAT

**Step 7:**      **Open MINIMUM FLOW HPCI-25**

Standard:      Operator takes control switch for HPCI-25 to OPEN and verifies HPCI-25 is open by observing Red light ON, Green light OFF above control Switch.

---

SAT/UNSAT

**\*Step 8:**      **Open STEAM SUPPLY HPCI 14**

Standard:      Operator takes the HPCI-14 control switch to OPEN and verifies HPCI-14 is open by observing Red light ON, Green light OFF above control switch.

---

SAT/UNSAT

**Step 9:**      **Verify that STM LINE DRAIN HPCI-42 and HPCI-43 close.**

Standard:      Operator verifies that HPCI-42 and HPCI-43 close by observing Green lights ON, Red lights OFF above valve control switches

---

SAT/UNSAT

**\*Step 10:**      **Start AUX OIL PUMP P-85-1A and monitor SI 23-2 TURBINE SPEED.**

Standard:      Operator places HPCI Aux Oil Pump in START and verifies HPCI Aux Oil Pump running by observing Red light ON, Green light OFF above control switch.

Operator monitors turbine speed at CRP 9-3 on SI-23-2

---

Evaluator Note:

Ensure that simulator instructor inserts simulator malfunction, **mfHP\_04 to 0%** (HPCI Flow Controller failure) when the AUX OIL PUMP, P-85-1A, is started.

---

SAT/UNSAT

**Step 11:**      **As flow increases above 800 gpm, verify that MINIMUM FLOW HPCI-25 closes**

Standard:      Operator monitors speed and HPCI-25 position.

---

Evaluator Note:

Flow will not increase and HPCI-25 will not close due to HPCI flow controller failure.

---

**Evaluation**

**Performance Steps**

**SAT/UNSAT**      **\*Step 12:**      **Recognize failure of flow to increase; failure of auto flow controller**

Standard:      Operator recognizes that HPCI flow does not rise to the expected 4,000 gpm, and informs CRS

Interim Cue:      Acknowledge report as CRS. If asked for direction, direct Operator to inject as necessary to maintain 127 – 177 inches

**SAT/UNSAT**      **\*Step 13:**      **Place HPCI PUMP FLOW CONTROLLER FIC 23-108 in MANUAL.**

Standard:      Operator transfers the HPCI Pump Flow Controller to MANUAL.

Interim Cue:      If report of transfer to MANUAL made, acknowledge report as CRS.

**SAT/UNSAT**      **\*Step 14:**      **Control flow using the MANUAL knob.**

Standard:      Operator adjusts the manual potentiometer to raise turbine speed (>2200-4000 rpm) / pump flow rate.

**SAT/UNSAT**      **Step 15:**      **Monitor the following HPCI parameters:**

- \_\_\_\_\_ Exhaust Pressure (0-50 psig)
- \_\_\_\_\_ Suction Pressure (6-30 psig)
- \_\_\_\_\_ Steam Supply Pressure (150-1120 psig)
- \_\_\_\_\_ Turbine Speed (>2200-4000 rpm)
- \_\_\_\_\_ Discharge Pressure (<1250 psig)

Standard:      Operator monitors parameters on CRP 9-3 as indicated above

**SAT/UNSAT**      **\*Step 16:**      **Open PUMP DISCHARGE HPCI-19.**

Standard:      Operator takes HPCI-19 switch to open and throttles HPCI-21 as necessary to slowly raise level. Operator monitors PI 23-109 (Pump Discharge Pressure) and PI 23-109 (Steam Supply Pressure) for pressures indicative of HPCI injection.

RPV level is at or approaching 127 inches.

Interim Cue:      Once parameters are monitored, inform Operator that no further actions are required for this JPM.

**Evaluation**

**Performance Steps**

TIME FINISH: \_\_\_\_\_

**Terminating Cue: HPCI injecting into vessel with flow controller in MANUAL and RPV level rising.**

**Evaluator Comments:** \_\_\_\_\_

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## EXAMINEE HANDOUT

### **Initial Conditions:**

A malfunction has occurred in the Feedwater System, resulting in a reactor scram on low level. Plant parameters are being controlled IAW EOP-1.

### **Initiating Cues:**

The CRS has directed you to place HPCI in pressure control and inject with HPCI to restore / maintain RPV level 127 to 177 inches IAW OP 2120, Appendix D.

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Perform Local Firing of Squib Valves  
Failure Mode: Valve fails to fire initially  
Reference: OE 3107, Rev 29, OE Appendices, Appendix I  
Task Number: 20070705

**Task Performance:**

AO/RO/SRO X RO/SRO    SRO Only    AO Only   

Time Critical: Yes    No X

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Activity Code: \_\_\_\_\_

Method of Testing: Simulation X Performance    Discuss   

Setting: Classroom    Simulator    Plant X

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS    FAIL    Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
Operations Training Instructor Date

Reviewed by: \_\_\_\_\_  
SRO Licensed/Certified Reviewer Date

Approved by: \_\_\_\_\_  
Operations Training Superintendent Date

**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for the candidate to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

After providing the initiating cue, ask the individual: "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **Plant** and you are to **simulate** all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

Scram condition exists. The reactor is not shutdown, steps are being taken per EOP-2. Torus temperature is approaching 110°F and normal squib valve firing did not function. SLC keylock switch on CRP 9-5 is in OFF position.

**Initiating Cues:**

CRS directs you to assist them with Alternate SLC Injection by local firing of the squib valves using OE 3107, Appendix I starting at Step 4.b.

**Task Standards:**

SLC squib valve fired locally after identification of the failed squib valve in accordance with OE 3107, Appendix I.

**Required Materials:**

OE 3107, OE Appendices, Appendix I, Revision 29

**Evaluation**

**Performance Steps**

TIME START: \_\_\_\_\_

---

**SAT/UNSAT**

**Step 1:**      **Obtain the procedure, review prerequisites.**

Standard:      OE 3107 Appendix I obtained; prerequisites reviewed.

---

Interim Cue:

When asked, inform the operator that all the prerequisites are satisfied.

---

**SAT/UNSAT**

**\*Step 2:**      **Obtain the 1.5 VDC Squib valve firing battery available with an alligator clip on each end.**

Standard:      The 1.5 VDC Squib valve firing battery available with an alligator clip on each end.

---

Note:

EOP toolbox is not be opened for this JPM.

---

Interim Cue:

When the operator locates EOP Toolbox and indicates he will get battery firing device, inform him he has the battery firing device.  
All other prerequisites are satisfied.

---

**SAT/UNSAT**

**\*Step 3:**      **At SLC-14A(B): unscrew Amphenol connector from the squib valve**

Standard:      Squib Valve Amphenol connector removed from SLC-14A(B).

---

Interim Cue:

When the operator locates squib valve and describes method to remove connector, inform him that the Amphenol connector is disconnected.

---

**SAT/UNSAT**

**\*Step 4:**      **Clip one of the leads from the battery to Pin "A".**

Standard:      Jumper connected from battery terminal to Pin "A"; Pin "A" is the thicker pin (see Figure 1).

---

Interim Cue:

When the operator indicates he will clip one lead from the battery to Pin "A" (using Figure 1 if necessary), inform him that the lead is connected.

---

**Evaluation**

**Performance Steps**

---

**SAT/UNSAT**

**Step 5:**      **Touch the other battery lead to Pin “B” (next clockwise terminal).**

Standard:      Other lead from battery touched to Pin “B” (see Figure 1).

---

Interim Cue:

When the operator indicates he will touch the other lead to the next clockwise terminal, inform operator that no “pop” was heard when terminal B was contacted.

---

**SAT/UNSAT**

**\*Step 6:**      **If a “pop” is not heard, THEN change location of the battery leads to the other two pins: ie, “C” and “D”.**

Standard:      Location changed of the battery leads to Pin “C” and “D” (see Figure 1).

---

Interim Cue:

When the operator indicates he will touch the lead to the other terminal Pins ‘C’ and ‘D’, inform operator that a “pop” was heard when the last terminal was contacted.

---

**SAT/UNSAT**

**Step 7:**      **Remove the Battery.**

Standard:      Battery and leads unclipped from Amphenol terminals.

---

Interim Cue:

When the operator indicates he will remove the battery and leads, inform him they are removed.

---

**SAT/UNSAT**

**Step 8:**      **Turn SLC Switch (Keylock) to SYS 1 or SYS 2.**

Standard:      Contacts the Control Room to place the SLC switch (keylock) to SYS 1 or SYS 2.

---

Interim Cue:

When the operator indicates that he will call to place the SLC switch (keylock) to SYS 1 or SYS 2, inform operator that the CRO has placed the switch in SYS 1 and that they will perform the remainder of Appendix I.

---

TIME FINISH: \_\_\_\_\_

**Terminating Cue:**

**Squib Valve fired locally in accordance with OE 3107, Appendix I.**

**Evaluator Comments:** \_\_\_\_\_

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## EXAMINEE HANDOUT

### **Initial Conditions:**

Scram condition exists. The reactor is not shutdown, steps are being taken per EOP-2. Torus temperature is approaching 110°F and normal squib valve firing did not function. SLC keylock switch on CRP 9-5 is in OFF position.

### **Initiating Cues:**

CRS directs you to assist them with Alternate SLC Injection by local firing of the squib valves using OE 3107, Appendix I starting at Step 4.b.

**VERMONT YANKEE  
JOB PERFORMANCE MEASURE  
WORKSHEET**

**Task Identification:**

Title: Startup the "A" RPS MG Set  
Failure Mode: N/A  
Reference: OP 2134, "Reactor Protection System," Rev. 24  
Task Number: 2127040104 (AO) / 2127080101 (RO/SRO)

**Task Performance:** AO/RO/SRO X RO/SRO    SRO Only   

Time Critical: Yes    No X

Operator Performing Task: \_\_\_\_\_

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

Date of Evaluation: \_\_\_\_\_

Method of Testing: Simulation X Performance    Discuss   

Setting: Classroom    Simulator    Plant X

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS    FAIL    Time Required: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
Operations Training Instructor Date

Reviewed by: \_\_\_\_\_  
SRO Licensed/Certified Reviewer Date

Approved by: \_\_\_\_\_  
Operations Training Supervisor Date



**Directions:**

Discuss the information given on this page with the operator being evaluated. Allow time for the candidate to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (\*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the individual has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

**Read to the person being evaluated:**

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **Plant** and you are to **simulate** all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

**Initial Conditions:**

The "A" RPS MG set is being returned to service after brush replacement.  
There is an Operator waiting in the Control Room to assist you.

**Initiating Cues:**

The CRS directs you to startup the "A" RPS MG set per OP 2134 Section A starting at step A 3. Steps A 1 and A 2 has been successfully completed by another operator. Inform the CRS when the MG set is ready to be placed in service.

**Task Standards:**

"A" RPS M/G Set running, producing 118±1 volts.  
"A" RPS M/G Set output breaker shut.  
Power Panels A-1 and A-2 breakers shut.

**Required Materials:**

OP 2134, Reactor Protection System, revision 24

**Evaluation**                      **Performance Steps**

TIME START: \_\_\_\_\_

---

**SAT/UNSAT**                      **Step 1:**                      **Obtain Procedure, review administrative limits, precautions and prerequisites.**

Standard:                      OP 2134 obtained, administrative limits, precautions and prerequisites reviewed.

---

Interim Cue:                      If asked, all prerequisites have been met.

---

**SAT/UNSAT**                      **Step 2:**                      **Check MG 3-1A Output Breaker on local panel is OFF**

Standard:                      Checks position of MG Output Breaker, observes breaker in the OFF (Down) position

---

Interim Cue:                      When checked, inform Operator that breaker is in the OFF (Down) position.

---

**SAT/UNSAT**                      **Step 3:**                      **Check Circuit Breakers on RPS Power Protection Panels A1 and A2 are OFF**

Standard:                      Checks position of the RPS Power Protection Panel breakers, observes breakers in the OFF (Down) position

---

Interim Cue:                      When checked, inform Operator that breakers are in the OFF (Down) position.

---

**SAT/UNSAT**                      **\*Step 4:**                      **Depress the Motor ON Pushbutton on local control panel**

Standard:                      Simulates starting the "A" RPS MG Set by depressing the Motor ON pushbutton

---

Interim Cue:                      When simulated, inform Operator that the pushbutton has been depressed.

---

**Evaluation**                      **Performance Steps**

---

**SAT/UNSAT**                      **Step 5:**                      **Verify RPS MG Set "A" starting**

Standard:                      Verifies that "Motor On" red light is ON, and that MG Set is starting and coming up to speed

---

Interim Cue:                      When checked, inform Operator that the "Motor On" red light is ON, and that the MG Set has started and is coming up to speed.

---

**SAT/UNSAT**                      **Step 6:**                      **Check Output Voltage**

Standard:                      Checks MG Set output voltage on local panel "A-C Volts" meter after MG Set reaches normal operating speed

---

Interim Cue:                      When checked, inform Operator that output voltage indication has increased and presently indicates 119 volts.

---

**SAT/UNSAT**                      **\*Step 7:**                      **Close the M/G Set "A" Output Breaker**

Standard:                      Simulates positioning the output breaker to the CLOSED (Up) position

---

Interim Cue:                      When simulated, inform Operator that the breaker is in the CLOSED (Up) position.

---

**SAT/UNSAT**                      **Step 8:**                      **Request Maintenance to check M/G Output of 118 +/- 1 volts in RPS Power Protection Panel PPP-A-1**

Standard:                      Requests Maintenance to verify M/G Output of 118 +/- 1 volts in RPS Power Protection Panel PPP-A-1

---

Interim Cue:                      When requested, inform Operator that the MG Set output voltage is 117.8 volts as read on the portable calibrated meter.

---

**Evaluation**

**Performance Steps**

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**SAT/UNSAT**

**Step 9:**      **Check RPS Power Protection Panel PPP-A-1 POWER IN Light is ON**

Standard:      Checks "Power In, Motor Gen" red light ON on Panel PPP-A-1

---

Interim Cue:

When checked, inform Operator that "Power In, Motor Gen" red light ON

---

**SAT/UNSAT**

**\*Step 10:**      **Place Panel PPP-A-1 Output Breaker to OFF**

Standard:      Simulates placing breaker in OFF

---

Interim Cue:

When simulated placing breaker in OFF, inform Operator that breaker is in the OFF (Down) position

---

**SAT/UNSAT**

**\*Step 11:**      **Place Panel PPP-A-1 Output Breaker to ON**

Standard:      Simulates placing breaker in ON

---

Interim Cue:

When simulates placing breaker in ON, inform Operator that breaker is in the ON (Up) position

---

**SAT/UNSAT**

**Step 12:**      **Check that the POWER OUT light on Panel PPP-A-1 is ON**

Standard:      Checks that the POWER OUT light on PPP-A-1 is ON

---

Interim Cue:

When checked, inform Operator that the POWER OUT light on PPP-A-1 is ON

---

**SAT/UNSAT**

**Step 13:**      **Check Panel PPP-A-2 POWER IN light is ON**

Standard:      Checks "Power In" light on A-2 is ON

---

Interim Cue:

When checked, inform Operator that the "Power In" light is ON

---

**Evaluation**                      **Performance Steps**

---

**SAT/UNSAT**

**\*Step 14:**      **Place Panel PPP-A-2 Output Breaker to OFF**

Standard:      Simulates placing breaker to the OFF (Down) position

---

Interim Cue:

When simulated, inform Operator that breaker is in the OFF (Down) position

---

**SAT/UNSAT**

**\*Step 15:**      **Place Panel PPP-A-2 Breaker to ON**

Standard:      Simulates placing breaker to the ON (Up) position

---

Interim Cue:

When simulated, inform Operator that breaker is in the ON (Up) position

---

**SAT/UNSAT**

**Step 16:**      **Check that the POWER OUT light on Panel PPP-A-2 is ON**

Standard:      Checks that the POWER OUT light on PPP-A-2 is ON

---

Interim Cue:

When checked, inform Operator that the POWER OUT light on PPP-A-2 is ON

---

**SAT/UNSAT**

**Step 17:**      **Inform CRS that the "A" RPS MG Set is ready to be placed in service.**

Standard:      Makes report to CRS.

---

Interim Cue:

Acknowledge report as CRS, and inform Operator that another operator will place the MG Set in service

---

TIME FINISH: \_\_\_\_\_

**Terminating Cue:**      **"A" RPS MG Set started and ready to be placed in service (through Step A.11 of OP 2134)**

**Evaluators Comments:** \_\_\_\_\_

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## EXAMINEE HANDOUT

### **Initial Conditions:**

The "A" RPS MG set is being returned to service after brush replacement.  
There is an Operator waiting in the Control Room to assist you.

### **Initiating Cues:**

The CRS directs you to startup the "A" RPS MG set per OP 2134 Section A starting at step A 3. Steps A 1 and A 2 has been successfully completed by another operator. Inform the CRS when the MG set is ready to be placed in service.

Facility:	Vermont Yankee	Scenario No.:	1	Op Test No.:	2014301
Examiners:	_____	Operators:	_____	_____	_____
<p>Initial Conditions: 100% MOL Steady State conditions. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator. A &amp; F APRMs are bypassed. House Heating Boilers in service.</p>					
Turnover: Perform Turbine Oil Pump Test in accordance with OP 4160 section B, steps B.1.a and B.1.b					
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	N-BOP N-CRS	Perform Turbine Oil Pump Test IAW OP 4160		
2 KEY 1	mfRD_15 0%	I-RO I-CRS	Control Rod Drive flow controller fails low		
3 KEY 2	mfAD_09B	TS-SRO	RV-71B de-energized		
4 KEY 3	mfRR_07A 50% over 300 sec	C-ALL	A Recirc Pump # 1 Seal Failure		
KEY 4	mfRR_08A 15% over 800 sec.	C-RO C-SRO	A Recirc Pump # 2 Seal Failure		
	N/A	TS-SRO	Rapid load reduction – Single Loop Operation (TS)		
5 KEY5	mfRR_05B  mfRD12A 35% <b>Preinsert</b> mfRD12B 40% <b>Preinsert</b>	M-ALL	B Recirculation Pump Trip; Hydraulic ATWS		
	mfRP_09 A&B <b>Preinsert</b>	C-ALL	PCIS Group V Isolation Failure		
	mfSL_01 A or B	C-RO	Operating SLC Pump Trips 60 seconds after start		
	mfRD_01B		B CRD fails to start		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					



## **Scenario Summary**

The crew assumes the watch with the unit at 100% power. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator. A & F APRM's are bypassed. House Heating Boilers in service. The SRO will direct the BOP to Perform Turbine Oil Pump Test in accordance with OP 4160 section B.

After the performance of the Turbine Oil Pump test, the Control Rod Drive flow controller will fail low resulting in the in-service FCV throttling close. The RO will respond to typer alarms. Review CRD indications and diagnose the controller failure. The SRO will enter OPON-3145-01 Loss of CRD Regulating Function and direct the RO to place the CRD flow controller in manual and restore CRD flow.

Once CRD flow has been stabilized, the BOP will respond to annunciator 3-A-4, ADS Power Failure and determine that the position indicating lights for RV-71B are extinguished. The SRO will review Technical Specifications, determine that RV-71B is inoperable and enter TS LCO 3.5.F.2.

As a result of the CRD flow controller failure, the A Recirculation Pump #1 Seal will fail. The BOP will respond to seal indications and alarms and diagnose the failure of the #1 seal. The SRO will enter OPON-3142-01 and direct the BOP to increase monitoring of seal parameters. After the commencement of monitoring, the #2 seal will fail requiring the A Recirculation Pump to be shut down and the crew to conduct a rapid load reduction IAW OPOT-3118-01 Recirculation Pump Trip. The RO will insert control rods to lower reactor power to approximately 45%. The SRO will review Technical Specifications and enter TS LCO 3.6.G.1 for single loop operation.

After reactor power is reduced to between 40 to 45% and the B Recirculation pump speed is being lowered, the B Recirculation Pump will trip. The crew will recognize the need to manually scram the reactor. Manual scram will result in partial rod insertion and the SRO will direct insertion of control rods (Critical Task). With the reactor not shutdown, the SRO will direct the RO to inject boron using the standby liquid control system. The operating SLC pump will trip after 60 seconds and the RO will diagnose failure and start the remaining SLC Pump to re-establish boron injection. PCIS Group V valves (RWCU-15, 18, and 68) will fail to isolate. The RO will diagnose the failure and manually close the valves.

During the ATWS, conditions will be met to perform power/level control TERMINATE AND PREVENT INJECTION into the RPV using appendix GG, until conditions are met to re-establish injection (Critical Task).

The scenario will be terminated when all rods are inserted and RPV level is restored.

**CREW BRIEF:**

**-Power level: 100%**

**-Rod Sequence:                    Rapid Shutdown Sequence A2                    -Rod Group: 20**

**-Equipment out of service and/or tagged or abnormalities:**

1.     Cooling Towers
2.     Booster Pumps
3.     SBO EDG

**-Reason For Equipment out of Service or tagged:**

1.     Cooling Towers – Winter Operations
2.     Booster Pumps – Winter Operations
3.     SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator

**-Applicable Tech Spec LCOs:**

1.     NONE

**EOOS                    Color:                    Green**

**-Plant evolutions in progress/Scheduled Shift Evolutions:**

1.     Perform Turbine Oil Pump Test in accordance with OP 4160 section B, steps B.1.a and B.1.b

**SCENARIO SUMMARY:**

See ES-D-1 for summary

**TERMINATING CONDITION(S):**

1. All rods inserted
2. RPV Level restored and maintained between 127” and 177”

## SIMULATOR OPERATOR INSTRUCTIONS

### Simulator Set Up:

1. IC# 830, 100% Power, winter line-up

### Discretionary Distracter Malfunctions/RFs/IOs:

No.	MF/RF/IO #	Severity	Ramp	REM #	Act. Time	Description
1.	mfRD_12A	35%	N/A			Partial SCRAM
2.	mfRD_12B	40%	N/A			Partial SCRAM
3.	mfRP_09 A&B	N/A	N/A			PCIS Group V Isolation Failure
4.	mfRD_01B	N/A	N/A			B CRD Pump fails to start
5.	mfRD_15	0%	N/A	KEY 1	After oil pump test	Control Rod Drive flow controller fails low
6.	mfAD_09B	N/A	N/A	KEY 2	After CRD flow re-established	RV-71B de-energized
7.	mfRR_07A	50%	300 sec	KEY 3	After TS evaluated	A Recirc Pump # 1 Seal Failure
8.	mfRR_08A	15%	800 sec	KEY 4	After initial response	A Recirc Pump # 2 Seal Failure
9.	mfRR_05B	N/A	N/A	KEY 5	When B recirc pump speed is lowered	B Recirculation Pump Trip; Hydraulic ATWS
10.	mfSL_01 A or B	N/A	N/A			Operating SLC Pump Trips 60 seconds after start

## SIMULATOR OPERATOR INSTRUCTIONS (Continued)

### **Additional Instructions:**

1. Time compression may be used at the discretion of the Lead Evaluator. If time compression is used the crew will be notified.
2. A call to the Work Week Manager (WWM) or Field Support Supervisor (FSS) will initiate all expected activities (including DCO, Ops Manager, Maintenance, and AOs) outside the Control Room for a particular malfunction.
3. The Lead Evaluator will determine when the event objectives have been met and the next event may be initiated. Event actuation times will be referenced and scenario flow will be considered during this determination.
4. When called as AO during oil pump testing, report oil pump(s) are operating normally.
5. When FSS/AO is asked to investigate the ADS power failure alarm, report that the breaker for CKT 8 on DC-1C and the breaker for CKT2 on DC-2C are closed. Report as I&C after approximately five minutes that the 'A' ADS power loss was caused by an apparent short in the valve control circuitry, causing fuses F3A & F11A on (CWD 752) to blow.
6. If requested to replace the blown fuses for SRV-71A, recommend as I&C that the fuses NOT be replaced until troubleshooting can be completed.
7. If requested as AO to secure 'A' recirc pump seal purge then take **rfRD\_11 to 0%**.
8. If requested to shut CRD-56, use **rfRD\_02**, when RPV level is being controlled < 90''.

**OPERATOR ACTIONS  
EVENT NUMBER 1**

**Crew Task Description:**

**Perform OP 4160 Once/Week Pump Performance Test Section 1.a and b.**

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	SRO	Briefs Crew Directs performance OP 4160 Once/Week Pump Performance Test Section 1.a and b.	
2.	BOP	To test the Auxiliary oil Pump, perform the following: ON CRP 9-7 take Aux Oil Pump Test switch to the TEST	
3.	BOP	Contacts AO to check that the auxiliary oil pump starts and is operating satisfactorily	
4.	BOP	Place the test switch to NORM	
5.	BOP	Verify the auxiliary oil pump does not automatically stop	
6.	BOP	Stop the auxiliary oil pump	
7.	BOP	Verify the control switch returns to normal after stop (green flag).	
8.	BOP	To test the Turning Gear Oil Pump, perform the following: On CRP 9-23 take Turn Gear L.O. Pump Test switch to the TEST position.	
9.	BOP	Contacts AO to check that the turning gear oil pump starts and is operating satisfactorily.	
10.	BOP	Allow the test switch to return to midposition	
11.	BOP	Verify the turning gear oil pump does not automatically stop	
12.	BOP	Stop the turning gear oil pump	
13.	BOP	Verify the control switch returns to AUTO	

## OPERATOR ACTIONS EVENT NUMBER 2

### Crew Task Description:

Respond to a failure of the CRD flow controller.

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	CREW	Recognize a loss of CRD flow (ERFIS typer alarm and 9-5 panel indications)	<b>KEY 1:</b> _____
2.	SRO	Direct actions in accordance with OPON-3145-01, Loss of CRD Regulating Function.	
3.	SRO	Place flow controller in manual and attempt to open	
4.	RO	Take manual control of the Flow Control valve and attempt to open it.	
5.	RO	Transfer CRD System Flow Control from Automatic to Manual as follows :	
6.	RO	<p>On CRD SYSTEM FLOW CONTROL FIC 3-301 depress the A/M pushbutton.</p> <ul style="list-style-type: none"> <li>• On CRD SYSTEM FLOW CONTROL FIC 3-301 verify the red manual LED illuminates.</li> <li>• On CRD SYSTEM FLOW CONTROL FIC 3-301 verify the green auto LED extinguishes.</li> </ul>	
7.	RO	<p>To make adjustments when in manual, proceed as follows:</p> <ul style="list-style-type: none"> <li>• On CRD SYSTEM FLOW CONTROL FIC 3-301 use the display pushbutton to display CRD. V.</li> <li>• Adjust output as required by plant conditions using the adjustment knob.</li> </ul>	
8.	RO	Adjust the CRD parameters to normal.	

**OPERATOR ACTIONS  
EVENT NUMBER 3**

**Crew Task Description:**

**Respond to a failure of RV-71B**

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	RO	Acknowledge 3-A-4 'ADS POWER FAILURE' and determine RV-71B is deenergized.	<b>KEY 2 : _____</b>
2.	RO	Directs AO to verify breaker for DC-1C CKT #8 is closed.	
3.	RO	Directs AO to verify breaker for DC-2C CKT #2 is closed.	
4.	RO	Verify that DC-1, DC-2 are energized.	
5.	SRO	Consult Tech. Specs. 3.5, declare RV-17B inoperable and enter TS LCO 3.5.F.2	

**OPERATOR ACTIONS  
EVENT NUMBER 4**

**Crew Task Description:**

Respond to 'A' Recirc Pump seal failures and securing the recirc pump.

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	CREW	Acknowledge/respond to Recirc Pump A Inner Seal Leaking Hi/Lo annunciator (4-C-2)	<b>KEY 3 :</b> _____
		Recognize Recirc "A" Outer Seal pressure rising; inform SRO	
2.	SRO	Enter/direct actions IAW OPON-3142-01 (Recirc Pump Seal Failure) Monitor seal pressures Monitor seal temperatures	
3.	RO	When directed, monitor seal pressures	
4.	BOP	When directed, monitor seal temperatures	
5.	CREW	Acknowledge/respond to Flow Det A Outer Seal LKG Hi annunciator (4-C-1)	<b>KEY 4 :</b> _____
		Recognize Recirc 'A' Outer Seal pressure lowering; inform CRS	
6.	SRO	Enter/Direct actions IAW OPON-3142-01	
		Shutdown "A" Recirc pump	
		Close Pump Suction RV-43A	
		Close Pump Discharge RV-53A	
		Secure seal purge to affected pump secured per OP 2111	
7.	RO	When directed, shutdown "A" Recirc pump	
		Close Pump Suction RV-43A	
		Close Pump Discharge RV-53A	



	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
8.	SRO	Enter / direct actions IAW OPOT-3118-01 (Recirc Pump Trip):	
		Depress PB2 to set down level setpoint to 155 inches.	
		Monitor APRM indications	
		Identify location on Power-to-Flow Map (Figure 2.4-1)	
9.	RO	When directed:	
		Depress PB2 to set down level setpoint to 155 inches.	
		Monitor APRM indications	
		Identify location on Power-to-Flow Map (Figure 2.4-1)	
10.	CREW	Make Plant announcements for RR pump trip and power reduction	
11.	SRO	Direct rod insertion to 40-45% RTP using the rapid Shutdown Sequence	
12.	RO	When directed, insert control rods using the rapid Shutdown Sequence to 40-45% RTP	
13.	SRO	Direct running recirc pump speed reduced to 65-70% rated speed	
14.	RO	When directed, lower running recirc pump speed to 65-70% rated speed	
15.	SRO	Consult TS 3.6.G to determine requirements for single loop operation	
16.	CREW	Inform WWM of the A Recirc Pump Trip	

## OPERATOR ACTIONS EVENT NUMBER 5

### Crew Task Description:

Respond to Trip of the B Recirculation Pump, ATWS

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	SRO	When B Recirc Pump trips:	KEY 5 : _____
		Scram the reactor	
2.	RO	When directed, scram the reactor	
		Recognize failure of rods to insert; inform CRS	
3.	RO	Actuate the ARI/RPT logic AND ensure that the recirc drive motor breakers are tripped within 2 minutes of the scram  Both Recirc pumps previously tripped	
4.	SRO	When informed of the scram failure enter and direct crew actions IAW EOP-1 and EOP-2	
5.	BOP	When directed, verify EOP-1 Table A automatic actions	
6.	CT-1	<b>With a reactor scram required and the reactor not shutdown, INHIBIT ADS to prevent an uncontrolled RPV depressurization and thereby prevent a potentially significant power excursion.</b>	
		<b>Standard:</b>	
		Inhibit ADS prior to automatic initiation.	
7.			
8.	SRO	Enter and direct actions per EOP-2:	
		Implement App P to keep the MSIVs Open	
		When steam flow <0.5lbm/hr per steamline, place Mode Switch in SHUTDOWN	

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
		Verify ARI/RPT initiated	Appendix BB and G are available; Do NOT close CRD-56 until Terminate and Prevent Appendix GG has been completed
		Insert control rods with one or more appropriate appendices	
		Stabilize pressure 800-1050 psig with BPVs	
9.	BOP	When directed:	
		Inhibit ADS	
		Implement App P to keep the MSIVs Open	
		Stabilize pressure 800-1050 psig with BPVs.	
10.	CT-2	<b>With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.</b>	
		<b>Standard:</b>	
		Actions taken within 10 minutes of the scram failure to implement appropriate appendices and/or inject SLC. Only one method needs to be used. The method must result in successful control rod insertion or SLC injection	
11.	RO	When steam flow <0.5lbm/hr per steamline, place Mode Switch in SHUTDOWN	Note: This step is an Immediate Action, and may be performed without direction.
		Coordinate with AOs (as necessary) to insert rods using appropriate Appendices	Appendix BB and G will be available. RO may perform this as a immediate action.
		Inject SLC. Recognize trip of operating SCL Pump and start other SLC Pump	
12.	RO	Recognizes failure of PCIS Group 5, closes RWCU-15, 18 and 68. Informs SRO	

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
13.	CT-3	During an ATWS with conditions met to perform power/level control, <b>TERMINATE AND PREVENT INJECTION</b> (with the exception of boron, RCIC and CRD) into the RPV until conditions are met to re-establish injection.	
		<b>STANDARD:</b>	
		Completion of Terminate and prevent injection IAW OE 3107 Appendix GG within 5 minutes of loss of forced circulation	
14.	SRO	Terminate and prevent injection per Appendix GG	
15.	RO/BOP	When directed, terminate and prevent injection per Appendix GG. Inform CRS when:	
		Appendix GG complete	
		RPV level reaches 90 inches	
		Power drops to <2%	
16.	SRO	When conditions are met to re-establish injection, direct RPV level restored and maintained between -19" and 90" using feed and condensate	
17.	RO	When directed, restore and maintain RPV level between -19" and 90", using feed and condensate	
18.	SRO	Classify the event as a Site Area Emergency IAW AP 3125 Appendix A (SS2.1)	

Facility:	Vermont Yankee	Scenario No.:	2	Op Test No.:	2014301
Examiners:	_____	Operators:	_____	_____	_____
<p>Initial Conditions:</p> <p>80% reactor power, MOL. Power was reduced to allow maintenance to evaluate A Main Feedwater Pump seal leakage. A main feedwater pump is in service. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator. A &amp; F APRM's are bypassed. House Heating Boilers in service.</p>					
<p>Turnover: Place Torus Cooling in service in accordance with OPOP-RHR-2124 Residual Heat Removal System. Section 7.3 Torus Cooling during normal operations, using the A RHR Pump and the A RHRSW Pump. RHR fill and vent has been completed.</p>					
Event No.	Malfunction No.	Event Type*	Event Description		
1	N/A	N-BOP N-SRO	Establish Torus Cooling		
2 KEY 1	mfNM_05C 0%	I-RO I-SRO TS-SRO	C APRM Fails downscale		
3 KEY 2	mfSW_07A  mfSW_18B <b>Preinsert</b>	C-BOP C-SRO TS-SRO	A Service Water Pump trips; standby pump (B) fails to auto start		
4 KEY 3	mfED_06C	C-ALL TS-SRO	Loss of DC Bus 3		
5 KEY4	mfHP_09 5% over 300 sec  mfPC_1HP15 mfPC_1HP16 <b>Preinsert</b>	M-ALL	HPCI Steam Leak in Reactor Building – small – Unisolable  HPCI Steam Supply valves fail to isolate (automatic & manual)		
5 (cont) KEY 5	mfHP_09 50% over 900 sec	M-ALL	Post Scram - HPCI Steam Leak in Reactor Building - large		
	mfRP_08A mfRP_08B <b>Preinsert</b>	C-ALL	PCIS Group 3 failure		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

## **Scenario Summary**

The crew assumes the watch with the unit at 80% power. Reactor power was reduced to allow Maintenance to evaluate A Main Feedwater Pump seal leakage. House Heating Boilers are in service. The SRO will direct the BOP to place Torus Cooling in service in accordance with OPOP-RHR-2124 Residual Heat Removal System. Section 7.3 Torus Cooling during normal operations to reduce torus temperature.

After torus cooling has been established, C APRM will fail downscale. The RO will respond to APRM Downscale and Rod Withdrawal Block alarms and diagnose the failure of C APRM. The SRO will direct the RO to remove A APRM from bypass and place C APRM in bypass. The SRO will determine the impact with 2 APRM's inoperable in the same channel (TS Table 3.1.1 Action 1). Once C APRM is bypassed the SRO will exit the APRM TS LCO.

After the Technical Specifications for C APRM have been addressed, B Service Water Pump will trip and the standby Service Water Pump will fail to auto start. The BOP will diagnose the failures. The SRO will direct the BOP to start the standby Service Water Pump, address actions in ON 3148 'Loss of Service Water', declare the B Service water Pump inoperable and enter TS LCO 3.5.D.2.

A loss of DC Bus 3 will result in a loss of the majority of control room annunciators and various control room indicators. The SRO will enter ON 3161 'Loss of DC-3' and direct the transfer of DC-3A to DC-1 (restores annunciators) and the BOP will place the Auxiliary Oil Pump in pull-to-lock. The SRO will review Technical Specifications, declare DC Bus1 inoperable and enter TS LCO 3.10. B.3.

A small steam leak will develop from the HPCI steam supply line in the reactor building. The fire detection Zone 11 Reactor Building Panel will alarm. The SRO will initially enter OP 3020 'Control Room Response to a Fire' and exit the procedure when the report of a steam leak is received. The SRO will enter ON-3158 'Reactor Building High Area Temperature / Water Level' and direct the BOP to isolate HPCI. The HPCI steam supply valves will fail to isolate automatically and will not close manually from the control room.

As area temperatures rise, the SRO will enter EOP-4 due to area temperature and will direct a reactor scram prior to any area in the reactor building exceeding the maximum safe operating level (Critical Task) and enter EOP-1.

The HPCI steam leak will increase after the reactor scram. PCIS Group 3 will fail to actuate requiring the crew to align and start standby gas (Critical Task). Additional attempts to isolate the HPCI steam leak will be unsuccessful requiring the crew to enter EOP-5 and perform an emergency depressurization of the reactor pressure vessel when two reactor building area temperatures exceed the maximum safe operating limits (Critical Task).

The scenario will be terminated when Reactor Vessel Emergency Depressurization has been achieved and vessel level is being controlled between 127 to 177 inches.

**CREW BRIEF:**

**-Power level: 80%**

**-Rod Sequence:** Rapid Shutdown Sequence

**-Rod Group: 20**

**-Equipment out of service and/or tagged or abnormalities:**

1. Cooling Towers
2. Booster pumps
3. SBO EDG

**-Reason For Equipment out of Service or tagged:**

1. Cooling Towers – Winter operations
2. Booster Pumps – Winter Operations
3. SBO EDG is out of service (tagged out) for Electrical Maintenance trouble shooting of the voltage regulator

**-Applicable Tech Spec LCOs:**

1. NONE

**EOOS Color:** Green

**-Plant evolutions in progress/Scheduled Shift Evolutions:**

1. Place Torus Cooling in service in accordance with OPOP-RHR-2124 Residual Heat Removal System. Section 7.3 Torus Cooling during normal operations, using the A RHR Pump and the A RHRSW Pump. RHR fill and vent has been completed; RP has been informed to survey; Chemistry reports chemical treatment is not required.

**SCENARIO SUMMARY:**

See ES-D-1 for summary

**TERMINATING CONDITION(S):**

1. Reactor Vessel Emergency Depressurization achieved.
2. RPV level restored and being controlled between 127 to 177 inches

## SIMULATOR OPERATOR INSTRUCTIONS

### Simulator Set Up:

1. IC# 831, 80% Power, 3 FW Pumps In-service; 3 SW Pumps running with B SW pump in standby; 8-D-9, SBO EDG Trouble alarm lit with Red Tag on touch screen; winter lineup

### Discretionary Distracter Malfunctions/RFs/IOs:

No.	MF/RF/IO #	Severity	Ramp	REM #	Act. Time	Description
1.	mfSW_18B preinsert	N/A	N/A			Standby Service Water Pump(B) auto start failure
2.	mfPC_1HP15 mfPC_1HP16 preinsert	N/A	N/A			HPCI Steam Supply valves fail to isolate (automatic & manual)
3.	mfRP_08A mfRP_08B preinsert	N/A	N/A			PCIS Group 3 failure
4.	mfNM_05C	0%	N/A	KEY 1	After torus cooling established	C APRM Fails downscale
5.	mfSW_07A	N/A	N/A	KEY 2	After C APRM TS evaluated	A Service Water Pump trips
6.	mfED_06C	N/A	N/A	KEY 3	After SW TS evaluated	Loss of DC-3
7.	mfHP_09	5%	300 sec	KEY 4	After restoration of alarms and Aux Oil Pp in PTL	HPCI Steam Leak in Reactor Building
8.	mfHP_09	50%	900 sec	KEY 5	Post SCRAM	HPCI Steam Leak in Reactor Building increases



## SIMULATOR OPERATOR INSTRUCTIONS (Continued)

### Additional Instructions:

1. A call to the Work Week Manager (WWM) or Field Support Supervisor (FSS) will initiate all expected activities (including DCO, Ops Manager, Maintenance, and AO's) outside the Control Room for a particular malfunction.
2. Time compression may be directed by the lead evaluator. If time compression is used, this will be reported to the crew.
3. The Lead Evaluator will determine when the event objectives have been met and the next event may be initiated. Event actuation times will be referenced and scenario flow will be considered during this determination.
4. When asked as the outside AO, provide a time compressed report that SW pump 'A' is very warm to the touch.
5. When asked to investigate the 'A' Service Water Pump trip, provide a time compressed report that an instantaneous over current flag on the 'A' and 'B' phases.
6. When requested to transfer DC-3A to its emergency supply, take **rfED\_17** to EMERG.
7. After HCPI steam leak is initiated and the zone 11 fire alarm annunciates, RP calls the control room to report steam in the HPCI corner room
8. If requested as Maintenance to attempt local closure of the HPCI-15 and 16 valves, report: **“Reactor building entry cannot be made at this time due to temperatures and the steam environment.”** The valves will remain open for the duration of the scenario.

## OPERATOR ACTIONS EVENT NUMBER 1

### Crew Task Description:

Place Torus Cooling in service

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	SRO	Direct Torus Cooling During Normal Operation	
		<b>FILL</b> and <b>VENT</b> the system per OPST-RHR-4124-01A, Maintenance of 'A' RHR Loop Filled Discharge Pipe.	Completed – part of initial conditions
		During power operation whenever any RHR loop is placed in the Torus Cooling Mode, <b>ENTER</b> the applicable TS LCO for LPCI: <ul style="list-style-type: none"> <li>With one RHR loop in Torus Cooling Mode enter 7 day LCO of TS 3.5.A.4</li> </ul>	
	BOP	<b>NOTIFY</b> RP to survey the appropriate RHR corner room and Torus area during Torus cooling operations.	
		<u>IF</u> condensate transfer is being used to provide keep fill pressure, <u>THEN</u> <b>SECURE</b> the condensate transfer keep fill per the Condensate Transfer Keep Fill Operation section of this procedure.	
	BOP	<u>IF</u> RHRSW pump A/C will be operated, <b>VERIFY</b> RHRSW DISCHARGE, RHR-89A, closed with the RHR-89A TEST switch in AUTO.	
		<b>ENSURE</b> adequate SW pumps are operating to handle RHRSW pump demand. <ul style="list-style-type: none"> <li><b>VERIFY</b> no more than one SW pump is in Standby mode.</li> </ul>	
		START A RHRSW pump from CRP 9-3. <ul style="list-style-type: none"> <li>Request Chemistry to determine whether RHRSW chemical treatment is necessary.</li> </ul>	
		<b>VERIFY</b> RHRSW cooling water flow is between 5 to 7.5 gpm.	
	2.	BOP	<b>START</b> A RHR pump.
On CRP 9-3, <b>OPEN</b> : <ul style="list-style-type: none"> <li>TORUS SPRAY/CLG, RHR-39A</li> <li>TORUS COOLING, RHR-34A</li> </ul>			

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
		<p>IF desired, operate Torus Spray by opening TORUS SPRAY RHR-38A. (Not performed)</p>	
		<p><b>ADJUST</b> RHRSW DISCHARGE, RHR-89A on CRP 9-3 to maintain RHRSW pressure in the heat exchanger greater than 20 psid above RHR pressure and limit RHRSW flow to 2300 to 3140 gpm.</p>	
	BOP	<p>IF desired, on CRP 9-3, TORUS COOLING RHR-34A may be throttled to produce desired Torus cooling flow rate, provided RHR flow is maintained greater than or equal to 4100 gpm for each pump in service.</p>	
		<p><b>MONITOR</b> Drywell/Torus <math>\Delta P</math>.</p>	
		<p>IF only one RHR pump in the loop is running, THEN if desired, on CRP 9-3, CLOSE HX BYPASS, RHR-65A.</p>	
		<p><b>MONITOR</b> flow on CRP 9-3:</p> <ul style="list-style-type: none"> <li>• FI-10-139A RHR PUMP A FLOW</li> <li>• FI-10-136A CTMT SPRAY A/C FLOW</li> <li>• FI-10-132A RHRSW A/C FLOW</li> </ul>	

**OPERATOR ACTIONS  
EVENT NUMBER 2**

**Crew Task Description:**

**Respond to "C" APRM Downscale Failure**

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	CREW	Responds to APRM downscale alarm, 5-M-4, Rod Withdraw Block, 5-D-3 and diagnosis failure of "C" APRM	<b>KEY 1</b> : _____
2.	SRO	SRO directs bypassing of APRMs IAW OP 2132	
3.	RO	On CRP 9-5: <ul style="list-style-type: none"> <li>• Place 'C' APRM in bypass</li> <li>• Place 'D' APRM in bypass</li> </ul>	
4.	SRO	Enter TS Table 3.1.1 Action 1; Exit TS Table 3.1.1 Action 1 after "C" APRM is bypassed.	

**OPERATOR ACTIONS  
EVENT NUMBER 3**

**Crew Task Description:**

**Respond to “A” SW Pump Trip and Failure of “B” SW Pump to Auto Start**

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	CREW	Respond to 6-4-1 SERV WTR PMP 4 TRIP	<b>KEY 2 : _____</b>
2.	SRO	Refer to ON 3148, Loss of Service Water.	
3.	BOP	Check all SW Pump indications. Verify auto startup of the standby pump. RO start “B” SW Pump	
4.	BOP	Verify adequate SW pressure.	
5.	RO	Dispatch AO to visually inspect pump and motor.	
6.	RO	Do not restart pump until cleared by Maintenance Dept.	
7.	SRO	Refer to Tech. Specs. 3.5 for operability requirements. Enter TS LCO 3.5.D.2	
8.	RO/BOP	Monitor plant components.	
9.	SRO	Notify the Duty on Call Officer, and the Operations Manager.	

**OPERATOR ACTIONS  
EVENT NUMBER 4**

**Crew Task Description:**

**Respond to Loss of DC-3**

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	CREW	Diagnose Loss of DC-3 based on Loss of Alarms and Control Board Indications.	<b>KEY 3 : _____</b>
2.	SRO	Enter ON 3161 Loss of DC-3	
3.	SRO	Request Electrical Maintenance assistance in determining the cause of the loss.	
4.	SRO	IF the following conditions can be met: <ul style="list-style-type: none"> <li>• DC-1 is operable, AND</li> <li>• The loss of DC-3 <u>is not</u> the result of a fault on DC-3A, AND</li> <li>• DC-3A can be re-energized,</li> </ul>	
5.	SRO	Directs BOP to transfer DC-3A to DC-1.	
6.	BOP	Directs AO (at DC-1) to close DC-3A MANUAL TRANS SW (EMERG) breaker (#10).  At DC-3A, perform the following: 1) Open the "NORMAL" breaker. 2) Loosen the knurled knob on the metal interlock plate. 3) Slide the metal interlock plate downward. 4) Re-tighten the knurled knob. 5) Close the "EMERGENCY" breaker.	
7.	BOP	Perform a test of all Control Room annunciator to verify operability (except CRP 9-50 annunciators, which are powered from DC-2C).	
8.	SRO	Refer to Technical Specification 3.10. Enter TS LCO 3.10.B.3 for the qualified delayed access source being inoperable until DC-3A is transferred.	
9.	BOP	Place AUX OIL PUMP P-72-1A control switch in PULL-TO-LOCK.	

**OPERATOR ACTIONS  
EVENT NUMBER 5**

**Crew Task Description:**

**Respond to HPCI Steam Leak**

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
1.	CREW	Respond to/report zone 11 fire alarm	<b>KEY 4 : _____</b>
2.	SRO	Enter and direct actions of OP 3020	
3.	CREW	Dispatch FSS to investigate fire alarm	
4.		Make plant announcement for fire alarm IAW OP 3020	
5.		Respond to/report Steam Leak Temp HI alarm, 4-H-1	
6.	SRO	Enter ON 3158, RB Area Hi Temp/Water Level.	RP contacts the control room to report steam in the HPCI corner room
7.		Direct crew member to monitor steam leak detection panel and radiation indications	
8.	BOP	Inform CRS of increasing reactor building temps in the HPCI-14 area.	
9.	CREW	Evacuate the Rx Bldg	
10.	SRO	Direct BOP to shut HPCI-15 and 16.	
11.	BOP	Attempt to shut HPCI-15 and 16, recognize and inform CRS of failure of HPCI valves to shut.	
12.	SRO	Direct BOP to close HPCI-15 and 16 using the HPCI Auto ISOL Manual Initiate switch	
13.	BOP	Attempt to shut HPCI-15 and 16 using the HPCI Auto ISOL Manual Initiate switch and inform CRS of failure of HPCI valves to shut.	
14.	SRO	Direct maintenance to attempt local valve closure or repair of HPCI-15 and 16.	
15.	BOP	Inform CRS of increasing temperature levels in the secondary containment.	

	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
16.	CREW	Enter EOP-4 Secondary Containment Control	
17.	CT-1	<p><b>With the reactor at power, and a primary system discharging into the Secondary Containment, manually scram the reactor BEFORE any area exceeds the maximum safe operating levels</b></p> <p><b>Standard:</b></p> <p>Manually scram the reactor within 5 minutes of any area temperature exceeding max safe or ARM 1, 2, 3, 4, 6, 7, 8, 10 or 11 exceeding 1,000 mR/hr</p>	
18.	SRO	Direct RO to insert manual Rx SCRAM	
19.	RO	When directed, insert manual Rx SCRAM	
20.	SRO	Enter and direct actions of OT 3100 and EOP-1	
21.		Direct STA to verify Table A initiations and isolations	
22.	BOP	When directed, verify Table A initiations and isolations	
23.	CREW	Recognize failure of Group III valves to close	
24.	CT-2	<p><b>When PCIS Group 1, 2, 3, 5, or 6 fails to isolate with a leak present, initiate PCIS Group manually</b></p> <p><b>Standard:</b></p> <p>Leak or release terminated within 10 minutes of receipt of the auto isolation signal.</p> <p>(Time from GP III Isolation signal to Group III IOPL Logic satisfied)</p>	
25.	SRO	Direct BOP to manually initiate a Group III isolation/initiation.	
26.	BOP	Manually initiate Group III isolation and start both Standby Gas trains	
27.	SRO	Direct RO to maintain reactor level between 127" and 177", using condensate and feed water per EOP-1.	
28.	RO	Maintain reactor level between 127" and 177".	
29.	SRO	Direct BOP to maintain reactor pressure between 800 and 1000 psig, and commence a cool down using BPVs.	



	POS	CANDIDATE ACTIONS/BEHAVIOR	COMMENTS
30.	BOP	Maintain reactor pressure and cool down as directed.	
31.	SRO	Direct Anticipate RPV-ED	
32.	BOP	Rapidly depressurize the RPV using BPVs irrespective of the cooldown rate	
33.	<b>CT-3</b>	<p><b>With a primary system discharging into the Secondary Containment and area radiation/temperature/water levels exceed maximum safe operating levels in more than one area, initiate RPV-ED</b></p> <p>Standard: Initiate RPV-ED within 5 minutes of area radiation/temperature/water level exceeding maximum safe operating levels in more than one area.</p>	
34.	CREW	Report area temperatures have exceeded their maximum safe operating levels in two areas	
35.		Enter and direct actions in EOP-5, RPVED	
36.	SRO	Verify Torus water level above 5.5 feet	
37.		Direct all SRVs opened	
38.	BOP	Open all SRVs	
39.	BOP/RO	Restore and Maintain RPV Level between 127" and 177"	
40.	SRO	Classify the event as a Site Area Emergency IAW AP 3125 Appendix A (FS1.1)	