VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Evaluate Overtime Work Request
Failure Mode: N/A
Reference: EN-OM-123, Rev 4 Fatigue Management Program, Rev 4.

Task Performance: AO/RO/SRO ___ **RO**/SRO Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: N/A

Method of Testing: Simulation ___ Performance _X_ Discuss

Setting: Classroom _X_ Simulator ___ Plant ___

Performance Expected Completion Time: 20 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 Manager 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.

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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Initial Conditions:

1. Shift supervision has contacted you on Sunday, 9/23 (a scheduled day off), to report to the control room to work a 12 hour overtime shift from 0600-1800.
2. You were on vacation from 8/12 through 9/8
3. Your work history for the previous 2 weeks is as follows (all hours worked performing licensed operator duties):

Sunday 9/9	**Monday 9/10**	**Tuesday 9/11**	**Wednesday 9/12**	**Thursday 9/13**	**Friday 9/14**	**Saturday 9/15**
Worked 1200-1800	Worked 0600-1800	Worked 0600-1800	Worked 0600-1000	Worked 0600-1000	Worked 0600-1000	Worked 0600-1200
Sunday 9/16	**Monday 9/17**	**Tuesday 9/18**	**Wednesday 9/19**	**Thursday 9/20**	**Friday 9/21**	**Saturday 9/22**
Worked 0600-1200	Worked 0600-2100	OFF	Worked 0600-1800	Worked 0600-1800	Worked 0800-1600	Worked 0600-2100

Initiating Cues:

Using the work history provided:

1. Determine whether or not you are able to cover the requested shift AND whether any work hour limits have already been violated.
2. Document your conclusions on the Task Condition sheet provided.

Task Standards:

The candidate determines that they are unable to work the requested shift without an approved waiver because they will not have had a 10 hour break prior to the work start and will exceed 26 hours worked within a 48 hour period; additionally, the previously worked schedule did not include at least a 34 hour break within the 9 day period from 9/9-9/17.

Required Materials:

EN-OM-123, Rev 4. Fatigue Management Program

Simulator Setup:

N/A

TIME START: _____

SAT/UNSAT **Step 1: Determine correct procedure for Work Hour Limits.**

Standard: Applicant refers to EN-OM-123, Fatigue Management Program.

SAT/UNSAT **Step 2: Refer to work history and analyze for additional requested work hours**

Standard: Refer to and analyze work hours.

SAT/UNSAT ***Step 3:** **Determine that working the requested overtime shift will result in exceeding work hour limits.**

Standard: Determine that the required 10 hour break between work periods will not be met, and that the additional hours will result in exceeding 26 hours worked within a 48 hour period (2100 to 0600 = 9hrs vs. 10hrs; 12hrs Sunday 9/23 + 15hrs Saturday 9/22 = 27hrs in a 48hr period.)

Interim Cue: If candidate asks, an 8 hour break vice a 10 hour break between 9/22 and 9/23 to accommodate the crew's scheduled transition between work schedules or shifts is not necessary.

SAT/UNSAT ***Step 4:** **Determine that the previously worked schedule violates additional work hour rules.**

Standard: Determine that during the previously worked schedule, there was NOT a 34hour break in a 9 day period as required.

SAT/UNSAT **Step 5: Report to shift supervision that the overtime request CANNOT be honored due to the 10 hour break between work periods not being met, and exceeding 26 hours worked within a 48 hour period. Additionally, the previous work schedule did not include at least a 34 hour break in a 9 day period.**

Standard: Make report to shift supervision.

* Critical Step

TIME FINISH: _____

Terminating Cue: Results of review reported to shift supervision.

Evaluator Comments: _____

_____

_____

_____

System: N/A **K/A's: N/A**

System Generic K/A's:

2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.

(CFR: 41.10 / 43.5 / 45.12)
IMPORTANCE RO 2.9 SRO 3.9 (CFR: 41.10 / 43.3 / 45.13)

Initial Conditions:

1. Shift supervision has contacted you on Sunday, 9/23 (a scheduled day off), to report to the control room to work a 12 hour overtime shift from 0600-1800.
2. You were on vacation from 8/12 through 9/8
3. Your work history for the previous 2 weeks is as follows (all hours worked performing licensed operator duties):

Sunday 9/9	**Monday 9/10**	**Tuesday 9/11**	**Wednesday 9/12**	**Thursday 9/13**	**Friday 9/14**	**Saturday 9/15**
Worked 1200-1800	Worked 0600-1800	Worked 0600-1800	Worked 0600-1000	Worked 0600-1000	Worked 0600-1000	Worked 0600-1200
Sunday 9/16	**Monday 9/17**	**Tuesday 9/18**	**Wednesday 9/19**	**Thursday 9/20**	**Friday 9/21**	**Saturday 9/22**
Worked 0600-1200	Worked 0600-2100	OFF	Worked 0600-1800	Worked 0600-1800	Worked 0800-1600	Worked 0600-2100

Initiating Cues:

Using the work history provided:

1. Determine whether or not you are able to cover the requested shift AND whether any work hour limits have already been violated.
2. Document your conclusions on the Task Condition sheet provided.

Circle One: CAN / CANNOT work the requested shift.

Reason(s):_____

_____

_____

Additional Violation(s) (if any):

_____

_____

_____

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Perform Reactor Coolant Temperature Check
Failure Mode: Temperatures out of spec for pump start
Reference: OP 4110, Reactor Recirc System Surveillance, Rev 44

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _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: 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 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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Initial Conditions:

A transient occurred during plant startup that resulted in a reactor scram and both recirculation pumps tripping. The scram has been reset.
The plant is currently in Hot Shutdown with the Recirc Pumps secured. ERFIS is not available. Other operators are monitoring the rest of the control room.

Initiating Cues:

You have been directed by the CRS to complete the Reactor Coolant Temperature Check per OP 4110 Section E, and determine whether temperatures are satisfactory for startup of the 'A' Recirc pump.

Task Standards:

VYOPF 4110.05 completed; identification that Recirc Pumps may not be started based upon temperatures.

Required Materials:

OP 4110, Reactor Recirc System Surveillance, Rev 44
VYOPF 4110.05
Steam Tables
Calculator

Simulator Setup:

Plant in Hot Shutdown with steam dome pressure greater than 618 psig:
Scram the reactor from a low power (~2%) IC
Trip both recirc pumps
Reset the reactor scram
Insert mfPP_01 (failure of the ERFIS computer)

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain procedure; review prerequisites, and Section E.**

Standard: OP 4110 obtained; admin limits, prerequisites and Section E reviewed.

Interim Cue: If asked, all prerequisites are met.

SAT/UNSAT **Step 2: Obtain copy of VYOPF 4110.05**

Standard: Operator obtains copy of form.

SAT/UNSAT **Step 3: Identify and record Recirc Loop A Temperature**

Standard: Operator identifies Recirc Loop A temperature on TR-2-165 (red pen) on CRP 9-4, and records temperature on form. (470 +- 5F acceptable)

SAT/UNSAT **Step 4: Identify and record Recirc Loop B Temperature**

Standard: Operator identifies Recirc Loop B temperature on TR-2-165 (blue pen) on CRP 9-4, and records temperature on form. (470 +- 5F acceptable)

SAT/UNSAT ***Step 5: Identify and record reactor pressure**

Standard: Operator identifies reactor pressure on PI-2-56A/B or PR-6-96 (on CRP 9-5) and records on form. (640 +-20psig acceptable)

SAT/UNSAT ***Step 6: Identify and record bottom head drain temperature.**

Standard: Operator identifies bottom head drain temperature on PLC-2-166 Ch. 6 (on CRP 9-21), and records on form.

SAT/UNSAT ***Step 7:** **Calculate saturation temperature.**

Standard: Operator calculates saturation temperature using saturated steam tables.

Note: 14.7 psi must be added to the reactor pressure psig number to obtain psia number for use in steam tables.

SAT/UNSAT ***Step 8:** **Determine and record difference between saturation temperature and vessel bottom head drain temperature**

Standard: Operator subtracts bottom head drain temperature from interpolated saturation temperature and records on form.

SAT/UNSAT ***Step 9:** **Identify difference between saturation temperature and bottom head drain temperature is greater than 145 deg F; inform CRS that pump may not be started**

Standard: Operator identifies that the temperature difference is greater than 145 deg F, and in accordance with the Note on VYOPF 4110.05, informs the CRS that the pump may not be started.

Interim Cue: Inform the Operator that no further actions are necessary for this JPM.

TIME FINISH: _____

Terminating Cue:

Temperatures identified as not within limits for starting the Recirc Pumps; CRS informed

Evaluator Comments: _____

System: 202001 Recirculation System

K/A: 2.1.7: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
(CFR: 41.5 / 43.5 / 45.12 / 45.13)

Importance: RO 4.4 SRO 4.7

System Generic K/A's: 2.1.20 2.1.31

Attachment RO A-2 Number 1

INSERT COLOR PICTURE of:

Recirc Loop "A" temperature on TR-2-165 (red pen) on CRP 9-4

Attachment RO A-2 Number 2

INSERT COLOR PICTURE of:

Recirc Loop "B" temperature on TR-2-165 (blue pen) on CRP 9-4

Attachment RO A-2 Number 3

INSERT COLOR PICTURE of:

Both PI-2-56A and PR-6-96 on CRP 9-5

Attachment RO A-2 Number 4

INSERT COLOR PICTURE of:

Bottom Head Drain Temperature on PLC-2-166 POINT #4

EXAMINEE HANDOUT

Initial Conditions:

A transient occurred during plant startup that resulted in a reactor scram and both recirculation pumps tripping.
The scram has been reset.
The plant is currently in Hot Shutdown with the Recirc Pumps secured. ERFIS is not available. Other operators are monitoring the rest of the control room.

Initiating Cues:

You have been directed by the CRS to complete the Reactor Coolant Temperature Check per OP 4110 Section E, and determine whether temperatures are satisfactory for startup of the 'A' Recirc pump.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Isolate Leaking Core Spray Pipe Weld
Failure Mode: N/A
Reference: P&ID G191168/G191299/G191301 and Technical Specications

Task Performance: AO/RO/SRO ___ **RO**/SRO Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: N/A

Method of Testing: Simulation ___ Performance _X_ Discuss

Setting: Classroom _X_ Simulator ___ Plant ___

Performance Expected Completion Time: 20 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 Manager 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.

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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Initial Conditions:

- The plant is operating at full power.
- No equipment is out of service.
- Core Spray is in its normal standby lineup

Initiating Cues:

A pencil size leak has been reported by the RBAO to the Shift Manager on the Core Spray suction piping downstream of CS-7A.

The shift manager directs you to:

- Identify mechanical and electrical components to isolate, vent, and drain the pump using controlled station mechanical and electrical drawings.

Task Standards:

P-46-1A Breaker Identified
P-46-1A Pump Isolation Vent, Drain Valves identified
MOV Breakers identified
No steps are sequence critical, the control authority will determine the tagging sequence

Required Materials:

Controlled prints

Simulator Setup:

Any IC, need controlled prints, can be done in any setting with controlled prints available

TIME START: _____

SAT/UNSAT **Step 1: Determine correct print for Core Spray system.**

Standard: Operator determines G191168 is the Core Spray system print.

SAT/UNSAT ***Step 2: Determine isolation boundaries**

Standard: The following valves determined to be shut:
CS-7A Handwheel,
CS-16A,
CS-8A,
CS-5A Handwheel (and/or CS-18A),
CS-35A,
CS-26A Handwheel,
CS-11A Handwheel, and
CS-21A

SAT/UNSAT ***Step 3: Determine vent path.**

Standard: The following valves determined to be open:
CS-19A, and
CS-29A.

SAT/UNSAT ***Step 4: Determine drain path.**

Standard: The following valves determined to be open:
CS-17A,
CS-27A, and
CS-28A.

SAT/UNSAT **Step 5: Determine correct print for Core Spray Pump 'A' motor breaker**

Standard: Operator reviews G191299

SAT/UNSAT ***Step 6: Determine Core Spray Pump 'A' Breaker.**

Standard: 4kV Bus 4 Compartment 4

SAT/UNSAT **Step 7: Determine correct print for CS MOV 5A/7A/11A/26A**

Standard: Operator reviews G191301 Sheet 2 of 2

SAT/UNSAT ***Step 8: Determine CS MOV 5A/7A/11A/26A power supplies.**

Standard: MCC 9B, Cubicles 2C, 7M, 2M, and 6K.

* Critical Step

TIME FINISH: _____

Terminating Cue: Mechanical and electrical boundaries. Order of steps not critical. Control authority will determine order of steps.

Evaluator Comments: _____

System: 209001 **K/A's:**

System Generic K/A's:

2.2.15 Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.
(CFR: 41.10 / 43.3 / 45.13)

IMPORTANCE RO 3.9 SRO 4.3

2.2.22 Knowledge of limiting conditions for operations and safety limits.
(CFR: 41.5 / 43.2 / 45.2)

IMPORTANCE RO 4.0 SRO 4.7

EXAMINEE HANDOUT

Initial Conditions:

- The plant is operating at full power.
- No equipment is out of service.
- Core Spray is in its normal standby lineup

Initiating Cues:

A pencil size leak has been reported by the RBAO to the Shift Manager on the Core Spray suction piping downstream of CS-7A.

The shift manager directs you to:

- Identify mechanical and electrical components to isolate, vent, and drain the pump using controlled station mechanical and electrical drawings.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Respond to an Abnormal Release of Gaseous Radioactivity – Determination of Offgas Release Rate without ERFIS
Failure Mode: None
Reference: ON 3152, MSL and Off Gas High Radiation, Rev. 18.

Task Performance: AO/RO/SRO ☐ RO/SRO ☒ SRO Only ☐

Sequence Critical: Yes ☐ No ☒

Time Critical: Yes ☐ No ☒

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: _____

Method of Testing: Simulation ☒ Performance ☐ Discuss ☐

Setting: Classroom ☒ Simulator ☐ 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 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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Initial Conditions:

- The plant has been at a steady state 100% power level for the last week.
- MSL, SJAE/AOG and Stack Radiation monitoring activities are all rising
- Indications have been validated by comparing with other independent indications and status lights.
- The Shutdown Iodine Filter was placed in service last shift per OP 2150
- ERFIS (SPDS) Steady-State SJAE activity indicated 2,000uCi/sec 24 hours ago
- ERFIS (SPDS) is currently unavailable.

Initiating Cues:

The CRS has directed you to, IAW ON 3152, MSL and Off Gas High Radiation:

- Manually determine the Offgas Release Rate in uCi/sec,
- Determine any applicable Tech Spec LCOs, and
- Determine notifications (if any) that must be made.

Task Standards:

With ERFIS (SPDS) not available the Offgas Release rate is determined in accordance with procedure ON 3152, Appendix A and required notifications are identified in section 4.a.

Required Materials:

ON 3152, MSL and Off Gas High Radiation, Rev 18

TIME START: _____

SAT/UNSAT **Step 1: Obtains and reviews procedure ON 3152.**

Standard: Procedure ON 3152, MSL and Off Gas High Radiation is obtained and reviewed.

Interim Cues: Provide Operator with a copy of ON 3152, MSL and Off Gas High Radiation.

SAT/UNSAT ***Step 2: Determines that Offgas Release Rates can be determined without ERFIS by using Appendix "A" of the procedure.**

Standard: Operator determines that to calculate the Offgas release rate, Appendix "A" of the procedure must be used.

SAT/UNSAT ***Step 3: Contacts Chemistry and requests the latest measured offgas sample Kf value recorded in the Chemistry log book.**

Standard: Contacts Chemistry and requests the latest measured offgas sample Kf value recorded in the Chemistry log book.

Interim Cues: When asked for the latest measured offgas sample Kf value recorded in the Chemistry log book. Hand the operator JPM Attachment #1

SAT/UNSAT ***Step 3: Evaluates SJAE Radiation PRM 17-150A and B and records the highest radiation level on Appendix "A"**

Standard: Operator observes the Simulator SJAE Radiation PRM 17-150A and B readings (475 and 480 mr/hr) and records just the highest radiation level on Appendix "A". Criteria for meeting critical step is 450 – 500 mr/hr.

SAT/UNSAT ***Step 4: Using Table 1 on Appendix A locates the column which most closely corresponds to the Kf from Appendix "A" step #1. If the Kf value is between values, round up to the next value on the table.**

Standard: The column that most closely corresponds to a Kf value of 2.1 is 2. However, 2.1 is between the values "2" and "2.25" therefore the 2.25 column must be selected.

SAT/UNSAT ***Step 5: Using the SJAE monitor value recorded in step #2 of the appendix "A" the row containing the corresponding SJAE value is selected to arrive at the appropriate SJAE Activity in uCi/sec.**

Standard: Using the SJAE monitor value recorded in step #2 of the appendix "A" (475) the row containing the corresponding SJAE value is selected (492) to arrive at the appropriate SJAE Activity, 80,000 uCi/sec.

SAT/UNSAT ***Step 6: Using the SJAE activity, Operator Actions section 4.a. is reviewed to determine that Chemistry is to ensure Tech Spec 4.6.B.1.a and 4.8.K.2 need to be completed within 4 hours.**

Standard: Using the SJAE activity, Operator Actions section 4.a. is reviewed to determine that because there was an increase of 25% and 5,000 uCi/sec in steady state reactor operation, Chemistry is to ensure Tech Spec 4.6.B.1.a and 4.8.K.2 need to be completed within 4 hours.

SAT/UNSAT ***Step 7: Using the SJAE activity, Operator Actions section 4.a. is reviewed to determine the notifications required.**

Standard: Using the SJAE activity of 80,000 uCi/sec, Operator Actions section 4.a. is reviewed to determine that the following management notifications are required:

- Operations Manager
- Reactor Engineering Superintendent
- Chemistry Superintendent, and
- Duty on Call Officer

Terminating Cue:

Once the operator determines the Offgas Release Rate in uCi/sec, any Tech Spec action time limits and makes notifications in accordance with procedure ON 3152, MSL and Off Gas High Radiation, the JPM is complete.

* Critical Step

TIME FINISH: _____

Evaluator Comments: _____

_____

_____

_____

_____

_____

_____

System: Emergency Procedures / Plan

K/A: 2.4.21: Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

(CFR: 41.7 / 43.5 / 45.12)

Importance: RO 4.0

EXAMINEE HANDOUT

Initial Conditions:

- The plant has been at a steady state 100% power level for the last week.
- MSL, SJAE/AOG and Stack Radiation monitoring activities are all rising
- Indications have been validated by comparing with other independent indications and status lights.
- The Shutdown Iodine Filter was placed in service last shift per OP 2150
- ERFIS (SPDS) Steady-State SJAE activity indicated 2,000uCi/sec 24 hours ago
- ERFIS (SPDS) is currently unavailable.

Initiating Cues:

The CRS has directed you to, IAW ON 3152, MSL and Off Gas High Radiation:

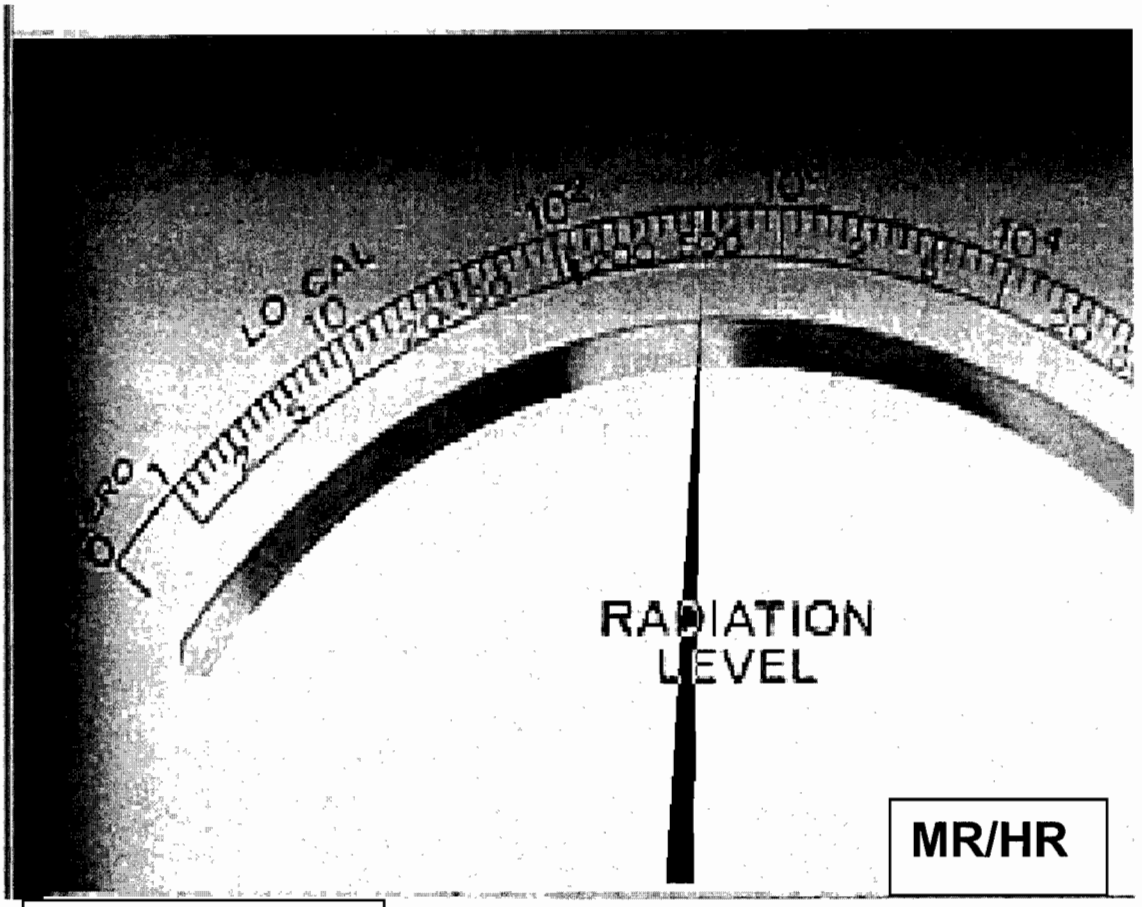
- Manually determine the Offgas Release Rate in uCi/sec,
- Determine any applicable Tech Spec LCOs, and
- Determine notifications (if any) that must be made.

JPM Attachment 1

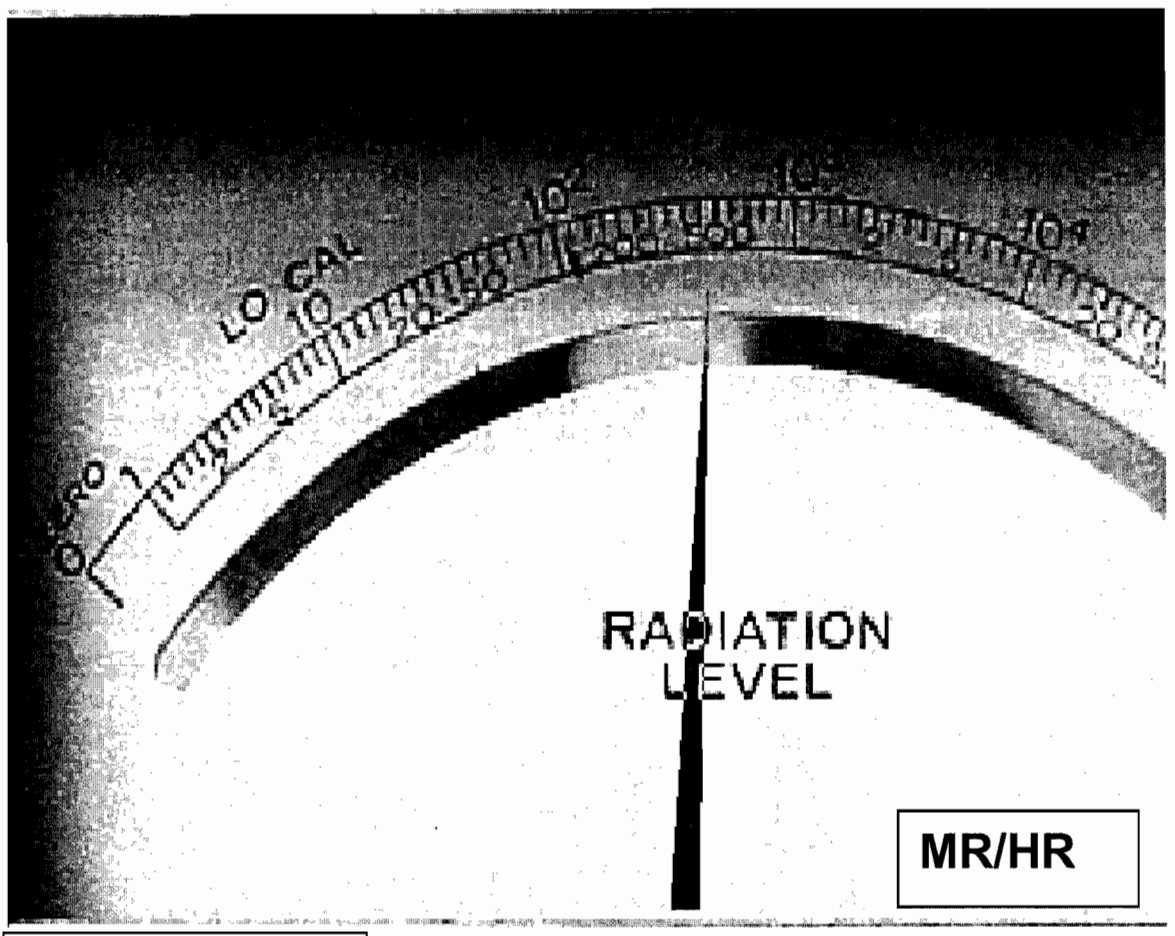
The latest measured offgas sample Kf value recorded in the Chemistry log book:

2.1 **uCi/sec/**
(mR/hr)(cfm)

JPM Attachment 2



PRM 17-150A



PRM 17-150B

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Evaluate Reactor Water Chemistry sample and identify required actions
Failure Mode: N/A
Reference: OP 2617 Chemistry Action Response Guide, Rev. 8

Task Performance: AO/RO/SRO ☐ RO/**SRO Only** ☒ SE Only ☐

Sequence Critical: Yes ☐ No ☒

Time Critical: Yes ☐ No ☒

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: _____

Method of Testing: Simulation ☒ Performance ☐ Discuss ☐

Setting: Classroom ☒ Simulator ☐ Plant ☐

Performance Expected Completion Time: 35 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.

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 **Classroom** and you are to **perform** all actions.

This JPM is **NOT** time critical.

Inform me upon completion of this task.

Initial Conditions:

1. The plant is at 100% power and has been for 58 days.
2. You are the CRS.
3. All Reactor Water Chemistry was normal and within specifications yesterday at 08:00 am.
4. At 02:30, Annunciator 4-J-5 "Reactor Water Conductivity High" alarms.
5. The alarm is acknowledged and conductivity recorder CR-35-135 is reading 0.88 umho/cm for RWCU inlet and 0.10 umho/cm for RWCU outlet with both rising very slowly.
6. Operator Actions 1 through 6 of Alarm Response Procedure 4-J-5 have been performed and no discrepancies were identified. Chemistry is performing Reactor Water sampling.
7. At 04:15 Chemistry reports the results of their 04:00 vessel grab sample and analysis which was required in accordance with OP 2617. Chemistry stated that all OP 2617 requirements have been completed satisfactory up and thru the requirement to obtain a "Vessel Grab" sample. The Vessel Grab sample results are as follows:
    - Reactor Water parameters:
        - Conductivity = 1.01 umho/cm at 25°C
        - CrO4 = 92 ppb
        - Iodine 131 = 1.3 microcuries/gm DEI
        - pH = 7.2
        - Chlorides = 23 ppb
        - SO4 = 4 ppb
8. Conductivity has been corrected for soluble iron and zinc.
9. Noble Metal Chemical Application (NMCA) is not in progress.

Initiating Cues:

Evaluate the 04:00 chemistry reactor coolant grab sample results and identify any required OP 2617 Chemistry Action level entries, and any required Tech. Spec or TRM related actions, including tracking/admin LCOs. Additionally make a thorough, legible and complete manual control room log entry documenting the results of your findings on Attachment #1.

Note: ODCM and EAL related evaluations are being reviewed separately by the Shift Manager.
Note: The raw 04:00 Chemistry data was recorded in the Control Room Log at 04:15.
Note: Your review was completed at 05:00.

Task Standards:

The applicant should determine from the evaluation of ARS 4-J-5, OP 2617, Figure 6, Tech. Specs, and VYTRM that:

- Conductivity = 1.01 umho/cm at 25°C
  - IAW OP2617, Figure 6, the vessel grab sample results are greater than 1.0 uhmo/cm conductivity and therefore **Action Level II was been exceeded for Reactor Water Conductivity at 04:00.**
  - Note: the TRM limit of 5 umho/cm conductivity has NOT been exceeded.
- CrO4 = 92 ppb
  - Note: the OP 2617 Action Level 1 limit of 100 ppb CrO4 has NOT been exceeded.
- Iodine 131 = 1.3 microcuries/gm DEI
  - **Tech Spec 3.6.B.1.a Iodine 131 DEI 1.1 microcuries/gram conditions have been exceeded**. Therefore Tech Spec 4.6.B.1.e requires a sample of reactor coolant taken every 4 hours and analyzed for radioactive iodine's of I-131 through I-135, until the specific activity of the reactor coolant is restored below 1.1 microcuries/gram dose equivalent I-131.
  - **Tech Spec Tracking 4.6.B.1.e 4 hour LCO action to acquire a reactor coolant sample every 4 hrs** until I-131 DEI is reduced below 1.1 microcuries per gram is required to be **entered at 04:00**
  - Tech Spec 3.6.B.1.b requires an orderly shutdown be initiated and the reactor placed in cold shutdown condition within 24 hours if 1.1 microcuries of I-131 dose equivalent per gram of water has been exceeded for greater than 24 consecutive hours.
  - **Tech Spec Tracking 3.6.B.1.b 24 hour LCO action to reduce reactor coolant I-131 DEI to less than 1.1 microcuries per gram within 24 hours is required to be entered at 04:00.**
- pH = 7.2
- Chlorides = 23 ppb
  - IAW OP2617, Figure 6, the vessel grab sample results are greater than 20 ppb Cl and therefore **Action Level II was been exceeded for Reactor Water Chlorides at 04:00.**
  - VYNPS TRM identifies a Chloride ion 0.5 ppm limit with steaming rates greater than or equal to 100,000 pounds per hour. This limit will have to be properly evaluated against the Chloride sample results given in ppb. Given the sample results were 23 ppb Chloride, the Chloride sample results limit has NOT been exceeded
- SO4 = 4 ppb
  - Note: the OP 2617 Action Level 1 limit of 5 ppb SO4 has NOT been exceeded.

NOTE: EAL for an Unusual Event is NOT applicable because Rx coolant activity has not exceeded 1.1 uCi/gm I-131 dose equivalent for greater than 24 hours.

Required Materials:

Provide the following documents upon request:

- Provide VY Tech Specs & TRM
- Provide CHOP-RWS-4612-01, Rev. 5
- Provide OP 2617, Chemistry Action Response Guide, Rev. 8
- Provide copy of ARP 9-4-J-5, Rev. 12 (Attached as last page of JPM)

Simulator Setup:

N/A

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain ARP 9-4-J-5, VYNPS TRM, OP 2617, Tech Specs and TRMs for review**

Standard: ARP 9-4-J-5, VYNPS TRM, OP 2617, Tech Specs and TRMs obtained for review.

Interim Cue: **Provide the following documents upon request:**

- Provide VY Tech Specs & TRM
- Provide CHOP-RWS-4612-01, Rev. 5
- Provide OP 2617, Chemistry Action Response Guide, Rev. 8

Note: A copy of ARS 21002, Rev.12 9-4-J-5 is provided as part of EXAMINEE HANDOUT

SAT/UNSAT ***Step 2:** **Review ARP 9-4-J-5 provided**

Standard: Compares initial conditions with ARP 9-4-J-5 requirements to identify procedural required next action.

* Determines that TRM 3.6.B and 4.6.B need to be consulted.

SAT/UNSAT **Step 3a:** **Reviews and determines required actions per TRM 3.6.B and 4.6.B.**

Standard: Determines that TRM 3.6.B and 4.6.B Chloride actions are **NOT applicable** if Chloride ppm is evaluated properly against Chemistry sample Chloride results in ppb.
Determines that TRM 3.6.B and 4.6.B Conductivity actions are **NOT applicable** due to not exceeding 5 umho/cm conductivity.

SAT/UNSAT ***Step 3b:** **Reviews and determines required actions per OP 2617.**

Standard: The applicant should determine from the evaluation of OP 2617, Figure 6 that:

- **Action Level II was been exceeded for BOTH Reactor Water Conductivity (≥ 1 uhmo/cm) and Chlorides (≥ 20 ppb),**
- Action Level entry identify time should be 04:00 am.

Evaluation **Performance Steps**

SAT/UNSAT ***Step 3c:** **Reviews and determines if any Tech Spec related actions are required.**

Standard: Determines that with Iodine 131 = 1.3 microcuries/gm DEI

- **Tech Spec 3.6.B.1.a Iodine 131 DEI 1.1 microcuries/gram conditions have been exceeded**. Therefore Tech Spec 4.6.B.1.e requires a sample of reactor coolant taken every 4 hours and analyzed for radioactive iodine's of I-131 through I-135, until the specific activity of the reactor coolant is restored below 1.1 microcuries/gram dose equivalent I-131.
- **Tech Spec Tracking 4.6.B.1.e 4 hour LCO action to acquire a reactor coolant sample every 4 hrs** until I-131 DEI is reduced below 1.1 microcuries per gram is required to be **entered at 04:00**
- Tech Spec 3.6.B.1.b requires an orderly shutdown be initiated and the reactor placed in cold shutdown condition within 24 hours if 1.1 microcuries of I-131 dose equivalent per gram of water has been exceeded for greater than 24 consecutive hours.
- **Tech Spec Tracking 3.6.B.1.b 24 hour LCO action to reduce reactor coolant I-131 DEI to less than 1.1 microcuries per gram within 24 hours is required to be entered at 04:00.**

Interim Cue: The Chemistry Department will submit the Condition Report.

SAT/UNSAT **Step 4:Makes Manual Control Room Log entry**

Standard: Using attached, makes a Manual Control Room Log entry that includes:

1). At 04:15 Chemistry reports the following Reactor Vessel Water grab sample results taken at 04:00 am:

- Conductivity = 1.01 umho/cm at 25°C
- CrO4 = 92 ppb
- Iodine 131 = 1.3 microcuries/gm DEI
- pH = 7.2
- Chlorides = 23 ppb
- SO4 = 4 ppb

*2). In accordance with OP 2617, Figure 6:

- Chemistry Action Level II was been exceeded for Reactor Vessel Water Conductivity and Chlorides.

*3). Tech Spec 3.6.B.1.b requires an orderly shutdown be initiated and the reactor placed in cold shutdown condition within 24 hours if 1.1 microcuries of I-131 dose equivalent per gram of water has been exceeded for greater than 24 consecutive hours. This Tech Spec. Action Tracking LCO is entered at 04:00 as a 24 hour 3.6.B.1.b LCO.

*4). Tech Spec 4.6.B.1.e requires a sample of reactor coolant taken every 4 hours and analyzed for radioactive iodine's of I-131 through I-135 from the 04:00 sample, until the specific activity of the reactor coolant is restored below 1.1 microcuries/gram dose equivalent I-131. This Tech Spec. Action Tracking LCO is entered at 04:00 as a 24 hour 4.6.B.1.e LCO.

5) VYNPS TRM identifies a Chloride ion 0.5 ppm limit with steaming rates greater than or equal to 100,000 pounds per hour. VTNPS TRM limits have NOT been exceeded.

NOTE: EAL for an Unusual Event is not applicable because Rx coolant activity has not exceeded 1.1 uCi/gm I-131 dose equivalent for greater than 24 hours. No EAL entry required.

TIME FINISH: _____

Terminating Cue:

JPM Attachment #1, Manual Control Room Log entry documents the evaluation of the 04:00 chemistry reactor water grab sample results.

Evaluator Comments: _____

_____

_____

_____

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_____

System: Conduct of Operations

IR: SRO 3.5

K/A: 2.1.34 Knowledge of primary and secondary plant chemistry limits.

EXAMINEE HANDOUT

1. The plant is at 100% power and has been for 58 days.
2. You are the CRS.
3. All Reactor Water Chemistry was normal and within specifications yesterday at 08:00 am.
4. At 02:30, Annunciator 4-J-5 "Reactor Water Conductivity High" alarms.
5. The alarm is acknowledged and conductivity recorder CR-35-135 is reading 0.88 umho/cm for RWCU inlet and 0.10 umho/cm for RWCU outlet with both rising very slowly.
6. Operator Actions 1 through 6 of Alarm Response Procedure 4-J-5 have been performed and no discrepancies were identified. Chemistry is performing Reactor Water sampling.
7. At 04:15 Chemistry reports the results of their 04:00 vessel grab sample and analysis which was required in accordance with OP 2617. Chemistry stated that all OP 2617 requirements have been completed satisfactory up and thru the requirement to obtain a "Vessel Grab" sample. The Vessel Grab sample results are as follows:
    - Reactor Water parameters:
        - Conductivity = 1.01 umho/cm at 25°C
        - CrO4 = 92 ppb
        - Iodine 131 = 1.3 microcuries/gm DEI
        - pH = 7.2
        - Chlorides = 23 ppb
        - SO4 = 4 ppb
8. Conductivity has been corrected for soluble iron and zinc.
9. Noble Metal Chemical Application (NMCA) is not in progress.

Initiating Cues:

Evaluate the 04:00 chemistry reactor coolant grab sample results and identify any required OP 2617 Chemistry Action level entries, and any required Tech. Spec or TRM related actions, including tracking/admin LCOs. Additionally make a thorough, legible and complete manual control room log entry documenting the results of your findings on Attachment #1.

Note: ODCM and EAL related evaluations are being reviewed separately by the Shift Manager.
Note: The raw 04:00 Chemistry data was recorded in the Control Room Log at 04:15.
Note: Your review was completed at 05:00.

EXAMINEE HANDOUT

JPM Attachment #1, Manual Control Room Log Entry **Page 1 of 2**

Date: (today's date) Time: 04:15

At 04:15 Chemistry reported the results of their 04:00 vessel grab sample and analysis which was required in accordance with OP 2617. Chemistry stated that all OP 2617 requirements have been completed satisfactory up and thru the requirement to obtain a "Vessel Grab" sample. The 04:00 Vessel Grab sample results are as follows:

- Reactor Water parameters:
- Conductivity = 1.01 umho/cm at 25°C
- CrO4 = 92 ppb
- Iodine 131 = 1.3 microcuries/gm DEI
- pH = 7.2
- Chlorides = 23 ppb
- SO4 = 4 ppb

Date: (today's date) Time: 05:00

As CRS I have evaluated the 04:00 chemistry reactor coolant grab sample results against the following requirements:

- Chemistry Action level entries, and
- Tech. Specs and TRM related actions, including tracking/admin LCOs

The results of my review are as follows:

EXAMINEE HANDOUT

JPM Attachment #1, Manual Control Room Log Entry **Page 2 of 2**

Name: _____
(Print)

REACTOR WATER CLEAN UP SYSTEM		4-J-5 Page 1 of 1
RWCU CONDUC HI		[redacted]
Causes: 1. Fuel cladding failure. 2. Lube oil leak from feedwater, condensate, RWCU, and Recirc pumps. 3. Resin exhausted. 4. Demin. bypass valve open. 5. Cond. Demin bypass valve open. 6. Condenser tube leak. 7. Air introduction to system. 8. Instrument malfunction. 9. Conductivity cell dirty.	Setpoints: 0.1 µmho - outlet 1.0 µmho - inlet	Actuating Devices: CR-12-135 CR-12-132 References: CWD 923 TRM 3.6.B, 4.6.B OPOP-RWCU-2112

Confirmation:

1. CRP 9-4 conductivity indications.
2. RCU demin. conductivity and conductivity cell flow indications on Rx Bldg sample panel.
3. Chemistry sample requested.

Automatic Actions:

None.

Operator Actions:

1. Check local and CRP 9-4 conductivity indications.
2. Check status of cond. demin. system.
3. Backwash and precoat demins. as required.
4. Check flows and inventories of suspected systems.
5. If cause cannot be determined, notify higher management.
6. Notify Chemistry Dept. and request they check adequate conductivity cell flow, if required, confirm with a sample analysis.
7. Consult TRM 3.6.B and 4.6.B, as needed.

NOTE

A freshly precoated demin will momentarily spike conductivity to bring this alarm in, it will drop off in a few minutes.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Evaluate CRO Logs for Readings Out of Specification and Determine Required Actions
Failure Mode: N/A
Reference: OP 0150, "Conduct of Operations and Operator Rounds"

Task Performance: AO/RO/SRO ___ RO/**SRO Only** _X_ SE Only ___

Sequence Critical: Yes ___ No 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: 30 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.

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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Initial Conditions:

The plant is at 100% power. The following equipment was taken out of service on the last shift:

"A" Rx Bldg Supply Fan for lubrication
"B" RHRSW pump for impeller replacement

There is one active 30 day LCO for the RHRSW pump per Tech Specs 3.5.C.2. The plant is in summer time operations with circ water in closed cycle operation.

eSOMs has been down since last shift and is expected to be down for approximately 36 hours. Manual Operators Round eSOMS Sheets are in use.

Initiating Cues:

The Shift Manager has requested you to review a CRO trainee's practice set of manual log entries, OP 0150, Rev.8, pages 106-112. If further investigation of the plants status is required, you are expected to retrieve and analyze data. Document on Attachment 1 the results of your detailed review. Your review must identify all problems identified and required actions. Some reference materials are available upon specific requests, if needed.

Task Standards:

1). It is determined that the current cooling tower basin temperature of 95 F requires all 4 RHRSW pumps operable and, with one pump inoperable, the Alternate Cooling System is inoperable and a 7 day LCO is required to be entered per 3.5.D.3. (See OPOP-SW-2181, Rev. 5, section 5.1.26)

2). It is determined that Torus level is below the minimum water volume of 68,000 cubic feet and an orderly shutdown shall be initiated and the reactor shall be in cold shutdown condition within 24 hours per 3.7.A.8.

3). Non-Critical: should also identify that Torus Water Temperature reading should have initials next to the lineout correction per OP 0150 page 7:

- A.2.a: All printed version round entries shall be neatly recorded using blue or black ink. Entry errors will be corrected by drawing a single line through the error, initialing the correction, and recording the correct reading. "White Out" and erasures are not allowed.

Required Materials:

- CRO Operator round sheets 106 – 112, Rev. 8, and completed with appropriate data showing deep basin temperature at 95 F, Torus temperature line-out correction and Torus Volume entry of "C029 Not Available".
- OP 0150, Rev. 182, "Conduct of Operations and Operator Rounds".
- **HOLD BACK:** OPOP-SW-2181, Rev. 05, "Service Water/Alternate Cooling Operating Procedure
- **HOLD BACK:** VY Technical Specifications, Amendment No. 250.
- **HOLD BACK:** AP 0151, Rev. 29, Responsibilities and Authorities of Operations Department Personnel
- **HOLD BACK:** **Attached** OP 2115, Rev. 80, Primary Containment, Figure #1, DW/Torus DP vs Indicated Water Level

Simulator Setup: **N/A**

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Reactor Operator manual round log sheets and reviews procedure OP 0150.**

Standard: Obtain Reactor Operator manual round sheet executed logs, and review procedure OP 0150.

Interim Cue: Provide CRO eSOMS RO manual round log sheets 106-112 with appropriate data filled in.

Note: If the candidate questions the accuracy of a log entry, inform him the readings are accurate.

SAT/UNSAT **Step 2:** **Reviews Reactor Operator manual round log sheet readings.**

Standard: Compare log entries to plant administrative and Tech. Spec requirements for problems and required actions.

SAT/UNSAT **Step 3:** **Determines and records on Attachment #1 an inappropriate "lineout" of a corrected entry.**

Standard: Records on Attachment #1 that the Torus Water Temperature reading should have initials next to the lineout correction per OP 0150 page 7.

SAT/UNSAT **Step 4:** **Requests and Reviews OPOP-SW-2181**

Standard: Reviews OPOP-SW-2181 admin for required RHRSW pumps due to the recorded cooling tower basin temperature of 95 F.

SAT/UNSAT **Step 5:** **Determine basin temperature and RHRSW requirements.**

Standard: Determines that 4 RHRSW pumps are required. OPOP-SW-2181 Section 5.1.26 states: "At least 4 RHRSW Pumps operable" as the minimum for Alternate Cooling System operability for a CT 2 Basin Temperature > 94 F to 103 F.

Evaluation	Performance Steps	
SAT/UNSAT	*Step 6:	**Documents on Attachment #1 that Tech Specs LCO 3.5.D.3 requirements must be entered.**
	Standard:	Presently there is one active 30 day 3.5.C.2 LCO because the 'B' RHRSW pump is out of service. Candidate records the following or equivalent on Attachment #1: - Alternate Cooling System is inoperable with less than the required 4 RHRSW pumps and Tech. Spec. 3.5.D.3 must be entered.
SAT/UNSAT	Step 7:	**Requests and Reviews OP 2115, LI-16-19-46A/B and DW to Torus dp.**
	Standard:	Reviews OP 2115, LI-16-19-46A/B and DW to Torus dp due to recorded rounds entry of "CO29 not available" on page 108 of the round sheets.

Interim Cue: Requests for procedures and indications are limited to OP 0150, OP 2115 and it's attached Figure #1 DW/Torus Dp vs Indicated water level, see attached JPM figures, when candidate asks for material/indications.

SAT/UNSAT	Step 8:	**Determines that the Torus water volume is below the minimum water volume of 68,000 cubic feet.**
	Standard:	Determines that the Torus water volume is below the minimum water volume of 68,000 cubic feet in accordance with OP 2115 figure #1. Determines that the Torus minimum water volume in accordance with Tech Spec 3.7.A.1.e. is 68,000 cubic feet.
SAT/UNSAT	*Step 9:	**Documents on Attachment #1 that Tech Specs 3.7.A.8 requirements must be entered.**
	Standard:	Candidate records the following or equivalent on Attachment #1: The primary containment suppression volume has less than the minimum required Torus water volume and Tech. Spec. 3.7.A.8 requirements must be entered: "An orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours."
SAT/UNSAT	Step 10:	**Completes review of RO manual round sheets provided.**
	Standard:	Candidate completes review of the RO manual round sheets provided and documents review on and prints name on Attachment #1.

* Critical Step

TIME FINISH: _____

Terminating Cue: It is determined that the current cooling tower basin temperature requires all 4 RHRSW pumps operable and, with one pump inoperable, Alternate Cooling is inoperable and a 7 day LCO 3.5.D.3 requirements must be entered and recorded on Attachment #1.

It is determined that the primary containment suppression volume has less than the minimum required torus water volume and Tech. Spec. 3.7.A.8 requirements must be entered and recorded on Attachment #1 requiring an orderly shutdown to be initiated and the reactor to be in cold shutdown condition within 24 hours.

Evaluator Comments: _____

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System:

K/A: 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. (CFR: 41.10 / 45.12 / 45.13)

Importance: RO 3.6 SRO 3.8

EXAMINEE HANDOUT

Initial Conditions:

The plant is at 100% power. The following equipment was taken out of service on the last shift:

"A" Rx Bldg Supply Fan for lubrication
"B" RHRSW pump for impeller replacement

There is one active 30 day LCO for the RHRSW pump per Tech Specs 3.5.C.2. The plant is in summer time operations with circ water in closed cycle operation.

eSOMs has been down since last shift and is expected to be down for approximately 36 hours. Manual Operators Round eSOMS Sheets are in use.

Initiating Cues:

The Shift Manager has requested you to review a CRO trainee's practice set of manual log entries, OP 0150, Rev.8, pages 106-112. If further investigation of the plants status is required, you are expected to retrieve and analyze data. Document on Attachment 1 the results of your detailed review. Your review must identify all problems identified and required actions. Some reference materials are available upon specific requests, if needed.

EXAMINEE HANDOUT

Reactor Operator Executed Manual Round Log sheets pages 106 to 112 are the next 7 pages.

RAD LEVEL TO HOLDUP AND STACK RAN-OG-3127 / RAN-OG-3128 CALIBRATION REQUIRED Seq: 473 Every Day 387
CHECK

Location: CRB-272-CRP 9-50

Short Instr: AGREE WITHIN 1 DECADE
Long Instr: ODCM 4.3.4
ODCM T.4.1.2
SR 90-20
SR 91-75
Units: DECADES

Shift Time	Reading	Notes	Recorded By
00-06	Check		AH
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

HVAC FANS (AC, AH, & EXH) **REQUIRED Seq:** 474 Every Day 388
Short Instr: TRAIN A OR B RUNNING (NOTE: A COMBINATION OF A AND B FANS RUNNING IS AN INDICATION THAT A STANDBY UNIT MAY HAVE AUTO-STARTED

Shift Time	Reading	Notes	Recorded By
06-12	Check		AH
18-24			

TURBINE BEARING TEMP **REQUIRED Seq:** 475 Every Day 389
Equip. ID: 1-TG -INDREC-TR-110-5 **Location:** CRB-272-CRP 9-23
Short Instr: THRUST BEARING (FRONT AND REAR PLATE METAL) <=225F
Long Instr: ER 950525_02
Units: F **Maximum:** <= 225

Shift Time	Reading	Notes	Recorded By
00-06	Check		AH
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

TURBINE BEARING TEMP **REQUIRED Seq:** 476 Every Day 390
Equip. ID: 1-TG -INDREC-TR-110-5 **Location:** CRB-272-CRP 9-23
Short Instr: ALL BEARINGS <=225F
Long Instr: ER 950525_02
Units: F **Maximum:** <= 225

Shift Time	Reading	Notes	Recorded By
00-06	Check		AH
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

CRO **OP 0150**
Operations **Rev 8**
Normal **Page 107 of 125**

CONDENSER A HOTWELL CONDUCTIVITY NORTH & SOUTH **REQUIRED** **Seq:** 477 Every Day 391

Equip. ID: 1-SPL -INDREC-CR-109-21 **Location:** CRB-272-CRP 9-23

Short Instr: RECORD HIGHEST CHANNEL

Units: umho/CM **Maximum:** <= .2

Shift Time	Reading	Notes	Recorded By
06-12	0.05		JAP
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

CONDENSER B HOTWELL CONDUCTIVITY NORTH & SOUTH **REQUIRED** **Seq:** 478 Every Day 392

Equip. ID: 1-SPL -INDREC-CR-109-23 **Location:** CRB-272-CRP 9-23

Short Instr: RECORD HIGHEST CHANNEL

Units: umho/CM **Maximum:** <= .2

Shift Time	Reading	Notes	Recorded By
06-12	0.06		JAP
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

OUTSIDE GAI-TRONICS **REQUIRED** **Seq:** 479 Every Day 393

Short Instr: NORMALLY OFF 1800-0600 WEEKDAYS AND ALL DAY WEEKENDS AND HOLIDAYS

Shift Time	Reading	Notes	Recorded By
06-12	ON		JAP
12-18			

CONTROL BUILDING PANEL **REQUIRED** **Seq:** 480 Every Day 394

Equip. ID: 1-FP -PANEL -CP-115-3 **Location:** CONTROL RM SAS

Short Instr: POWER AVAILABLE / NO ALARMS

Long Instr: TRM 3.13.A.1

Shift Time	Reading	Notes	Recorded By
06-12	Check		JAP
18-24			

TURBINE BEARING OIL TEMPS CHECK **REQUIRED** **Seq:** 481 Every Day 395

Location: (ERFIS TBD SCREEN)

Short Instr: <= 35F DELTA T RISE ACROSS BEARINGS

Long Instr: ER 950525_02

Shift Time	Reading	Notes	Recorded By
00-06	Check		JAP
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

CRO **OP 0150**
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TURBINE BEARING VIBRATION **REQUIRED** **Seq:** 482 Every Day 396

Location: (ERFIS TBD SCREEN)

Short Instr: IF ANY TURBINE BEARING VIBRATION EXCEEDS 6 MILS, NOTIFY MECHANICAL MAINTENANCE MANAGER VIA EMAIL
Long Instr: ER 950525 02
Units: mils **Maximum:** <= 6

Shift Time	Reading	Notes	Recorded By
06-12	5.3	Bearing 9-X	[signature]
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

COMPENSATED TORUS WATER VOLUME **REQUIRED** **Seq:** 483 Every Day 397

Location: C029

Short Instr: IF C029 NOT AVAILABLE OR LEVEL OUT OF SPEC SEE LONG INSTUCTION.
Long Instr: IF C029 NOT AVAILABLE, CALULATE LEVEL USING LI-16-19-46A/B AND OP2115 FIG-1.

IF TORUS WATER LEVEL IS OUT OF SPEC, NOTIFY OPERATIONS MANAGER AND ENTER TECH. SPEC. LCO 3.7.A.8

TS 3.7.A.1.e
TS 3.7.A.1.f
TS 3.7.A.1

Units: CUBIC FEET **Minimum:** >= 68255 **Maximum:** <= 69745

Shift Time	Reading	Notes	Recorded By
06-12		C029 Not Available	[signature]
18-24			

COMPENSATED TORUS WATER VOLUME **REQUIRED** **Seq:** 484 Every Day 518

Short Instr: Shutdown water inventory check for volume in excess of 70,000 cuft. Reading is in gallons
Units: gallons

Shift Time	Reading	Notes	Recorded By
06-12			
18-24			

Reading Expr.: (n(sta(397))-70000)*7.4
Appl. Expr.: n(Sta(397))>70000 and (Sta(102) = "START / HOT STANDBY" OR Sta(102)="SHUTDOWN" OR Sta(102) = "REFUEL")

CORE THERMAL POWER **REQUIRED** **Seq:** 485 Every Day 398

Location: C047

Units: MWth **Maximum:** <= 1912

Shift Time	Reading	Notes	Recorded By
00-06	1910.3		[signature]
12-18			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

COMPENSATED TORUS WATER TEMPERATURE **REQUIRED Seq:** 486 Every Day 399

Location: C207

Short Instr: IF C207 NOT AVAILABLE, OR TEMPERATURE IS OUT OF SPEC SEE LONG INSTRUCTION

Long Instr: IF C207 NOT AVAILABLE, CALCULATE AVERAGE TORUS WATER TEMPERATURE USING TI-16-19-33A/C.

IF THE 87.3F LIMIT IS EXCEEDED REFER TO OP2115 APPENDIX G FOR ADDITIONAL MARGIN BASED UPON INSTRUMENT AND COMPUTER POINT AVAILABILITY.

TS 3.7.A.1
TS 4.7.A.1

Units: F **Minimum:** >= 50 **Maximum:** <= 87.3

Shift Time	Reading	Notes	Recorded By
00-06	~~72~~ 71.8		
06-12			
12-18			
18-24			

Appl. Expr.: (Sta(102)="SHUTDOWN" OR Sta(102) = "REFUEL") OR ((Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY") AND (CurShiftNo( )=2 OR CurShiftNo( )=4))

ACS OPERABLILITY **REQUIRED Seq:** 487 Every Day 469

Location: F074

Short Instr: CT-2-1 DEEP BASIN TEMPERATURE. USE COMPUTER POINT F074. RECORD VALUE

Long Instr: USING DEEP BASIN TEMPERATURE INDICATED BY F074 VERIFY DEEP BASIN TEMPERATURE AND NUMBER OF RHRSW PUMPS OPERABLE SATISFIES OP 2181 ADMIN LIMITS.

TS 3.5.D.1

Shift Time	Reading	Notes	Recorded By
06-12	95		

Appl. Expr.: Sta(102)="SHUTDOWN" OR Sta(102) = "REFUEL"

SJAE STEAM FLOW **REQUIRED Seq:** 488 Every Day 400

Location: T032

Shift Time	Reading	Notes	Recorded By
00-06	16568		
12-18			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

CIRC WATER INLET TEMPERATURE **REQUIRED Seq:** 489 Every Day 401

Location: C053

Short Instr: WITH 2 CIRCWATER PUMPS RUNNING DURING COLD WEATHER OPS. N/A IF NOT IN COLD WEATHER OPS.

Long Instr: ER 970019
OP 2180

Units: F **Minimum:** >= 33

Shift Time	Reading	Notes	Recorded By
06-12	78.8		
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

CRO **OP 0150**
Operations **Rev 8**
Normal **Page 110 of 125**

CONDENSER BACKPRESSURE **REQUIRED** **Seq:** 490 **Every Day** 402

Location: C033

Short Instr: WITH 2 CIRCWATER PUMPS RUNNING DURING COLD WEATHER OPS. N/A IF NOT IN COLD WEATHER OPS.
Long Instr: ER 970019
OP 2180

Units: in Hg **Minimum:** >= 1 **Maximum:** <= 1.6

Shift Time	Reading	Notes	Recorded By
06-12	1.3		AP
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

ACS OPERABILITY, CT-2-1 DEEP BASIN TEMPERATURE **REQUIRED** **Seq:** 491 **Every Day** 403

Location: F074

Short Instr: RECORD VALUE AND VERIFY DEEP BASIN TEMPERATURE AND NUMBER OF RHRSW PUMPS OPERABLE SATISFIES OP 2181 ADMIN LIMITS
Long Instr: TS 3.5.D.1

Shift Time	Reading	Notes	Recorded By
06-12	95		AP

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

OUTSIDE AIR TEMPERATURE **REQUIRED** **Seq:** 492 **Every Day** 404

Location: PRIMARY MET TOWER 33' ELEV. - C182

Short Instr: AT -15F INITIATE OP 3127 EXTREME COLD WEATHER ACTIONS.
Units: F **Minimum:** >= -15

Shift Time	Reading	Notes	Recorded By
06-12	68		AP
18-24			

SW SUPPLY TEMPERATURE **REQUIRED** **Seq:** 493 **Every Day** 405

Location: F060

Short Instr: IF F060 >= 82F, REFER TO OP 2181 ADMIN LIMITS
Units: F **Maximum:** < 82

Shift Time	Reading	Notes	Recorded By
00-06	80.2		AP
06-12			
12-18			
18-24			

UPSTREAM RIVER TEMPERATURE **REQUIRED** **Seq:** 494 **Every Day** 406

Location: M036

Short Instr: IF POINT IS OUT OF SERVICE REFER TO OP 2180, SECTION P

Shift Time	Reading	Notes	Recorded By
00-06	78.6		AP
06-12			
12-18			
18-24			

DOWNTREAM RIVER TEMPERATURE **REQUIRED** **Seq:** 495 **Every Day** 407

Location: M037

Short Instr: IF POINT IS OUT OF SERVICE REFER TO OP 2180, SECTION P

Shift Time	Reading	Notes	Recorded By
00-06	81.9		AP
06-12			
12-18			
18-24			

CRO **OP 0150**
Operations **Rev 8**
Normal **Page 111 of 125**

SRM RESPONSE **REQUIRED Seq:** 496 Every Day 470

Short Instr: VYOPF 4102.04 PERFORMED DAILY. (PREFER 00-06 SHIFT) DURING CORE ALTERATIONS ONLY.

Long Instr: TS 4.12.B

Shift Time	Reading	Notes	Recorded By
00-06	N/A		
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="SHUTDOWN" OR Sta(102) = "REFUEL"

APRM A GAF **REQUIRED Seq:** 497 Every Day 408

Location: REO SCREEN

Short Instr: IF > 1 SHALL BE CORRECTED WITH 6 HOURS

Long Instr: LER 9717_02

Maximum: <= 1

Shift Time	Reading	Notes	Recorded By
00-06	0.981		
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

APRM A GAF COMPARISON **REQUIRED Seq:** 498 Every Day 409

Location: REO SCREEN

Long Instr: THIS POINT COMPARES OPERABLE APRM GAF FROM ERFIS REO SCREEN FROM ONE SHIFT TO ANOTHER AT STEADY STATE POWER CONDITIONS. THIS POINT IS NOT VALID IF GREATER THAN 5% CHANGE IN THE LAST 24 HOURS OR A ROD PATERN ADJUSTMENT WAS MADE IN THE LAST 24 HOURS.

LER 9717_02

Maximum: <= .01

Shift Time	Reading	Notes	Recorded By
00-06	0.003		
06-12			
12-18			
18-24			

Reading Expr.: Round(N(RangeLastX(408 , 2)),3)

Appl. Expr.: Sta(408)<>"IN OPERABLE" AND (Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY")

APRM C GAF **REQUIRED Seq:** 499 Every Day 410

Location: REO SCREEN

Short Instr: IF > 1 SHALL BE CORRECTED WITH 6 HOURS

Long Instr: LER 9717_02

Maximum: <= 1

Shift Time	Reading	Notes	Recorded By
00-06	0.989		
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

CRO **OP 0150**
Operations **Rev 8**
Normal **Page 112 of 125**

APRM C GAF COMPARISON **REQUIRED Seq:** 500 Every Day 411

Location: REO SCREEN

Long Instr: THIS POINT COMPARES OPERABLE APRM GAF FROM ERFIS REO SCREEN FROM ONE SHIFT TO ANOTHER AT STEADY STATE POWER CONDITIONS. THIS POINT IS NOT VALID IF GREATER THAN 5% CHANGE IN THE LAST 24 HOURS OR A ROD PATERN ADJUSTMENT WAS MADE IN THE LAST 24 HOURS.

LER 9717_02

Maximum: <= .01

Shift Time	Reading	Notes	Recorded By
00-06	0.002		JAP
06-12			
12-18			
18-24			

Reading Expr.: Round(N(RangeLastX(410 , 2)),3)

Appl. Expr.: Sta(410)<>"IN OPERABLE" AND (Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY")

APRM E GAF **REQUIRED Seq:** 501 Every Day 412

Location: REO SCREEN

Short Instr: IF > 1 SHALL BE CORRECTED WITH 6 HOURS

Long Instr: LER 9717_02

Maximum: <= 1

Shift Time	Reading	Notes	Recorded By
00-06	0.990		JAP
06-12			
12-18			
18-24			

Appl. Expr.: Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY"

APRM E GAF COMPARISON **REQUIRED Seq:** 502 Every Day 413

Location: REO SCREEN

Long Instr: THIS POINT COMPARES OPERABLE APRM GAF FROM ERFIS REO SCREEN FROM ONE SHIFT TO ANOTHER AT STEADY STATE POWER CONDITIONS. THIS POINT IS NOT VALID IF GREATER THAN 5% CHANGE IN THE LAST 24 HOURS OR A ROD PATERN ADJUSTMENT WAS MADE IN THE LAST 24 HOURS.

LER 9717_02

Maximum: <= .01

Shift Time	Reading	Notes	Recorded By
00-06	0.003		JAP
06-12			
12-18			
18-24			

Reading Expr.: Round(N(RangeLastX(412 , 2)),3)

Appl. Expr.: Sta(412)<>"IN OPERABLE" AND (Sta(102)="RUN" OR Sta(102) = "START / HOT STANDBY")

Attachment 1
Results of RO Round Sheet 106 thru 112 Review

NAME: _____
(Print)

HOLD BACK FROM ISSUING JPM pages 19 thru 21 until request by Candidate!!!!!!

HOLD BACK FROM ISSUING JPM pages 19 thru 21 until request by Candidate!!!!!!

Figure #1
LI-16-19-46A/B Indication

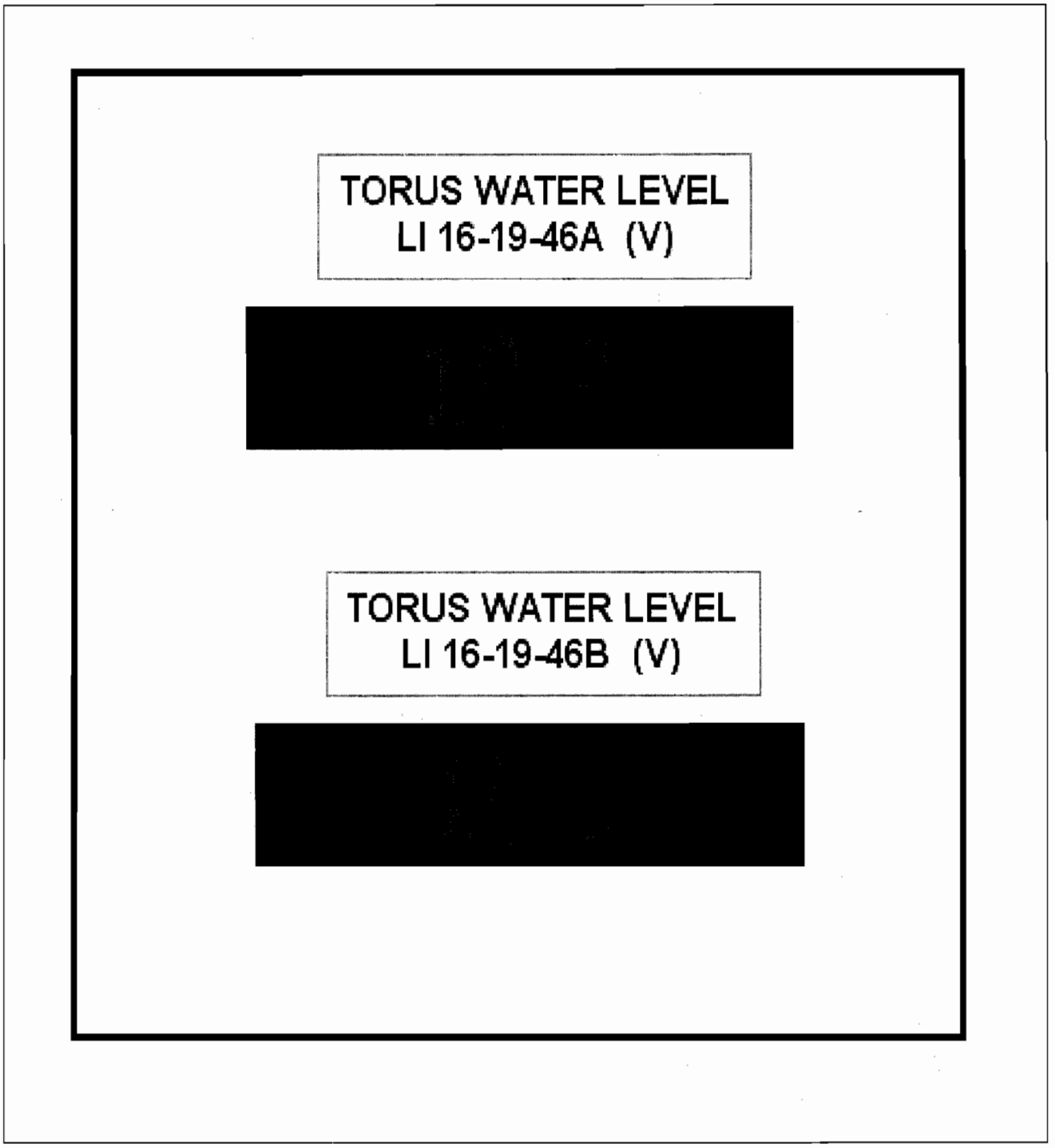


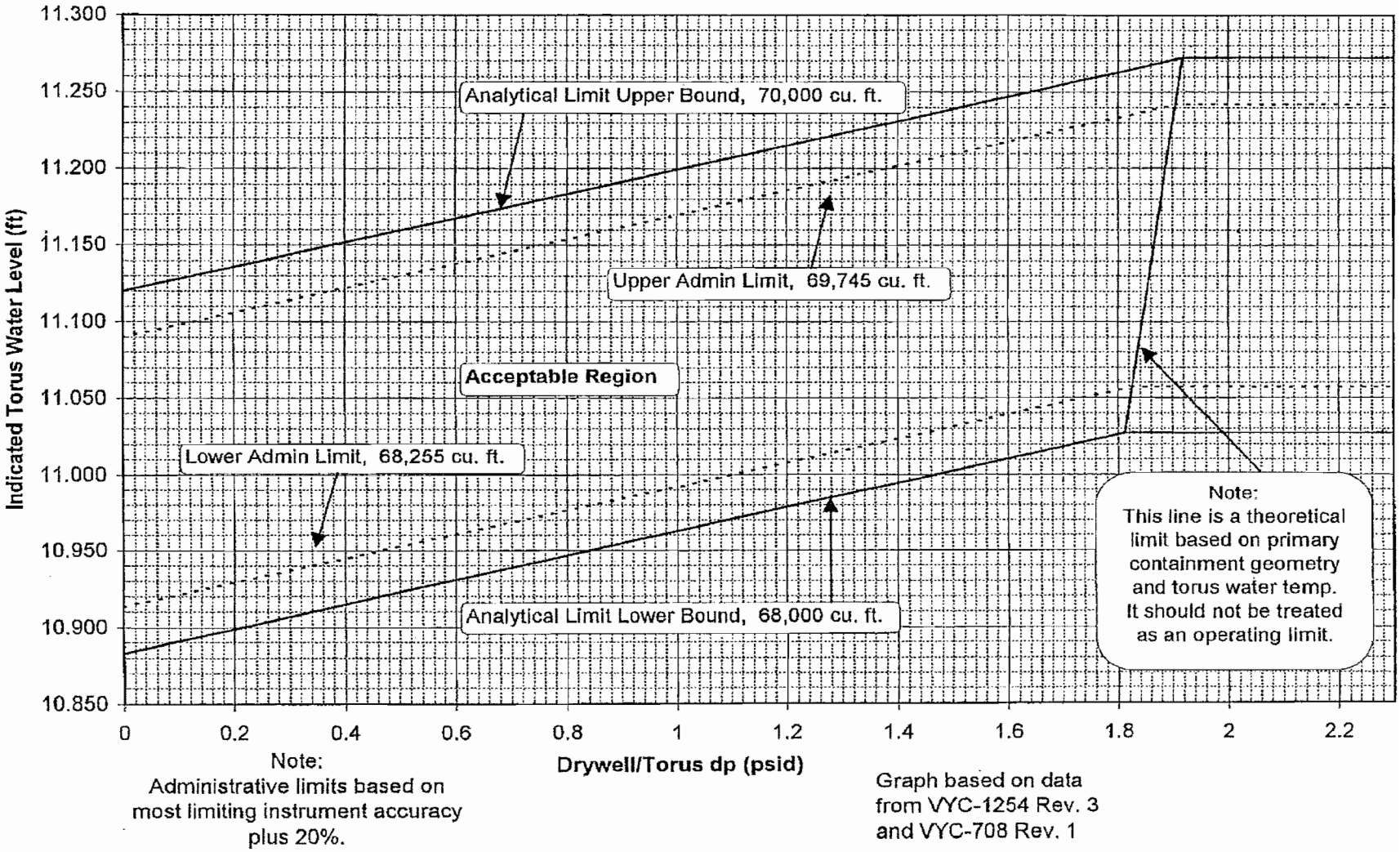
Figure #2
Drywell/Torus dp Indication

Drywell/Torus dp Indication

Is Reading 0.4 psid

FIGURE 1

DRYWELL/TORUS DP VS. INDICATED WATER LEVEL



Note:
Administrative limits based on most limiting instrument accuracy plus 20%.

Graph based on data from VYC-1254 Rev. 3 and VYC-708 Rev. 1

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Isolate Leaking Core Spray Pipe Weld and Determine Technical Specification Required Actions
Failure Mode: N/A
Reference: P&ID G191168/G191299/G191301 and Technical Specications

Task Performance: AO/RO/SRO ___ RO/**SRO** Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: N/A

Method of Testing: Simulation ___ Performance _X_ Discuss

Setting: Classroom _X_ Simulator ___ Plant ___

Performance Expected Completion Time: 25 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 Manager 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.

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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Initial Conditions:

- The plant is operating at full power.
- No equipment is out of service.
- Core Spray is in its normal standby lineup

Initiating Cues:

A through wall crack causing a pencil size leak has been reported by the RBAO to the Shift Manager on the Core Spray suction piping downstream of CS-7A.

The shift manager directs you to:

- Identify mechanical and electrical components to isolate, vent, and drain the pump using controlled station mechanical and electrical drawings.
- Determine applicable LCOs (if any) before AND after leak isolation.

Task Standards:

P-46-1A Breaker Identified
P-46-1A Pump Isolation Vent, Drain Valves identified
MOV Breakers identified
No steps are sequence critical, the control authority will determine the tagging sequence
Correct Technical Specification LCO determined

Required Materials:

Controlled prints

Technical Specifications

Simulator Setup:

Any IC, need controlled prints, can be done in any setting with controlled prints available

TIME START: _____

SAT/UNSAT **Step 1: Determine correct print for Core Spray system.**

Standard: Operator determines G191168 is the Core Spray system print.

SAT/UNSAT ***Step 2: Determine isolation boundaries**

Standard: The following valves determined to be shut:
CS-7A Handwheel,
CS-16A,
CS-8A,
CS-5A Handwheel (and/or CS-18A),
CS-35A,
CS-26A Handwheel,
CS-11A Handwheel, and
CS-21A

SAT/UNSAT ***Step 3: Determine vent path.**

Standard: The following valves determined to be open:
CS-19A, and
CS-29A.

SAT/UNSAT ***Step 4: Determine drain path.**

Standard: The following valves determined to be open:
CS-17A,
CS-27A, and
CS-28A.

SAT/UNSAT **Step 5: Determine correct print for Core Spray Pump 'A' motor breaker**

Standard: Operator reviews G191299

SAT/UNSAT ***Step 6: Determine Core Spray Pump 'A' Breaker.**

Standard: 4kV Bus 4 Compartment 4

SAT/UNSAT **Step 7: Determine correct print for CS MOV 5A/7A/11A/26A**

Standard: Operator reviews G191301 Sheet 2 of 2

SAT/UNSAT ***Step 8: Determine CS MOV 5A/7A/11A/26A power supplies.**

Standard: MCC 9B, Cubicles 2C, 7M, 2M, and 6K.

SAT/UNSAT ***Step 9:** **Determine Technical Specification LCO prior to leak isolation.**

Standard: 3.7.A.8 due to failure to comply with 3.7.A.3 (24hr Cold Shutdown).

SAT/UNSAT ***Step 10:** **Determine Technical Specification LCO after leak isolation.**

Standard: 3.5.A.2 due to one Core Spray system being made inoperable. (7 days or go to cold shutdown within 24hrs).

* Critical Step

TIME FINISH: _____

Terminating Cue: Mechanical and electrical boundaries identified and Technical Specification LCOs determined. Order of steps not critical. Control authority will determine order of steps.

Evaluator Comments: _____

System: 209001 **K/A's:**

System Generic K/A's:

2.2.15 Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.
(CFR: 41.10 / 43.3 / 45.13)

IMPORTANCE RO 3.9 SRO 4.3

2.2.22 Knowledge of limiting conditions for operations and safety limits.
(CFR: 41.5 / 43.2 / 45.2)

IMPORTANCE RO 4.0 SRO 4.7

EXAMINEE HANDOUT

Initial Conditions:

- The plant is operating at full power.
- No equipment is out of service.
- Core Spray is in its normal standby lineup

Initiating Cues:

A through wall crack causing a pencil size leak has been reported by the RBAO to the Shift Manager on the Core Spray suction piping downstream of CS-7A.

The shift manager directs you to:

- Identify mechanical and electrical components to isolate, vent, and drain the pump using controlled station mechanical and electrical drawings.
- Determine applicable LCOs (if any) before AND after leak isolation.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Review and Approve Emergency Plan Allowed Radiation Exposure
Failure Mode: N/A
Reference: OP 3507, Emergency Radiation Exposure Control, Rev. 41

Task Performance: AO/RO/SRO ___ RO/**SRO** Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: N/A

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 Manager 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.

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 **Classroom** and you are to **perform** all actions.

Inform me upon completion of this task.

Do not give applicant 'EXAMINEE HANDOUT (Supplement)' until cued by JPM script*

Initial Conditions:

1. A Site Area Emergency has been declared due to a steam line rupture with significant fuel damage.
2. Entry is required into the MSIV Room to close the outboard MSIVs to prevent event escalation.
3. Job conditions are as follows:
    a. Two individuals are required to complete the job.
    b. **EACH** worker is expected to receive 500 mR in transit from the plant entrance to the Main Steam line access door **AND** the same amount when transiting from the Main Steam line access door to the plant exit.
    c. **EACH** worker is expected to spend 2 minutes in an 800mR/hr field in transit from the Main Steam line access door to the job site **AND** the same amount again while transiting from the job site to the Main Steam line access door.
    d. The job site is in a 2 R/hr field. The job will take 1.5hrs at the job site with both workers working full time.
    e. Airborne radiation levels at this time are not above normal.

4. Earlier today, during an initial entry for this event under a modified RWP, the workers have ALREADY received the following dose:

   a. Technician 1: 600mR, resulting in a total exposure of 1399mR for the year.

   b. Technician 2: 600mR, resulting in a total exposure of 1389mR for the year.

   c. Technician 3: 900mR, resulting in a total exposure of 1280mR for the year.

   d. Technician 4: 900mR, resulting in a total exposure of 1450mR for the year.

   e. Technician 5: 900mR, resulting in a total exposure of 1382mR for the year.

5. The TSC has not been staffed yet.

Do not give applicant 'EXAMINEE HANDOUT (Supplement)' until cued by JPM script*

EXAMINEE HANDOUT (Supplement)

- Five workers are preparing to be briefed to complete the task:

Technician	Sex	Age	SSN	Marital Status	Volunteer	TLD	Pregnant
1. Mike Woods	M	45	123-45-6789	Married	No	145678	N/A
2. Henry James	M	33	987-65-4321	Single	Yes	235699	N/A
3. Jane Riley	F	35	345-67-8900	Married	Yes	233490	No
4. Bill Smith	M	40	654-54-4678	Single	Yes	123462	N/A
5. Mike Long	M	47	610-45-2873	Married	Yes	456237	N/A

All workers have low lifetime accumulated doses

- None of the individuals has ever received an emergency exposure.

Initiating Cues:

1. You are the Shift Manager.

IAW OP 3507, 'Emergency Radiation Exposure Control':

2. Anticipate the total dose to be accumulated by EACH worker.

3. Determine the appropriate exposure limits to allow completion of the required task.

4. Select two (2) workers to complete the task.

Task Standards:

Determine which 2 workers must have Emergency exposure controls put in place due to anticipated doses during response to emergency conditions.

Required Materials:

OP 3507, Rev. 41

Simulator Setup:

N/A

TIME START: _____

SAT/UNSAT ***Step 1: The applicant determines the total does to be received by each worker for the task:**

Standard: a. Determine the anticipated dose from task performance in the work area: (2000mR/hr)(1.5hr)= 3000mR

b. Determine anticipated dose from transit to/from the plant entrance to the Main Steam access door: (500mR)+(500mR)= 1000mR

c. Determine anticipated dose from transit to/from the job site from the Main Steam access door:
(800mR/hr)(2min/60)+(800mR/hr)(2min/60)=53mrem

d. Determine the total dose to each worker for the task:
3000mR+1000mR+53mR=4053mR per worker (+/- 1mR acceptable due to rounding errors)

SAT/UNSAT **Step 2:The applicant determines that task performance is not allowable per normal controls.**

Standard: The applicant determines that the planned dose for the job, combined with the dose already received as a result of the event, is greater than the annual 4500mR administrative limit for radiation exposure per EN-RP-201. (4053mr + 600mr/900mr > 4500mR admin limit)

SAT/UNSAT ***Step 3: The applicant implements OP3507, Attachment 9.1, Step 1.3 and determines that emergency exposure controls are required.**

Standard: The applicant evaluates the total expected dose (>4.5 REM) and recognizes that emergency exposure controls are required to raise the limit (10 REM) per OP3507. *Note: 25 or 75REM exposure limit also acceptable if applicant believes that MSIV closure is necessary to protect plant employees (25REM) or surrounding population (75 REM).*

Interim Cue: Examiner should only provide '**EXAMINEE HANDOUT (Supplement)**' when the applicant determines that emergency radiation exposure authorization is required.
Inform the applicant that joint concurrence with the Shift Manager and Senior Radiation Protection Representative has been obtained for emergency does controls > 4.5REM.

SAT/UNSAT ***Step 4:** **The applicant selects two Technicians for the task per OP3507, Attachment 9.5, Note 1.**

Standard: The applicant selects Technicians 4 and 5 as best suited for the emergency exposure per Note 1. (Technician 1 did not volunteer, Technicians 2 and 3 are younger than Technicians 4 and 5.) All technicians have low lifetime accumulated doses per Examinee Handout Supplement.

* Critical Step

TIME FINISH: _____

Terminating Cue: Two technicians selected and authorized to perform the task.

Evaluator Comments: _____

System: **K/A's:**

System Generic K/A's: **2.3.4 Knowledge of radiation exposure limits and contamination control/incouding permissible levels in excess of those authorized.**

(CFR: 43.4/45.10)

IMPORTANCE **RO 2.5** **SRO 3.1**

EXAMINEE HANDOUT

Initial Conditions:

1. A Site Area Emergency has been declared due to a steam line rupture with significant fuel damage.
2. Entry is required into the MSIV Room to close the outboard MSIVs to prevent event escalation.
3. Job conditions are as follows:
   a. Two individuals are required to complete the job.
   b. **EACH** worker is expected to receive 500 mR in transit from the plant entrance to the Main Steam line access door **AND** the same amount when transiting from the Main Steam line access door to the plant exit.
   c. **EACH** worker is expected to spend 2 minutes in an 800mR/hr field in transit from the Main Steam line access door to the job site **AND** the same amount again while transiting from the job site to the Main Steam line access door.
   d. The job site is in a 2 R/hr field. The job will take 1.5hrs at the job site with both workers working full time.
   e. Airborne radiation levels at this time are not above normal.
4. Earlier today, during an initial entry for this event under a modified RWP, the workers have ALREADY received the following dose:
   a. Technician 1: 600mR, resulting in a total exposure of 1399mR for the year.
   b. Technician 2: 600mR, resulting in a total exposure of 1389mR for the year.
   c. Technician 3: 900mR, resulting in a total exposure of 1280mR for the year.
   d. Technician 4: 900mR, resulting in a total exposure of 1450mR for the year.
   e. Technician 5: 900mR, resulting in a total exposure of 1382mR for the year.
5. The TSC has not been staffed yet.

Initiating Cues:

1. You are the Shift Manager.

IAW OP 3507, 'Emergency Radiation Exposure Control':

2. Anticipate the total dose to be accumulated by EACH worker.
3. Determine the appropriate exposure limits to allow completion of the required task.
4. Select two (2) workers to complete the task.

EXAMINEE HANDOUT (Supplement)

- Five workers are preparing to be briefed to complete the task:

Technician	Sex	Age	SSN	Marital Status	Volunteer	TLD	Pregnant
1. Mike Woods	M	45	123-45-6789	Married	No	145678	N/A
2. Henry James	M	33	987-65-4321	Single	Yes	235699	N/A
3. Jane Riley	F	35	345-67-8900	Married	Yes	233490	No
4. Bill Smith	M	40	654-54-4678	Single	Yes	123462	N/A
5. Mike Long	M	47	610-45-2873	Married	Yes	456237	N/A

All workers have low lifetime accumulated doses

- None of the individuals has ever received an emergency exposure.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: PAR Based on Plant Conditions
Failure Mode: N/A
Reference: OP 3511, Off Site Protective Action Recommendations, Rev. 30

Task Performance: AO/RO/SRO ___ RO/**SRO** Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes _X_ No _____

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: N/A

Method of Testing: Simulation ___ Performance _X_ Discuss

Setting: Classroom _X_ Simulator ___ Plant ___

Performance Expected Completion Time: 13 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 Manager 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. 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 **Classroom** and you are to **perform** all actions.

This is a time critical JPM.

Inform me upon completion of this task.

Initial Conditions:

A steam line rupture and a loss of cooling accident has occurred. All ECCS systems responded as expected. The following plant data is available:

- Reactor water level is -30" and stable
- Containment RAD level is 10,000R/hr and increasing
- Torus pressure is 5psig and steady
- The Shift Manager has declared a General Emergency and the EOF has not yet been manned.
- Wind direction is from 020 degrees

Initiating Cues:

Determine the Protective Action Recommendation based on plant conditions per OP3511, and provide to the Shift Manager for approval.

Task Standards:

Attachment 9.5 PAR complete and submitted to Shift Manager within 13 minute administrative time limit.

Required Materials:

OP 3511, Rev. 30

Simulator Setup:

N/A

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain OP3511 and review precautions:**

Standard: Operator obtains and reviews procedure.

SAT/UNSAT **Step 2:** **Utilize OP3511 Attachment 9.4 to determine the appropriate protective action recommendation based on plant conditions, and record on Attachment 9.5.**

Standard: Operator obtains Attachment 9.4 and Attachment 9.5 from OP3511.

SAT/UNSAT ***Step 3:** **Determine wind direction from meteorological data.**

Standard: Operator records current upper wind direction on Attachment 9.4.

Interim Cue: If JPM is administered in the simulator and the operator attempts to obtain real time data IAW OP3513 Attachment 9.7, inform him/her that wind direction is from 020 degrees as stated in the initial conditions.

SAT/UNSAT ***Step 4:** **Determine from initial conditions that substantial core damage is in progress.**

Standard: Operator answers yes to "substantial core damage" decision block on OP3511 Attachment 9.4 due to containment radiation levels >4,000R/hr and RPV level < TAF.

SAT/UNSAT **Step 5:** **Determine from initial conditions that containment failure has NOT occurred and a release is NOT underway.**

Standard: Operator answers no to "containment failure projected or release underway" decision block on OP3511 Attachment 9.4.

SAT/UNSAT ***Step 6:** **Determine PAR of EVACUATION for Vernon, Hinsdale, Bernardstown, Guilford, Winchester, and Northfield.**

Standard: Operator determines that PAR is EVACUATION for Vernon, Hinsdale, Bernardstown, Guilford, Winchester, and Northfield (from OP3511

Attachment 9.1 based on wind direction from 020 degrees) and completes Attachment 9.5, Section 1.

SAT/UNSAT **Step 7:** **Review PAR with Shift Manager for approval.**

Standard: Operator requests approval of PAR from Shift Manager.

Interim Cue: Shift Manager states that he/she will complete the remainder of the procedure.

---

* Critical Step

TIME FINISH: _____

Terminating Cue: OP3511 Attachment 9.5 PAR completed and submitted to Shift Manager for review within 13 minute administrative time limit.

Evaluator Comments: _____

System: **K/A's:**

System Generic K/A's: **2.4.29 Knowledge of emergency plan**

(CFR: 43.5/45.11)

IMPORTANCE **RO 2.6** **SRO 4.0**

EXAMINEE HANDOUT

Initial Conditions:

A steam line rupture and a loss of cooling accident has occurred. All ECCS systems responded as expected. The following plant data is available:

- Reactor water level is -30" and stable
- Containment RAD level is 10,000R/hr and increasing
- Torus pressure is 5psig and steady
- The Shift Manager has declared a General Emergency and the EOF has not yet been manned.
- Wind direction is from 020 degrees

Initiating Cues:

Determine the Protective Action Recommendation based on plant conditions per OP3511, and provide to the Shift Manager for approval.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Transfer of RBCCW Heat Exchangers from 'A' to 'B'
Failure Mode: N/A
Reference: OP 2182, Section C 'Transfer of RBCCW Heat Exchangers"

Task Performance: AO/RO/SRO ___ RO/SRO Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Activity Code: _____

Method of Testing: Simulation _X_ Performance ___ Discuss

Setting: Classroom ___ Simulator ___ Plant _X_

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 Manager 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.

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:

Plant is operating at 100% power
A RBCCW Heat Exchanger is in service

Initiating Cues:

The CRS has directed you to transfer RBCCW Heat Exchangers from 'A' to 'B' in accordance with OP 2182, Section C.

Task Standards:

The actions of OP 2182, Section C.1 are complete with RBCCW heat exchanger 'B' in service and 'A' secured.

Required Materials:

OP 2182, Rev 36.

Simulator Setup:

N/A

TIME START: _____

SAT/UNSAT **Step 1: Operator obtains OP 2182 and notes precautions and limitations**

Standard: Operator obtains appropriate procedure and notes precautions and limitations.

Interim Cue: All precautions and limitations have been met.
Note: If asked by applicant, RBCCW D/P check will be performed separately.

SAT/UNSAT **Step 2: Check open RBCCW heat exchanger B inlet valve RCW-91A**

Standard: Operator indicates that he/she will check open RCW-91A by rotating valve handwheel in the counterclockwise direction.

Interim Cue: When operator simulates checking open of RCW-91A, inform operator that handwheel is full open when rotated counterclockwise.

SAT/UNSAT **Step 3: Check open RBCCW heat exchanger B service water inlet valve SW-90**

Standard: Operator indicates that he/she will check open SW-90 by rotating valve handwheel in the counterclockwise direction.

Interim Cue: When operator simulates checking open of SW-90, inform operator that handwheel is full open when rotated counterclockwise.

SAT/UNSAT **Step 4: Do not exceed 8 psi across the service water side of any RBCCW heat exchanger in service**

Standard: Operator notes caution

SAT/UNSAT ***Step 5: Slowly open RBCCW heat exchanger B service water outlet valve SW-92B to approximately the same position as the off-going heat exchanger**

Standard: Operator indicate that he/she will slowly open SW-92B to approximately the same position as the off-going heat exchanger (SW-92A) by rotating the valve handwheel in the counterclockwise direction to

approximately the same position as SW-92A.

Interim Cue: Inform the operator that the valve rotates freely in the counterclockwise direction and the stem is moving outward.

SAT/UNSAT ***Step 6: Slowly open RBCCW heat exchanger B outlet valve RCW-91B**

Standard: Operator indicates that he/she will rotate the RCW-91B handwheel in the counterclockwise direction until full open.

Interim Cue: When operator simulates opening RCW-91B, inform him/her that the valve rotates freely, and that the stem moves outward until resistance is felt and the handwheel stops moving.

SAT/UNSAT ***Step 7: Close RBCCW heat exchanger A outlet valve RCW-93B**

Standard: Operator indicates that he/she will rotate the RCW-93B handwheel in the clockwise direction until full close.

Interim Cue: When operator simulates closing RCW-93B, inform him/her that the valve rotates freely, and that the stem moves inward until resistance is felt and the handwheel stops moving.

SAT/UNSAT ***Step 8: Close RBCCW heat exchanger A service water outlet valve SW-92A**

Standard: Operator indicates that he/she will rotate the SW-92A handwheel in the clockwise direction until full close.

Interim Cue: When operator simulates closing SW-92A, inform him/her that the valve rotates freely, and that the stem moves inward until resistance is felt and the handwheel stops moving.

SAT/UNSAT **Step 9: Verify service water differential pressure through RBCCW heat exchanger B is <= 8 psid as follows:**

1. Open SW-176B RBCCW HX B SW Inlet PI-104-121B Isol

Standard: Operator indicates that he/she will rotate the SW-176B handwheel in the counterclockwise direction until full open. (Note: scaffold required to access SW-176B. Examiner may direct applicant to point to valve in lieu of climbing scaffold.)

Interim Cue: When operator simulates opening SW-176B, inform him/her that the valve rotates freely, and that the stem moves outward until resistance is felt and the handwheel stops moving.

SAT/UNSAT **Step 10: Verify service water differential pressure through RBCCW heat exchanger B is <= 8 psid as follows:**

2. Obtain PI-104-121B pressure.

Standard: Operator obtains PI-104-121B pressure.

Interim Cue: Inform operator that PI-104-121B reads 70 psi.

SAT/UNSAT **Step 11: Verify service water differential pressure through RBCCW heat exchanger B is <= 8 psid as follows:**

3. Close SW-176B RBCCW HX B SW Inlet PI-104-121B Isol

Standard: Operator indicates that he/she will rotate the SW-176B handwheel in the clockwise direction until full close.

Interim Cue: When operator simulates closing SW-176B, inform him/her that the valve rotates freely, and that the stem moves inward until resistance is felt and the handwheel stops moving.

SAT/UNSAT **Step 12: Verify service water differential pressure through RBCCW heat exchanger B is <= 8 psid as follows:**

4. Open SW-177G RBCCW HX B SW Outlet PI-104-122B Isol

Standard: Operator indicates that he/she will rotate the SW-177G handwheel in the counterclockwise direction until full open.

Interim Cue: When operator simulates opening SW-177G, inform him/her that the valve rotates freely, and that the stem moves outward until resistance is felt and the handwheel stops moving.

SAT/UNSAT **Step 13: Verify service water differential pressure through RBCCW heat exchanger B is <= 8 psid as follows:**

5. Obtain PI-104-122B pressure and verify that differential pressure is <= 8psid

Standard: Operator obtains PI-104-122B pressure and determines differential pressure across the heat exchanger by subtracting the PI-104-121B and PI-104-122B pressure readings.

Interim Cue: Inform operator that PI-104-122B reads 65 psi.

SAT/UNSAT **Step 14: Verify service water differential pressure through RBCCW heat exchanger B is <= 8 psid as follows:**

6. Close SW-177G RBCCW HX B SW Outlet PI-104-122B Isol

Standard: Operator indicates that he/she will rotate the SW-177G handwheel in the clockwise direction until full close.

Interim Cue: When operator simulates closing SW-177G, inform him/her that the valve rotates freely, and that the stem moves inward until resistance is felt and the handwheel stops moving.

---

* Critical Step

TIME FINISH: _____

Terminating Cue: RBCCW 'B' heat exchanger in service with RBCCW 'A' heat exchanger secured. SW differential pressure across the 'B' heat exchanger <= 8psid.

Evaluator Comments: _____

System: 400000 **K/A's:** K1.01, K6.01, K6.06, A1.01

System Generic K/A's: N/A

EXAMINEE HANDOUT

Initial Conditions:

Plant is operating at 100% power
A RBCCW Heat Exchanger is in service

Initiating Cues:

The CRS has directed you to transfer RBCCW Heat Exchangers from 'A' to 'B' in accordance with OP 2182, Section C.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Alternate Shutdown Attachment 4, Diesel Start
Failure Mode: Diesel starts, Fails to load
Reference: OPOP-ALTSD-3126, Attachment 4, Rev 2

Task Performance: AO/RO/SRO _X_ RO/SRO ___ SRO Only _____

Sequence Critical: Yes ___ No _X_

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: _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 **Plant** and you are to **simulate** all actions while exercising ALARA, being respective of plant Protected Areas and identifying components to the evaluator's satisfaction.

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 shutdown from outside the control room is in progress. The Vernon tie is NOT available.

Initiating Cues:

The SM directs you to start and load the 'A' Diesel Generator using Attachment 4 of OPOP-ALTSD-3126 starting at step 12.3. Steps 12.1 and 12.2 are complete and you are in radio contact with the SM.

Task Standards:

The 'A' Diesel is started and powering 4KV Bus 4.

Required Materials:

OPOP-ALTSD-3126, Rev 2, Attachment 4

Simulator Setup:

N/A

Evaluation	Performance Steps
	TIME START: _____
SAT/UNSAT	**Step 1: Obtain Procedure OPOP-ALTSD-3126 and review Admin Limits, Precautions, and Prerequisites, and steps prior to step 12.3 as necessary.**
	Standard: OPOP-ALTSD-3126 Attachment 4 obtained, admin limits, precautions and prerequisites reviewed.

Interim Cue: Inform operator Prerequisites are SAT.

SAT/UNSAT	***Step 2: Establish the following conditions at the DG-1-1A GENERATOR PANEL:** **1) DIESEL GEN ALTERNATE SHUTDOWN TRANSFER SS611A IN "EMERG"**
	Standard: At the side of the generator panel, places switch SS611A (front switch) in the EMERG position by turning the switch.

Interim Cue: Inform operator SS611A is in the 9 O'Clock position.

SAT/UNSAT	***Step 3: 2) DIESEL GEN ALTERNATE SHUTDOWN TRANSFER SS611B IN "EMERG"**
	Standard: At the side of the generator panel, places switch SS611B (back switch) in the EMERG position by turning the switch.

Interim Cue: Inform operator SS611B is in the 9 O'Clock position

SAT/UNSAT	**Step 4: 3) SS 611 MAN/AUTO CNTRL SW FOR ALT SHUTDOWN IN AUTO**
	Standard: In the center of the front of the generator panel, verifies switch SS611 in the AUTO position

Interim Cue: Inform operator SS611 is AS-IS.

Evaluation	Performance Steps	
SAT/UNSAT	**Step 5:**	**Request Operator #1 to perform the following: If available close STATION SERVICE WATER PUMP P-7-1C breaker 4KV Bus 4-2).**
	Standard:	Contacts Operator #1 and request the 'C' SW pump breaker be closed.

Interim Cue: Inform operator that the 'C' SW pump breaker is CLOSED.

SAT/UNSAT	**Step 6:**	**Close the STATION SERVICE TRANSF T-9-1A (49) breaker (4KV Bus 4-3).**
	Standard:	Operator contacts Operator #1 and directs him to close the 49 breaker.

Interim Cue: Inform the operator that the 49 breaker is CLOSED.

SAT/UNSAT	**Step 7:**	**Close the MAIN (99) breaker (480V Bus 9). Hold in pushbutton for ~5 seconds.**
	Standard:	Operator requests that Operator #1 close the 99 breaker.

Interim Cue: Inform the operator that the 99 breaker is CLOSED.

SAT/UNSAT	***Step 8:**	**Request Operator #1 install/check installed the "TRIP" and "CLOSE" fuses for DIESEL GENERATOR DG-1-1A breaker (4KV Bus 4-8).**
	Standard:	Operator contacts Operator #1 and directs him to install the TRIP and CLOSE fuses for the A EDG Output breaker.

Interim Cue: Inform the operator that TRIP and CLOSE fuses have been installed.

Evaluation **Performance Steps**

SAT/UNSAT **Step 9: Verify the following occur:**
"A" Diesel Generator starts.
"A" Diesel Generator accelerates to operating speed.
"A" Diesel Generator frequency increases to approximately 60 Hz.
"A" Diesel Generator voltage increases to approximately 4160 volts.

Interim Cue: Inform the operator that he hears the Diesel start and accelerate to operating speed, that frequency is 60 Hz and voltage 4160 volts.

SAT/UNSAT **Step 10: If the Diesel starts but the output breaker fails to close, at DG-1-1A GENERATOR PANEL:**

Standard: Operator checks the position of the output breaker at the local control panel or asks Operator #1 at Bus 4 in the switchgear room.

Interim Cue: When operator checks the breaker at the local control panel inform him that the green light is ON and the red light is OFF. If operator requests a report from Operator #1 on the status, inform the operator as the SM that Operator #1 has informed him that DG-1-1A output breaker failed to close.

SAT/UNSAT ***Step 11: Place synchronizing switch to the ON position**

Standard: Operator places the synchronizing switch at the local control panel to ON

Interim Cue: Inform the operator that the switch is now in the 'On' position.

SAT/UNSAT ***Step 12: Close the DG-1-1A breaker**

Standard: Operator goes to the local control panel and turns the control switch for the DG-1-1A breaker to Close.

Interim Cue: Inform the operator that the switch is now in 2 O'Clock position. Generator Kw can now be observed at the generator control panel. Green light Off, Red light On on 4kV 1-A indicator.

Evaluation	Performance Steps	
SAT/UNSAT	**Step 13:**	**Verify that DIESEL GEN ROOM EXHAUST FAN TEF-2 operates as required.**
	Standard:	Operator checks status of TEF-2 visually.

Interim Cue: Inform the operator that TEF-2 is operating normally.

SAT/UNSAT	**Step 14:**	**Adjust generator voltage as necessary to maintain between 4000 to 4200 volts.**
	Standard:	Operator checks on the Generator Panel for Diesel and/or Bus 4 voltage.

Interim Cue: Inform the operator that voltage reads 4100V.

SAT/UNSAT	**Step 15:**	**Report the status of the diesel to the Shift Manager**
	Standard:	Operator informs the SM that the diesel starts.

Interim Cue: SM acknowledges the report. Another operator will complete remaining section of Attachment 4.

SAT/UNSAT	**Step 16:**	**Place Keeping and STAR used consistently throughout.**
	Standard:	Steps are circled as performed, crossed out as completed and N/A'd as appropriate. STAR used consistently for each simulated manipulation.

* Critical Step

TIME FINISH: _____

Terminating Cue: The 'A' Diesel Generator is running supplying 4KV Bus 4.

Evaluators Comments: _____

System: <u>264000</u> K/As: A4.04

EXAMINEE HANDOUT

Initial Conditions:

A plant shutdown from outside the control room is in progress. The Vernon tie is NOT available.

Initiating Cues:

The SM directs you to start and load the 'A' Diesel Generator using Attachment 4 of OPOP-ALTSD-3126 starting at step 12.3. Steps 12.1 and 12.2 are complete and you are in radio contact with the SM.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Operate RCIC From the Alternate Shutdown Panel
Reference: OPOP-ALTSD-3126, Shutdown Using Alternate Shutdown Methods

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only _____

Sequence Critical: Yes _X_ No

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: _20 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 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. A (+) sign indicates a sequence 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 **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 Control Room is inaccessible. The reactor is scrammed and all initial actions have been completed prior to evacuating the Control Room. You have a portable radio and a key ring.

Initiating Cues:

The SM has appointed you as Operator #3. You are to inject RCIC to control reactor level from the Alternate Shutdown Panel in accordance OPOP-ALTSD-3126, Shutdown Using Alternate Shutdown Methods, starting at Attachment 3, Step 2.

Task Standards:

Reactor vessel level rising in accordance with OPOP-ALTSD-3126.

Required Materials:

OPOP-ALTSD-3126, Rev. 2, Shutdown Using Alternate Shutdown Methods, Attachment 3

TIME START: _____

SAT/UNSAT **Step 1: Obtain and review OPOP-ALTSD-3126**

Standard: **OPOP-ALTSD-3126** obtained and reviewed.

Interim Cue: If asked, all prerequisites have been met and the Shift manager has not directed you to SCRAM the reactor utilizing the scram air filters..

SAT/UNSAT ***Step 2: At MTS-13-2 (Rx Bldg 252' by RCIC door) Transfer 125V DC Manual RCIC Transfer Switch MTS-13-2 to "Emergency" by turning counter clockwise.**

Standard: Operator rotates MTS-13-2 (RB 252' by RCIC door) counter clockwise to the EMERGENCY position.

Interim Cue: Inform Operator that MTS-13-2 is in EMERGENCY.

SAT/UNSAT ***Step 3: Place RCIC V-13-15 Steam Supply Line Isolation Valve Shutdown Transfer Switch (SS1188) to "EMER" (CP-82-3).**

Standard: Operator places RCIC-15 Steam Supply Line Isolation Valve Transfer Switch (SS1188) on CP-82-3 in EMERGENCY

Interim Cue: Inform Operator that the RCIC-15 Valve Transfer Switch is in EMERGENCY

SAT/UNSAT ***Step 4: Place RCIC V13-16 Steam Supply Line Isolation Valve Shutdown Transfer (SS1189) to "EMER" (CP-82-3)**

Standard: Operator places RCIC-16 Steam Supply Line Isolation Valve Transfer Switch (SS1189) on CP-82-3 in EMERGENCY

Interim Cue: Inform Operator that the RCIC-16 Valve Transfer Switch has been placed in EMERGENCY

SAT/UNSAT **Step 5: Open/Check Open RCIC V13-15 Steam Supply Line Isolation Valve.**

Standard: Operator checks RCIC-15 open by observing Red light On, Green light Off on CP-82-3.

Interim Cue: Inform Operator that RCIC-15 indicates open.

SAT/UNSAT **Step 6: Open/Check Open RCIC V13-16 Steam Supply Line Isolation Valve**

Standard: Operator checks RCIC-16 open by observing Red light On, Green light Off on CP-82-3.

Interim Cue: Inform Operator that RCIC-16 indicates open.

SAT/UNSAT **Step 7: In the HPCI room, Open the ACB for HPCI Aux Oil Pump P-85-1A (MCC-DC-1B-4L)**

Standard: Operator opens the HPCI Aux Oil Pump ACB on DC-1B (in HPCI Room) by placing the breaker switch to OFF.

Interim Cue: Inform the Operator that the ACB for the HPCI Aux Oil Pump is open.

SAT/UNSAT

Step 8: At the RCIC Corner Room (Rx Bldg 213' Level) on Alternate Shutdown Station ADS Safety Relief Valves Panel B1300SII perform the following:

- **Check/Place Safety Relief Valve RV2-71A Control Switch to CLOSE.**
- **Check/Place Safety Relief Valve RV2-71B Control Switch to CLOSE.**

Standard: Operator verifies that the control switches for SRV 71A/B on panel B1300S11 (RCIC Room SRV control panel 213' level), are in CLOSE

Interim Cue: Inform Operator that the control switches for SRV 71A/B are in CLOSE

SAT/UNSAT

Step 9: At the Appendix R SRV Alt Shutdown Panel (RCIC Corner Room 232' level), place the ADS Transfer, SS-752, Switch to EMER

Standard: Operator places the Appendix R ADS Transfer Switch in the RCIC Corner Room 232' level in EMERGENCY (Note: it is acceptable to have the applicant inform the examiner where he/she would go to actuate SS-752 rather than transit to the 232' level and back to the 213' level. The applicant should show the examiner where SS-752 after the completion of the JPM step in the 232; level)

Interim Cue: Inform Operator that the Appendix R ADS Transfer Switch is in EMERGENCY

(Note: it is acceptable to have the applicant inform the examiner where he/she would go to actuate SS-752 rather than transit to the 232' level and back to the 213' level. The applicant should physically show the examiner where SS-752 is after the completion of the JPM step in the 232; level)

SAT/UNSAT ***Step 10: At the RCIC Corner Room (Rx Bldg 213' Level) Transfer 125V DC Manual RCIC Transfer Switch MTS-13-1 to "Emergency" by turning counter clockwise.**

Standard: Operator rotates MTS-13-1 counter-clockwise to EMERGENCY.

Interim Cue: Inform Operator that MTS-13-1 is in EMERGENCY.

SAT/UNSAT ***Step 11: At the RCIC Corner Room (Rx Bldg 213' Level) At CP-82-1 RCIC Alternate Shutdown System, Place the three RCIC Alternate Shutdown Transfer Switches to EMERGENCY in the following sequence:**

1. **SS1178A**
2. **SS1178B**
3. **SS1178C**

Standard: Operator transfers the switches on CP-82-1 to EMERGENCY in sequence: SS1178A →SS1178B → SS1178C

Interim Cue: Inform Operator, as each switch is addressed, that it is in EMERGENCY

SAT/UNSAT ***Step 12: In Panel B1300SII, Transfer the SRV control power Knifeswitch to EMER**

Standard: Operator transfers the SRV Control Power Knife switch in Panel 1300BS11 to EMERGENCY

Interim Cue: Hand the Operator the photo of the inside of the panel and have him explain the manipulation, or if no photo available, inform Operator that the SRV Control Power knife switch is in EMERGENCY

SAT/UNSAT

Step 13: If Power is not available on the panel, or to some valves, replace the fuses as described in Appendix E.

Standard: Operator observes the position/status indicating lights for all valves/motors on CP-82-1 to determine if fuse replacement is necessary.

Interim Cue: Inform Operator that ALL position/status indicating lights are energized

---

SAT/UNSAT

Step 14: On CP-82-1, RCIC Alternate Shutdown System Checks Closed the following valves:

- **RCIC V13-30 (Test Bypass to Condensate Storage Tank)**
- **RCIC V13-131 (Steam to Turbine)**
- **RCIC V13-27 (Minimum Flow Byp to Suppression Chamber)**
- **RCIC V13-41 (Pump Suction From Suppression Chamber)**
- **RCIC V13-39 (Pump Suction From Suppression Chamber)**

Standard: Operator checks closed above listed valves at CP-82-1; verifies Green light On / Red light Off for each valve.

Interim Cue: As each valve is addressed, inform Operator that the Green light is On / Red light is Off.

SAT/UNSAT

***Step 15: On CP-82-1, RCIC Alternate Shutdown System Open/Check Open the following valves:**

- **RCIC V13-132 (Turbine Cooling Water Supply) - OPEN**
- **RCIC V13-18 (Pump Suction From cond Storage Tank) - Check**
- **RCIC V13-20 (Pump Discharge Valve) - OPEN**
- **RCIC V13-21 (Pump Discharge Valve) - OPEN**
- **RCIC Turbine Trip Throttle Valve Check –Check Open**
- **RCIC V13-15 Steam Supply Line Isolation Valve – Check Open**
- **RCIC V13-16 Steam Supply Line Isolation Valve – Check Open**

Standard: Operator opens/checks open above listed valves at CP-82-1; verifies Red light On /Green light Off for each valve.

Interim Cue: As each valve is addressed, inform Operator that the Red light is On / Green light is Off.

SAT/UNSAT ***Step 16: Start the RCIC gland seal vacuum pump**

Standard: RCIC gland seal vacuum pump control switch on CP-82-1 positioned to START. Operator verifies RCIC gland seal vacuum pump running by observing Red light On / Green light Off on CP-82-1.

Interim Cue: Inform Operator that the RCIC gland seal vacuum pump control switch is in START. Inform Operator that the RCIC gland seal vacuum pump Red light is On, Green light is Off

---

SAT/UNSAT **Step 17: Operate the RCIC gland seal vacuum tank condensate pump as necessary to maintain vacuum tank level within the sightglass**

Standard: Operator verifies mid-level indicated in sightglass.

Interim Cue: When checked, inform Operator that vacuum tank level is mid-level within the sightglass.

SAT/UNSAT ***Step 18: Set the RCIC Turbine Speed potentiometer to zero by turning potentiometer to zero by turning counter-clockwise**

Standard: Operator rotates the RCIC potentiometer fully counter-clockwise

---

Interim Cue: Inform Operator that the RCIC potentiometer is fully counter-clockwise.

SAT/UNSAT **Step 19: Open RCIC V13-27 (Minimum Flow Bypass to Suppression Chamber)**

Standard: Operator places the RCIC-27 control switch on CP-82-1 to OPEN. Operator then verifies RCIC **V13**-27 OPEN by observing Red light On / Green light Off on CP-82-1.

Interim Cue: Inform Operator that the RCIC V13-27 control switch is in OPEN, stating to the Operator that RCIC V13-27 Red light is On / Green light is Off

---

SAT/UNSAT **Step 20: Monitor CST Level on Condensate Storage Tank Level LI-107-12A**

Standard: Operator monitors CST level on CP-82-1 using LI-107-12A.

Interim Cue: Inform Operator that the level is stable.

SAT/UNSAT **Step 21: Monitor Torus Level on Torus Water Level LI-16-19-10A**

Standard: Operator monitors Torus level on CP-82-1 using LI-16-19-10A.

Interim Cue: Inform Operator that the level is stable.

SAT/UNSAT ***Step 22: Start the RCIC Turbine by Opening RCIC V13-131 Steam To Turbine...**

Standard: RCIC V13-131 control switch on CP-82-1 positioned to OPEN. Operator verifies RCIC V13-131 Open by observing Red light On/ Green light Off on CP-82-1.

Interim Cue: Inform Operator that the RCIC-131 control switch is in OPEN by informing the Operator that RCIC-131 Red light is On / Green light is Off

---

SAT/UNSAT ***Step 23: And increasing RCIC potentiometer so turbine accelerates to greater than 2000 rpm immediately.**

Standard: Immediately rotates RCIC potentiometer clockwise to raise RCIC turbine speed to > 2000 rpm.

Time

Interim Cue: Inform Operator that RCIC turbine speed rises to 2200 rpm and stabilizes.

SAT/UNSAT ***Step 24: Adjust RCIC potentiometer to obtain 400 gpm at less than or equal to 4500 rpm as indicated on local instrument dpi/FI-13-61**

Standard: Potentiometer on CP-82-1 adjusted to achieve RCIC rpm at ≤4500 rpm as indicated by RPM meter on CP-82-1 and RCIC flow at 400 gpm as indicated by RCIC flow DPIS-13-61 located on the instrument rack next to the RCIC Alternate Shutdown Panel.

Interim Cue: Inform Operator that RCIC speed is at 4300 rpm and stable. When DPIS-13-61 is checked, inform Operator that indicated flow is 400 gpm.

SAT/UNSAT ***Step 25: When RCIC flow increases above 80 gpm, close RCIC V13-27 Minimum Flow Bypass To Supp Chamber.**

Standard: When report is received that flow is > 80 gpm, Operator manually closes RCIC V13-27 by taking control switch on CP-82-1 to CLOSE. Operator then verifies RCIC-27 Green light On / Red light Off

---

Interim Cue: Inform Operator that RCIC-27 Green light is On / Red light is Off, RCIC V13-27 control switch is in CLOSE.

SAT/UNSAT **Step 26: Maintain RCIC Turbine Speed < 4500 rpm.**

Standard: Operator adjusts RCIC potentiometer as necessary to maintain RCIC turbine speed ≤ 4500 rpm

---

Interim Cue: Inform Operator that RCIC speed has stabilized at 4300 rpm.

SAT/UNSAT ***Step 27: Adjust RCIC flow with the potentiometer as necessary to maintain reactor water level between 137" and 167" as read on RPV Water Level LI-2-3-72C**

Standard: Operator adjusts potentiometer to maintain level between 137" and 167" while monitoring level on LI-2-3-72C.

Interim Cue: Inform Operator that RPV level is 138" and slowly rising.

SAT/UNSAT **Step 28: Place keeping and STAR used consistently throughout.**

Standard: Steps are circled as performed, crossed out as completed and N/A'd as appropriate. STAR used consistency for each manipulation.

TIME FINISH: _____

Terminating Cue: Reactor level rising and being maintained using RCIC in accordance with OPOP-ALTSD-3126.

Evaluator Comments:_____

System:
PRIMARY:
217000 Reactor Core Isolation Cooling System (RCIC)

K/A: A1.03
Al. Ability to predict and/or monitor changes in parameters associated with operating the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) controls including:
(CFR: 41.5 / 45.5)
A1.03 Reactor water level

IMPORTANCE:
RO 4.0 SRO 4.0

SECONDARY:
295016 Control Room Abandonment

K/A: AA1.06
AA1. Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT :
(CFR: 41.7 / 45.6)
AA1.06 Reactor water level.....

IMPORTANCE:
RO 4.0 SRO 4.1

EXAMINEE HANDOUT

Initial Conditions:

The Control Room is inaccessible. The reactor is scrammed and all initial actions have been completed prior to evacuating the Control Room. You have a portable radio and a key ring.

Initiating Cues:

The SM has appointed you as Operator #3. You are to inject RCIC to control reactor level from the Alternate Shutdown Panel in accordance OPOP-ALTSD-3126, Shutdown Using Alternate Shutdown Methods, starting at Attachment 3, Step 2.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Startup Idle Recirc Pump "A" with "B" Recirc Pump Running
Failure Mode: **(Alternate Path)** RV-53A Disc Separation
Reference: OP 2110, Reactor Recirc System (Rev 81)

Task Performance: AO/RO/SRO ___ RO/SRO Only _X_ SRO Only ___

Sequence Critical: Yes ___ No _X

Time Critical: Yes _X_ No

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: 20 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.

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.

Portions of this JPM are time critical.

Inform me upon completion of this task.

Initial Conditions:

- Reactor is in single loop power operation.
- The idle 'A' Recirc Loop has been prepared for pump start IAW Section D.1 through 5 of OP 2110 including the reactor coolant temperature check of 4110.05 is complete, See Attached.
- The 'B' Recirc Pump speed has just been reduced to minimum.

Initiating Cues:

The CRS has directed you to start the 'A' Reactor Recirc Pump IAW OP 2110, starting at step D.6. An Operator, stationed in the vicinity of the 'A' Recirc MG set, is in continuous phone communication with the control room.

Task Standards:

This JPM has been written to start the "A" recirculation loop pump.

"A" Recirc Pump is secured due to failure of the discharge valve disc

Required Materials:

OP 2110, Reactor Recirc System, Rev. 81
Attached: Executed VYOPF 4110.05, Rev. 44 (Reactor Coolant Temperature Check Data Sheet)

Simulator Setup:

- 20% power IC
- Activate rfSW_58 (Auto Recirc MG Lube Oil Temperature Control)
- Secure the A Recirc Pump, place controller in MANUAL and adjust to minimum speed
- Adjust B Recirc Pump to minimum speed, with controller in MANUAL
- Ensure the A Recirc pump speed controller is set at 0 in manual with P displayed.
- Insert mfRR_14A (RV-53A Disc Separation)
- Limit RV-53A open travel to 70% open

CAUTION

When reducing the speed of running recirculation pump to minimum, plant conditions may result in thermal stratification in the bottom head region. The performance of steps to start the secured recirculation pump and opening RV-53A are time critical.

CAUTION

- **During recirculation pump startup, IF there is no indication that flow has been established (jet pump flow, pump flow, pump dp, and/or reactor neutron flux) within one minute of field breaker closure, THEN:**
  - **Trip the recirc pump A(B) and**
  - **Close Pump Discharge RV-53A(B)**
- **PUMP DISCHARGE valve RV-53A(B) must be opened at least 90% within 5 minutes of drive motor breaker closure or the drive motor breaker will trip.**

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain procedure; review admin limits, precautions, and pre-requisites**

Standard: Procedure OP 2110 Rev. 81 obtained; admin limits, precautions, and pre-requisites reviewed

---

Interim Cue: Present candidate a copy of OP 2110, Rev. 81 once attempt to obtain in the Control Room with the "REACTOR COOLANT TEMPERATURE CHECK DATA SHEET" filled out.
If asked, all pre-requisites are met. MG set lube oil is at 100 degrees F locally.

SAT/UNSAT **Step 2: Ensure motor-generator set start permissives are satisfied.**

Standard: Operator verifies the following Section D.6 requirements:

a) ____ Pump Suction Valve RV-43A is open (RED light on)

b) ____ Generator field breaker is open (Green light on)

c) ____ Lockout relay is reset

Interim Cue: Cue: "Lockout relay is reset"

---

d) ____ Lube oil circulation flow is normal (40-65 psig)

Interim Cue: Cue: "Lube oil circulation flow is normal at an indicated 52 psig"

---

e) ____ Drive motor bus is at or near rated voltage
(Bus #1, 3rd gauge down)

f) ____ Pump Discharge Valve RV-53A is closed (Green light on)

Evaluation	Performance Steps	
SAT/UNSAT	**Step 3:**	**Monitor ERFIS Point M040**
	Standard:	Operator monitors Point M040 ("A" Generator Tach Speed) on ERFIS
SAT/UNSAT	***Step 4:**	**Start the 'A' Reactor Recirc Pump (P-18-1A)**
	Standard:	Operator may perform a PA announcement of pump start. Operator takes the Recirc Pump 'A' Drive Motor control switch to START.
SAT/UNSAT	**Step 5:**	**Observe that Field breaker closes approximately 7 sec. after drive motor breaker is closed. (Green to Red light lit)**
	Standard:	7.a.1) Operator verifies that field breaker closes in approximately seven seconds by observing indications at CRP 9-4

Record Time: _____

NOTE: within 1 minute Pump needs to be tripped IF candidate does not establish and recognize pump loop flow (Step #9 below)
NOTE: within 5 minutes Pump needs to be tripped (Step #12 below) because RV-53A will not open at least 90%.

SAT/UNSAT	**Step 6:**	**Observe Generator speed (M040) hits peak of approximately 80%.**
	Standard:	7.a.2) Operator observes generator speed hits peak of approx. 80%
SAT/UNSAT	**Step 7:**	**Observe that Generator speed settles out to approximately 40% speed and then decays to approximately 20% speed**
	Standard:	7.a.3) Operator verifies that generator speed settles to approximately 40% and then decays to approximately 20% by observing ERFIS PTID.
SAT/UNSAT	***Step 8:**	**Jogs Open PUMP DISCHARGE valve RV-53A**
	Standard:	Operator takes the RV-53A control switch to OPEN for 3 seconds and waits at least 10 seconds. Operator notices 'A' D/P and flow increase.

Booth Operator Cue: Should observe both initial "A" D/P and flow increase
AND THEN: Place fault in Simulator RV-53A.

Evaluation	Performance Steps	
SAT/UNSAT	T*Step 9:	**Recognizes some 'A' loop pump flow has been established.**
	Standard:	Operator recognizes some jet pump flow, pump dp and/or reactor neutron flux within one minute of field breaker closure. **Precaution #33: IF** there is no indication that flow has been established (jet pump flow, pump flow, pump dp, and/or reactor neutron flux) within one minute of field breaker closure, THEN Operator should: • Trip the recirc pump A(B) and • Close Pump Discharge RV-53A(B)

Record Time: _____ (< 1 minute from field breaker closure?)

SAT/UNSAT	Step 10:	**MAY Continues to Jog Open PUMP DISCHARGE valve RV-53A**
	Standard:	Depending on Booth Instructor timing and Simulator response: Operator takes the RV-53A control switch to OPEN for 3 seconds and waits at least 10 seconds repeatedly.
SAT/UNSAT	Step 11:	**Recognize abnormal flow response to RV-53A manipulation and recommend tripping of the "A" Recirc Pump**
	Standard:	Operator recognizes: - Abnormal flow indication on CRP 9-4: (FI-2-159A, FI-2-3-87A/B, FI-2-3-92A), and - RV-53A Open Red light does not illuminate, and Operator Recommends that "A" Recirc Pump be tripped.

Interim Cue: When the Operator requests/recommends tripping of the A Recirc Pump, direct that pump be tripped

---

Note: With the pump discharge valve RV-53A not greater than 90% open, within 5 minutes of drive motor breaker closure or the drive motor breaker will trip IAW OP 2110 Precaution #5. The 5-minute clock for the time critical portion of this JPM starts when the pump is started (Step 4), and ends with Step 12 (when the pump is tripped).

Evaluation **Performance Steps**

SAT/UNSAT **T*Step 12: Trip the A Recirc Pump**

Standard: Operator trips Recirc Pump 'A' Drive Motor Breaker at CRP 9-4

RecordTime: _____

Did 'A' Recirc Pump Auto Trip or Intentionally Tripped? _____

Interim Cue: No further actions are required for this JPM

TIME FINISH: _____

Terminating Cue: Operator trips the "A" Recirc Pump IAW OP 2110 Precaution #5

Evaluator Comments: _____

System: 202001 Recirculation System

K/A: Ability to predict and/or monitor changes in parameters associated with operating the RECIRCULATION SYSTEM controls including:

- Core flow

IR: RO 3.6
SRO 3.6

EXAMINEE HANDOUT

Initial Conditions:

- Reactor is in single loop power operation.
- The idle 'A' Recirc Loop has been prepared for pump start IAW Section D.1 through 5 of OP 2110 including the reactor coolant temperature check of 4110.05 is complete, See Attached.
- The 'B' Recirc Pump speed has just been reduced to minimum.

Initiating Cues:

The CRS has directed you to start the 'A' Reactor Recirc Pump IAW OP 2110, starting at step D.6. An Operator, stationed in the vicinity of the 'A' Recirc MG set, is in continuous phone communication with the control room.

REACTOR COOLANT TEMPERATURE CHECK DATA SHEET

1. Prior to and after startup of an idle loop, record the following:

Startup of Recirc Pump in Loop 'A'

	Before Pump S/U	After Pump S/U
Recirc Loop A Temperature (°F)	520	
Recirc Loop B Temperature (°F)	520	
Reactor Pressure (psig)	925	
Bottom Head Drain Temp (°F) (PLC-2-166, RPV/SV/RV Screen, Ch. 4) (ERFIS Pt S026)	412	

Saturation temperature corresponding to above reactor pressure from saturated steam tables. 534 °F

Difference between saturation temperature and bottom head drain temperature 122 °F

NOTE

The pump in an idle recirculation loop shall not be started unless:

a) the bottom head drain temperature is within 145°F of the reactor saturation temperature,

b) if one recirc pump is running, the temperatures of the idle and operating loop are within 50°F of each other,

c) if the reactor is in hot shutdown and both loops are secured with the reactor in the natural circulation mode of operation, the idle loop temperature is within 50°F of the reactor saturation temperature.

2. After startup of the idle loop and with recirc pump speeds balanced to within 5% of each other, perform the daily jet pump operability check per procedure Section A.2.

_____(Initials)

Recorded By_____ Date TODAY
(Print/Sign)

Reviewed By_____ Date_____
Shift Manager (Print/Sign)

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Startup Torus Cooling Using the "A" Side of RHR
Failure Mode: Pump Seal Leakage
Reference: OPOP-RHR-2124 Residual Heat Removal System, Rev. 6

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only__

Sequence Critical: Yes ___ No _X

Time Critical: Yes ___ No _X

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

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 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 Reactor is at power.

Initiating Cues:

The CRS directs you to start torus cooling using the 'A' side of RHR, using the 'A' RHRSW pump and 'A' RHR pump in accordance with OPOP-RHR-2124, Section 7.3. The heat exchanger sample is complete and satisfactory. The 'A' loop of RHR is filled and vented. Torus spray is not desired.

Task Standards:

Torus cooling in service on 'A' RHR system with 'A' RHRSW pump and 'C' RHR pump running in accordance with OPOP-RHR-2124.

Required Materials:

OPOP-RHR-2124, Residual Heat Removal System (latest revision)

Simulator Set-Up:

Any IC, RHR loop 'A' in normal standby lineup. Run scenario file which contains event triggers to simulate RHR pump 'A' seal leakage and the 3-J-5, 'RHR PUMP A SEAL LKG HI' alarm on the RHR Pump 'A' start . 3 SW pumps running at scenario start.

TIME START: _____

Evaluation **Performance Steps**

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

Standard: OPOP-RHR-2124, section 7.3, obtained, administrative limits, precautions and prerequisites reviewed.

Interim Cue: Inform operator that all prerequisites are satisfied.

SAT/UNSAT **Step 2: Request CRS to enter Tech Spec LCO 3.5.A.4 for RHR loop aligned for torus cooling.**

Standard: Operator advises CRS of Tech Spec requirement

Interim Cue: CRS acknowledges report.

SAT/UNSAT **Step 3: Request RP to survey the RHR corner room and torus area.**

Standard: Operator uses the gai-tronics or telephone to request surveys.

Interim Cue: When call is made, inform operator that an RP will conduct surveys

---

SAT/UNSAT **Step 4: Check condensate transfer is being used to provide keep fill pressure, secure the condensate transfer keep fill per the Condensate Transfer Keep Fill Operation section of this procedure.**

Standard: Operator notes that the condensate system is providing keep fill.

SAT/UNSAT **Step 5: Verify RHR-89A CLOSED.**

Standard: Operator verifies RHR-89A CLOSED on CRP 9-3 by Green light ON and Red light OFF.

SAT/UNSAT **Step 6: Verify RHR-89A TEST switch in AUTO.**

Standard: Operator verifies RHR-89A TEST switch in AUTO on the CRP vertical panel.

SAT/UNSAT **Step 7: Ensure Adequate Number of SW Pumps are Operating to handle RHRSW pump demands.**

Standard: Operator checks on CRP 9-6 that adequate number of SW pumps are on and that no more than one station SW pump is in STANDBY.

SAT/UNSAT **Step 8: Start Station SW Pumps as Necessary**

Standard: On CRP 9-6 horizontal panel, the operator starts any standby service water pumps as necessary (if initial condition of three SW pumps running is met, this step is N/A).

SAT/UNSAT ***Step 9: Start 'A' RHRSW Pump**

Standard: RHR SW Pump Switch P-8-1A on CRP 9-3 taken to START and released.

SAT/UNSAT **Step 10: Verify "A" RHR SW Pump Starts**

Standard: Operator acknowledges alarm 3-K-4, Operator observes red light ON and green light OFF on CRP 9-3, and pump amps peg and return to normal amber band. Operator verifies flow indication on FI-10-132A. **(Note: Pump doesn't start until RHR-89A reaches full open-> ~40seconds)**

Interim Cue: If operator requests Chemistry to determine whether RHRWS chemical treatment is necessary, inform operator that chemical treatment is *not* necessary.

SAT/UNSAT **Step 11: RHR SW pump cooling flow verified between 5 to 7.5 gpm.**

Standard: Operator contacts AO and directs AO to verify RHR SW pump cooling flow 5 to 7.5gpm.

Interim Cue: When AO contacted, AO reports 6.5gpm RHR SW Pump cooling flow.

SAT/UNSAT ***Step 12: Start RHR Pump 'A'**

Standard: RHR Pump Switch P-10-1A on CRP 9-3, taken to START and released

when pump starts

SAT/UNSAT **Step 13: Verify RHR pump 'A' running.**

Standard: Operator observes red light on, green light off associated with 'A' RHR pump. Operator observes pump amps peg high on 10A-M1A and then settle to normal band on vertical CRP 9-3.

SAT/UNSAT **Step 14: Operator acknowledges alarm 3-J-5, RHR PUMP 'A' SEAL LKG HI.**

Standard: Operator reports alarm to the CRS.

Interim Cue: CRS acknowledges report.

SAT/UNSAT ***Step 15: Operator refers to the ARS for 3-J-5.**

Standard: Operator refers to ARS 3-J-5 Operator Actions.

SAT/UNSAT **Step 16: Verify leakage using local seal leak off flow meter**

Standard: Operator contacts AO and directs him to verify leakage using local seal leak off flow meter.

Interim Cue: AO reports ~1.0gpm on FI-10-125A (local seal leak off flow meter).

SAT/UNSAT **Step 17: If RHR is required, consider starting RHR pump 'C' and securing RHR pump 'A'**

Standard: Operator asks CRS whether RHR is required.

Interim Cue: CRS informs operator that RHR is required and to continue with the procedure using RHR Pump 'C'.

SAT/UNSAT **Step 18: Consult Tech Spec 3.5**

Standard: Operator informs CRS of ARS action to consult TS 3.5.

Interim Cue: CRS acknowledges recommendation to consult TS 3.5

SAT/UNSAT ***Step 19: Start RHR Pump 'C'**

Standard: RHR Pump Switch P-10-1C on CRP 9-3, taken to START and released when pump starts

SAT/UNSAT **Step 20: Verify RHR pump 'C' running.**

Standard: Operator observes red light on, green light off associated with 'C' RHR pump. Operator observes pump amps peg high on 10A-M1C and then settle to normal band on vertical CRP 9-3.

SAT/UNSAT ***Step 21: Secure RHR Pump 'A'**

Standard: RHR Pump Switch P-10-1A on CRP 9-3, taken to STOP. Operator observes red light off, green light on associated with 'A' RHR pump.

SAT/UNSAT ***Step 22: Open RHR 39A**

Standard: Operator takes control switch for RHR 39A on CRP 9-3 to OPEN momentarily and verifies red light on and green light off.

SAT/UNSAT ***Step 23: Open RHR 34A**

Standard: Operator takes control switch for RHR 34A on CRP 9-3 to OPEN momentarily and verifies red light on and green light off.

SAT/UNSAT **Step 25: Adjust RHR-89A on CRP 9-3 to maintain RHR SW pressure in the heat exchanger at greater than 20 psid above RHR pressure and limit RHRSW flow to 2300-3140gpm.**

Standard: Operator adjust RHR 89A to maintain greater than 20 psid above RHR pressure (as read on DPI-10-130A) and 2300-3140gpm RHRSW flow (as read on FI-10-132A).

SAT/UNSAT **Step 26:** **If desired, RHR-34A may be throttled to produce desired Torus cooling flow rate, provided RHR flow is maintained greater than or equal to 4100gpm for each pump in service**

Standard: Control switch for RHR-34A on CRP 9-3 taken to open to maintain RHR flow ≤ 7000 GPM

Interim Cue: If asked, CRS directs containment cooling flow to be maintained between 5000-7000gpm (as read on FI-10-136A)

SAT/UNSAT **Step 28:** **Monitor Torus/DW dP**

Standard: Maintain > 1.7 psid between DW/Torus (Recorder located on CRP 9-25)

SAT/UNSAT **Step 29:** **If only one RHR pump is running, then if desired, on CRP 9-3, CLOSE HX Bypass, RHR-65A**

Standard: Control switch for RHR-65A on CRP 9-3 taken to close. Operator observes green light on, red light off.

Interim Cue: CRS indicates desire to CLOSE HX bypass, RHR-65A

SAT/UNSAT **Step 30:** **Monitor Flow Indicators on 9-3**

Standard: Operator observes flow indication on FI-139A, FI-136A, and FI-132A.

SAT/UNSAT **Step 31:** **If desired, pump the Torus to Radwaste**

Standard: Operator asks CRS if pumping the Torus to Radwaste is desired

---

Interim Cue: If requested, CRS indicates that pumping the Torus to Radwaste is not desired at this time.

---

* Critical Step

TIME FINISH: _____

Terminating Cue: Torus cooling in service on 'A' RHR system with 'A' RHRSW pump and 'C' RHR pump running in accordance with OPOP-RHR-2124.

Evaluators Comments: _____

System: 219000 RHR/LPCI: Torus/Suppression Pool Cooling Mode

K/A's:
A2.02 Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Pump trips

(CFR: 41.5 / 45.6)

RO3.3 SRO3.3

System Generic K/A's:

EXAMINEE HANDOUT

Initial Conditions:

The Reactor is at power.

Initiating Cues:

CRS directs you to start torus cooling using the 'A' side of RHR, using the 'A' RHRSW pump and 'A' RHR pump in accordance with OPOP-RHR-2124, Section 7.3. The heat exchanger sample is complete and satisfactory. The 'A' loop of RHR is filled and vented. Torus spray is not desired.

JOB PERFORMANCE MEASURE WORKSHEET

Task Identification:

Title: EPR/MPR Performance Test
Failure Mode: **(Alternate Path)** Swap to MPR
Reference: OP 4160, Turbine Generator Surveillance, Rev. 54

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

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: **20** 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 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:

Normal Rx operation, 100% power with the EPR in control.

Initiating Cues:

The CRS directs you to perform the Daily EPR Performance Test in accordance with section A of OP 4160, Turbine Generator Surveillance.
Today is an odd numbered day.

Task Standards:

The Daily EPR Performance Test Fails.
Reactor Pressure Control is swapped to the MPR.
Plant is stable with reactor pressure control on the MPR.

Required Materials:

OP 4160, Turbine Generator Surveillance, Rev. 54
VYOPF 4160.07, Daily EPR(MPR) Performance Test, Rev. 54
OP 2160, Turbine Generator Support Systems Operation, Rev. 24

Simulator Setup:

Any 100% power IC with Reactor Pressure set at 12 psig below top off normal pressure band.
EPR failure IC mfTC_04A with +/- 10 psig EPR oscillations.

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Procedure OP 4160 and VYOPF 4160.07 and review Admin Limits, Precautions, and Prerequisites.**

Standard: OP 4160 and VYOPF 4160.07 obtained, admin limits, precautions and prerequisites reviewed.

Interim Cue: Inform operator Prerequisites are SAT.

SAT/UNSAT **Step 2:** **Trend Reactor pressure using ERFIS point B025 and verify stability.**

Standard: 1a) Operator Displays a trend of point B025, reactor pressure and confirms reactor pressure is stable.

SAT/UNSAT ***Step 3:** **Adjust the EPR set point approximately 1 psig up.**

Standard: As instructed, Operator confirms day is **ODD** then EPR set point is adjusted 1 psig **UP.**
MPR SERVO MOTOR POSITION (TO35) should move 2 ½% up).

(Non-Critical: Operator initials steps in Form VYOPF 4160.07)

SAT/UNSAT **Step 4:** **Verify response of EPR by observing:**
- **amplitude of oscillation**
- **change in reactor pressure, and**
- **ERFIS TO33 EPR SERVO MOTOR POSITION**

Standard: 1.c) Operator observes amplitude of oscillation and change in reactor pressure and ERFIS TO33 position.

Evaluation	Performance Steps	
SAT/UNSAT	**Step 5:**	**Verify response of MPR by observing final position of MPR servo motor position, ERFIS point T035.**
	Standard:	1.d) Operator observes MPR servo position indicator via ERFIS point T035 and confirms servo **motor** position increases or decreases approximately 2½% depending on direction of set point adjustment.

ENTER FAULT: Booth Operator enters both:

- **EPR failure with 9 to 10 psig reactor pressure oscillation visible on BO25 & CRP Digital.**

SAT/UNSAT	***Step 6:**	**Verify the Amplitude of reactor pressure oscillations < 5 psig.**
	Standard:	1.e) Operator observes amplitude of oscillation and change in reactor pressure on reactor pressure, BO25. AND DETERMINES THAT REACTOR PRESSURE OSCILLATIONS ARE GREATER THAN +/- 7 psig.

Interim Cue: **IF the operator reports the reactor pressure is oscillating to the CRS. Acknowledge the report, only. If guidance/direction is requested, provide direction:**

"Perform the required actions for the given condition IAW OP 4160".

SAT/UNSAT	***Step 7:**	**EPR should be suspected as the cause with available indications.**
	Standard:	2.a) Operator determines that the EPR is the suspected cause of reactor pressure oscillations and commences to swap pressure control to the MPR per OP 2160.

Evaluation **Performance Steps**

SAT/UNSAT **Step 8:** **Obtain Procedure OP 2160 and review Admin Limits, Precautions, and Prerequisites**

Standard: OP 2160 obtained, admin limits, precautions, and prerequisites reviewed

---

Interim Cue: If operator is taking actions to retrieve OP 2160, THEN hand the operator a copy of OP 2160. Inform Operator that prerequisites are SAT

SAT/UNSAT **Step 9:** **If time permits, verify that the MPR pilot bushing is rotating**

Standard: OP 2160 Section B,1.a) Directs auxiliary operator to verify that the MPR pilot bushing is rotating **IF he determines time permits.**

Interim Cue: Respond as the auxiliary operator, and inform Operator that the MPR pilot bushing is rotating

---

SAT/UNSAT **Step 10:** **Verify MPR OUTPUT STROKE is approximately 10% below EPR OUTPUT STROKE setting**

Standard: B.1.b) Verifies that the MPR output stroke is approximately 10% below the EPR output stroke setting by comparing stroke indicators.

Interim Cue: State: "MPR output stroke is approximately 10% below the EPR output stroke setting"

SAT/UNSAT **Step 11:** **Verify bulb for oncoming (MPR) pressure regulator is sound**

Standard: B.1.c) Removes MPR white light bulb and checks/swaps bulb with one currently illuminated to verify viability

---

Interim Cue: State: "MPR white light bulb"

Evaluation	Performance Steps	
SAT/UNSAT	*Step 12:	**Using MPR SET-POINT switch, slowly lower the MPR SETPOINT by going to LOWER until the MPR OUTPUT STROKE moves in the direction of the EPR OUTPUT STROKE setting**
	Standard:	B.1.d) Rotates MPR Setpoint Switch to the LOWER position, and observes that the MPR Output Stroke moves in the direction of the EPR Output Stroke setting. Holds the switch until the MPR takes control.
	NOTES:	**Both white lights will be lit for a brief time and then only the light for the MPR will be lit.**
SAT/UNSAT	*Step 13:	**Continue to slowly lower the MPR SETPOINT until the MPR begins to take control**
	Standard:	B.1.e) Rotates MPR Output Switch to the LOWER position, and observes that the MPR Output Stroke moves in the direction of the EPR Output Stroke setting until the MPR takes control.
SAT/UNSAT	Step 14:	**Verify that the MPR is controlling pressure as follows:Verify white light above MPR SETPOINT switch is illuminated**
	Standard:	B.1.f.1) Observes white light above MPR Setpoint Switch ON,
SAT/UNSAT	Step 15:	**Verify white light above EPR SETPOINT switch is extinguished**
	Standard:	B.1.f.2) Observes white light above EPR Setpoint Switch OFF
SAT/UNSAT	Step 16:	**On CRP 9-5, verify stable reactor pressure**
	Standard:	B.1.f.3) Observes reactor pressure is **stable.**
SAT/UNSAT	Step 17	**If either pressure regulator fails to control pressure, refer to OT 3115, Reactor Pressure, transients for immediate actions.**
	Standard:	B.1.g) Recognizes that the **MPR has control and OT 3115 is N/A.**

Evaluation	Performance Steps	
SAT/UNSAT	*Step 18:	**Using EPR SET-POINT switch, slowly Raise the EPR SET-POINT, by going to RAISE. EPR OUTPUT STROKE will slowly decrease to zero with MPR in control.**
	Standard:	B.1.h) Slowly raises the EPR SET-POINT, by going to RAISE with the EPR SET-POINT switch.
SAT/UNSAT	Step 19:	**EPR cutout switch may be placed in CUTOUT (OFF), if required. The EPR cutout switch should be placed in CUTOUT (OFF)**
	Standard:	B.1.i) Procedure, OP 4160 step A.1.e.2.b states: "Remove the EPR(MPR) from service". Operator places the EPR cutout switch in CUTOUT (OFF).
SAT/UNSAT	Step 20:	**Verify alarm 7-G-2, "EPR CONTROL POWER LOSS/TROUBLE" is energized.**
	Standard:	B.1.i.1) Operator confirms 7-G-2, "EPR CONTROL POWER LOSS/TROUBLE" is energized.
SAT/UNSAT	Step 21:	**Adjust reactor pressure as necessary.**
	Standard:	B.1. j) Operator a**djust** reactor pressure as necessary using the MPR
SAT/UNSAT	Step 22:	**If desired, THEN secure ERFIS reactor pressure trend.**
	Standard:	OP 4160 A.1.g) Operator secures ERFIS reactor pressure trend if desired.

***Critical Step**

TIME FINISH: _____

Terminating Cue: **Reactor Pressure control has been transferred to the MPR, within band and stable. The EPR Performance Test is complete.**

Evaluator Comments: _____

System: 241000 Reactor/Turbine Pressure Regulating System

K/A: A2.04 Ability to (a) predict the impacts of the following on the REACTOR/TURBINE PRESSURE REGULATING SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6)
A2.04 Failed open/closed control/governor valve(s)

IMPORTANCE:
RO 3.7 SRO 3.8

EXAMINEE HANDOUT

Initial Conditions:

Normal Rx operation, 100% power with the EPR in control.

Initiating Cues:

The CRS directs you to perform the Daily EPR Performance Test in accordance with section A of OP 4160, Turbine Generator Surveillance.
Today is an odd numbered day.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Place 'B' Core Spray in Normal Standby Alignment
Failure Mode: N/A
Reference: OP 2123, Rev. 44

Task Performance: AO/RO/SRO ___ RO/SRO Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X_

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: _____ _____
Operations Training Instructor Date

Reviewed by: _____ _____
SRO Licensed/Certified Reviewer Date

Approved by: _____ _____
Operations Training Manager 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.

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:

The reactor is shutdown, Core Spray train 'A' has been aligned to its normal lineup per Section A of OP 2123, Core Spray train 'B' is aligned to the CST for system testing, both trains of Core Spray have been filled and vented per Section I of OP 2123.

Initiating Cues:

The CRS directs you to place Core Spray train 'B' in the normal standby lineup per Section A of OP 2123.

Task Standards:

Core Spray train 'B' in the normal standby lineup per Section A of OP 2123.

Required Materials:

OP 2123, Rev 44

Simulator Setup:

Reactor shutdown, Core Spray loop 'A' in normal standby lineup per Section A of OP2123, Core Spray loop 'B' aligned to the CST per Section 'H' of OP 2123.

TIME START: _____

Evaluation **Performance Steps**

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

Standard: OP 2123 obtained, precautions, administrative limits, and prerequisites reviewed.

Interim Cue: Inform operator Prerequisites are met.

SAT/UNSAT **Step 2: If the core spray system suction was aligned to the CST, then proceed as follows: Place/verify CORE SPRAY PUMP P-46-1B control switch in pull to lock.**

Standard: Operator verifies CORE SPRAY PUMP P-46-1B control switch on CRP 9-3 in pull-to-lock

SAT/UNSAT ***Step 3: If locked, unlock and close CS-8B, CS Pump B Suction. Lock closed CS-8B**

Standard: Operator directs AO to unlock, close and lock CS-8B.

Interim Cue: After directed, AO informs operator that CS-8B is closed and locked.

SAT/UNSAT ***Step 4: Open PUMP SUCTION CS-7B**

Standard: Operator open CS-7B and observes red light on and green light out on CRP 9-3 (Note: operator may remove key for CS-7B keylock)

SAT/UNSAT **Step 5: Open/verify locked open CS-18B, Minimum Flow.**

Standard: Operator directs AO to verify CS-18B locked open.

Interim Cue: After directed, AO informs operator that CS-18B is locked open.

SAT/UNSAT **Step 6: Close/verify closed MINIMUM FLOW CS-5B ACB**

Standard: Operator directs AO to verify CS-5B ACB is closed (Note: light on panel can also provide indication of closure of ACB)

Interim Cue: After directed, AO informs operator that CS-5B ACB is closed.

SAT/UNSAT ***Step 7: Open MINIMUM FLOW CS-5B**

Standard: Operator opens CS-5B and observes red light on, green light out on CRP 93

SAT/UNSAT **Step 8: Close/verify Closed FULL FLOW TEST CS-26B ACB**

Standard: Operator directs AO to verify CS-26B ACB is closed (Note: light on panel can also provide indication of closure of ACB)

Interim Cue: After directed, AO informs operator that CS-26B ACB is closed.

SAT/UNSAT **Step 9: Open FULL FLOW TEST CS-26B**

Standard: Operator opens CS-26B and observes red light on, green light out on CRP 93

SAT/UNSAT **Step 10: Close FULL FLOW TEST CS-26B**

Standard: Operator closes CS-26B and observes green light on, red light out on CRP 93

SAT/UNSAT ***Step 11: Unlock and verify open CST-2, CS Sys Suction Isol. Remove locking device.**

Standard: Operator directs AO to verify CST-2 is unlocked and verified open with locking device removed.

Interim Cue: After directed, AO informs operator that CST-2 is unlocked and verified open with locking device removed.

SAT/UNSAT **Step 12: Independently verify the following:**

- **CS-8B is Locked Closed**
- **CS-18B is Locked Open**

Standard: Operator directs independent AO to verify CS-8B locked closed and CS-18B locked open.

Interim Cue: After directed, AO informs operator that CS-8B is independently verified locked closed and CS-18B is independently verified locked open.

SAT/UNSAT **Step 13: Verify the following valve control switched on CRP-3 in AUTO:**

- **CS-12B PUMP DISCHARGE**
- **CS-11B PUMP DISCHARGE**
- **CS-26B FULL FLOW TEST**

Standard: Operator verifies CS-12B, CS-11B, and CS-26B control switched in AUTO on CRP 9-3.

SAT/UNSAT ***Step 14: Place the control switch for CORE SPRAY PUMP P-46-1B in AUTO.**

Standard: Operator places CORE SPRAY PUMP P-46-1B control switch in AUTO on CRP 9-3.

SAT/UNSAT **Step 15: Verify open MINIMUM FLOW CS-5B.**

Standard: Operator verifies open MINIMUM FLOW CS-5B on CRP 9-3 and observes red light on, green light off.

SAT/UNSAT **Step 16: Verify or place CORE SPRAY B DWL PRESS LOGIC switches on CRP 9-3 in AUTO.**

Standard: Operator verifies/places CORE SPRAY B DWL PRESS LOGIC control switch in AUTO on CRP 9-3.

SAT/UNSAT **Step 17: Verify/place the following test switches in NORMAL:**

- **14A-S11A PWR MON TEST (CRP 9-32)**
- **14A-S12A PWR MON TEST (CRP 9-32)**
- **14A-S13A LNP MON TEST (CRP 9-32)**
- **14A-S14B TEST STATUS (CRP-9-32)**
- **14A-S11B PWR MON TEST (CRP 9-33)**
- **14A-S12B PWR MON TEST (CRP 9-33)**
- **14A-S13B LNP MON TEST (CRP 9-33)**
- **14A-S14B TEST STATUS (CRP 9-33)**

Standard: Operator verifies/places appropriate test switched in NORMAL.

SAT/UNSAT **Step 18: Ensure all alarms on CRP 9-3 and 9-5 for the CS System are cleared.**

Standard: Operator verifies all alarms on CRP 9-3 and 9-5 for the CS System are cleared.

* Critical Step

TIME FINISH: _____

Terminating Cue:

Core Spray train 'B' in the normal standby lineup per Section A of OP 2123.

Evaluator Comments: _____

System: 209001 Low Pressure Core Spray System

K/A's: A4 Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)

K5.05, A1.08, A2.02, A2.08, A3.01, A3.06, A4.02, A4.03, A4.04

System Generic K/A's: N/A

EXAMINEE HANDOUT

Initial Conditions:

The reactor is shutdown, Core Spray train 'A' has been aligned to its normal lineup per Section A of OP 2123, Core Spray train 'B' is aligned to the CST for system testing, both trains of Core Spray have been filled and vented per Section I of OP 2123.

Initiating Cues:

The CRS directs you to place Core Spray train 'B' in the normal standby lineup per Section A of OP 2123.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Defeating HPCI PCIS Group VI Isolation Interlocks for Alternate RPV Depressurization
Failure Mode: N/A
Reference: OE 3107, OE Appendices, Appendix KK (Rev. 27)

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X

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: 30 minutes

Evaluation Results:

Performance: PASS _____ FAIL _____ Time Required: _____

Prepared by: _____ _____
NRC Date

Reviewed by: _____ _____
SRO Licensed/Certified Reviewer Date

Approved by: _____ _____
Operations Training Manager 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 unless otherwise stated.

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 LOCA has occurred. The reactor is shutdown and a Group VI PCIS isolation has occurred due to low RPV pressure.

Initiating Cues:

The CRS directs you to prepare for Alternate RPV depressurization by defeating the HPCI PCIS Group VI Isolation interlocks using Appendix KK of OE 3107.

Task Standards:

HPCI Group VI isolation signals defeated IAW OE 3107 Appendix KK Steps 1.a-1.d.

Required Materials:

OE 3107, Appendix KK, Rev 27
Banana to banana jumper wires
Flathead screwdriver
Electrical tape (for simulation use only)

Simulator Set-Up:

Post SCRAM IC with DW leak. Achieve stable level with RCIC.

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain Procedure and review prerequisites**

Standard: OE 3107 Appendix KK obtained, prerequisites reviewed.

Interim Cue: Inform operator that all prerequisites have been met.

SAT/UNSAT ***Step 2: Obtain the EOP toolbox or necessary equipment from the tool box**

Standard: Obtains two jumpers, flathead screwdriver and electrical tape from EOP toolbox in Control Room.

SAT/UNSAT ***Step 3: IF in Standby, THEN place HPCI Turbine Trip/Inhibit switch to INHIBIT.**

Standard: Operator places HPCI turbine Trip/Inhibit switch to INHIBIT on panel 9-3.

Procedure Step: Defeat Isolation interlocks for HPCI-15 STEAM ISOLATION as follows:

SAT/UNSAT ***Step 4: Defeat Isolation interlocks for HPCI-15 STEAM ISOLATION as follows:**
Lift and tape the following leads

- **CRP 9-41: BB12**
- **CRP 9-39: AA39**

Standard: In the back of CRP 9-41, lift and simulate taping of lead BB-12. In the back of CRP 9-39, lift and simulate taping of lead AA39. (Note: If two leads are connected to a single terminal, only a single lead needs to be taped.)

Interim Cue: After appropriate leads are located, instruct applicant to lifting and SIMULATE taping.

SAT/UNSAT ***Step 5: In CRP 9-39 install a jumper from AA-36 to AA-37.**

Standard: In the back of CRP 9-39, install a jumper from AA-36 to AA-37,

Procedure Step: Defeat isolation interlocks for HPCI-16 STEAM ISOLATION as follows:

SAT/UNSAT ***Step 6: Defeat isolation interlocks for HPCI-16 STEAM ISOLATION as follows:**
Lift and tape the following leads
- **CRP 9-41: BB14**
- **CRP 9-39: AA29**

Standard: In the back of CRP 9-41, lift and simulate taping of lead BB-14. In the back of CRP 9-39, lifting and simulate taping of lead AA29. (Note: If two leads are connected to a single terminal, only a single lead needs to be taped.)

Interim Cue: After appropriate leads are located, instruct operator to lifting and SIMULATE taping.

SAT/UNSAT ***Step 7: IN CRP 9-39 install a jumper from AA-25 to AA-26**

Standard: In the back of CRP 9-39, install a jumper from AA-25 to AA-26

SAT/UNSAT **Step 8: OPEN/Check OPEN the following:**
- **HPCI-15 Steam Isolation**
- **HPCI-16 Steam Isolation**

Standard: Operator checks open HPCI-15 and HPCI-16 on panel CRP 9-3, observing red light On and green light Off for each valve.

Interim Cue: Pressure equalization around HPCI-15 and HPCI-16 is not required.

SAT/UNSAT **Step 8: Place Keeping and STAR used consistently throughout.**

Standard: Steps are circled as performed, crossed out as completed and N/A'd as appropriate. STAR used consistently for each manipulation.

*Critical Step

Terminating Cue: PCIS Group VI isolation signals defeated HPCI and prepared for operation.

TIME FINISH: _____

Evaluator Comments: _____

_____

_____

_____

_____

_____

_____

System: 223002 Primary Containment Isolation System/Nuclear Steam Supply Shut-Off

K/A's: A4. Ability to manually operate and/or monitor in the control room:

(CFR: 41.7 / 45.5 to 45.8)

K1.04, K3.12, K4.03, K4.04, K4.08, A4.01, A4.03

EXAMINEE HANDOUT

Initial Conditions:

A LOCA has occurred. The reactor is shutdown and a Group VI PCIS isolation has occurred due to low RPV pressure.

Initiating Cues:

The CRS directs you to prepare for Alternate RPV depressurization by defeating the HPCI PCIS Group VI Isolation interlocks using Appendix KK of OE 3107.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Transfer of Station Load from the Startup Transformer to the Auxiliary Transformer (Main Transformer Phased to the System)
Failure Mode: N/A
Reference: OPOP-4KV-2142, 4 KV Electrical System, Rev. 2

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

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: 5 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 Manager Date

Directions:

Discuss the information given on this page with the operator being evalu
ated. 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 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:

- Plant Startup in progress.
- Reactor power ~ 25%.
- Main Turbine synchronized to the grid.

Initiating Cues:

The CRS directs you to transfer station loads from the Startup to the Auxiliary transformer in accordance with OPOP-4KV-2142, 4 KV Electrical System, Section 9.5.

Task Standards:

Station loads transferred to Auxiliary transformer in accordance with OPOP-4KV-2142, Rev. 2

Required Materials:

OPOP-4KV-2142, 4 KV Electrical System, Rev 2, Section 9.5.

Simulator Setup:

Any power IC will work. IC-7 is preferred (35% pwr). House loads on startup transformers.

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain procedure, review Precautions, Administrative Limits, and Prerequisites.**

Standard: OPOP-4KV-2142, Section 9.5 obtained. Precautions, Administrative Limits, and Prerequisites, Reviewed.

Interim Cue: When asked all prerequisites are met.

SAT/UNSAT **Step 2:** **Check auxiliary transformer energized from main generator (which must be phased to the 345 KV system) or being backfed through main transformer from 345 KV system.**

Standard: Observes Main Generator tied to grid. MOD T-1, and ATBs 81-1T and 1T closed as indicated by red lights above their control switches on CRP 9-7.

SAT/UNSAT ***Step 3:** **Insert sync check handle in BKR 12 socket and turn sync switch on.**

Standard: 4 KV switch installed in sync selector for breaker 12 on CRP 9-8 horizontal and positioned to ON.

SAT/UNSAT **Step 4:** **Verify bus 1 in phase with auxiliary transformer (synchroscope at 12 o'clock position).**

Standard:
1) Observes synchroscope at 12:00 position on CRP 9-8 and white lights out indicating synchronism.

2) Red lights on both sides of sync scope on CRP 9-8 vertical on indicating voltage on running and incoming bus/machine.

Evaluation	Performance Steps	
SAT/UNSAT	***Step 5: Close breaker 12.**	
	Standard:	Breaker handswitch on CRP 9-8 horizontal taken to CLOSE position then released. Verifies breaker 12 closed as indicated by red light above breaker control switch on CRP 9-8 horizontal
SAT/UNSAT	**Step 6: Check that BKR 13 trips open when BKR 12 switch is released.**	
	Standard:	Observes breaker 13 opened as indicated by green and amber lights above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 7: Reset BKR 13 amber light.**	
	Standard:	13 Breaker handswitch on CRP 9-8 horizontal taken to OPEN then released. Indicates amber light above breaker 13 switch on CRP 9-8 horizontal is out
SAT/UNSAT	***Step 8: Turn sync check handle off and remove it.**	
	Standard:	Sync. check hand on CRP 9-8 horizontal positioned to off, removed from breaker 12 socket.
SAT/UNSAT	***Step 9: Insert sync check handle in BKR 22 socket and turn sync switch on.**	
	Standard:	4 KV switch installed in sync selector for breaker 22 on CRP 9-8 horizontal and positioned to ON.
SAT/UNSAT	**Step 10: Verify bus 2 in phase with auxiliary transformer (synchroscope at 12 o'clock position).**	
	Standard:	1) Observes synchroscope at 12:00 position on CRP 9-8 and white lights out indicating synchronism.
		2) Red lights on both sides of sync scope on CRP 9-8 vertical on indicating voltage on running and incoming bus.

Evaluation	Performance Steps	
SAT/UNSAT	***Step 11:**	**Close BKR 22.**
	Standard:	Breaker handswitch for breaker 22 on CRP 9-8 taken to CLOSE position then released. Verifies breaker 22 closed as indicated by red light above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 12:**	**Check that BKR 23 trips opens when BKR 22 switch is released.**
	Standard:	Observes breaker 23 opened as indicated by green and amber lights above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 13:**	**Reset breaker 23 amber light.**
	Standard:	23 breaker handswitch on CRP 9-8 horizontal taken to OPEN then released. Indicate amber light above breaker 23 switch on CRP 9-8 horizontal is out.
SAT/UNSAT	**Step 14:**	**Turn sync check handle off and remove it from the socket.**
		Place sync check handle on CRP 9-8
	Standard:	Sync switch on CRP 9-8 horizontal turned to OFF and removed from breaker 23 socket and placed on CRP 9-8.
SAT/UNSAT	**Step 15:**	**Check computer points D619 and D620.**
		If either is in the LOSS state, follow section 9.12 of this procedure.
	Standard:	Computer checked, both points found to be in "NORM". Performance of Section 9.12 not necessary.

*Critical Step

TIME FINISH: _____

Terminating Cue: Station loads supplied from Auxiliary Transformer.

Evaluators Comments:

System: 262001 A.C. Electrical Distribution

K/A's: A4.04
A4. Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)
A4.04 Synchronizing and paralleling of different A.C. supplies .

IMPORTANCE:
RO 3.6 SRO 3.7

EXAMINEE HANDOUT

Initial Conditions:

- Plant Startup in progress.
- Reactor power ~ 25%.
- Main Turbine synchronized to the grid.

Initiating Cues:

The CRS directs you to transfer station loads from the Startup to the Auxiliary transformer in accordance with OPOP-4KV-2142, 4 KV Electrical System, Section 9.5.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Shift RPS Bus "A" Power Supply
Reference: OP 2134, Reactor Protection System, Rev 24

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only _____

Sequence Critical: Yes ___ No X

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: 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 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** 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 at power, undergoing normal operation. Both RPS Buses are supplied from their normal sources. An AO is standing by to assist with this evolution.

Initiating Cues:

The CRS has directed you to place RPS Bus "A" on alternate power to allow for MG maintenance and reset the half scram in accordance with OP-2134. A Group 3 isolation has already been inserted in accordance with procedure OP 2115.

Task Standards:

RPS Bus "A" power supply shifted to alternate power in accordance with OP 2134 (Reactor Protection System.)

Required Materials:

OP 2134, Rev. 24, Reactor Protection System (Section C & H)

Simulator Setup:

Any at power IC. No half scrams present. No LPRMs inoperable nor bypassed.
Insert a Group III isolation (verify manual NOT auto insertion)

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Procedure OP 2134, 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. If asked, a pre-job brief has been conducted.

SAT/UNSAT **Step 2:** **Verify 'A' RPS alternate power is available.**

Standard: C1). Observes alternate power supply available light on CRP 9-15 (above and to the right of the NORM/ALT switch) is **"ON".**

SAT/UNSAT **Step 3:** **Check the number of LPRMs bypassed on the companion APRM.**

Standard: C2). Observes on CRP 9-14 that each companion APRM has no more than 1 LPRM bypassed on shared channels that will remain energized during the transfer.

NOTE: APRMs A/D share LPRMs. APRMs C/F share LPRMs. APRMs B/E are independent of one another.

SAT/UNSAT **Step 4:** **Check the number of LPRMs per level on the companion APRM.**

Standard: C3). Observes on CRP 9-14 that each companion APRM that will remain energized has at least 2 operable LPRMs per level.

SAT/UNSAT **Step 5:** **Verify no PCIS group half isolations exist which could cause a full isolation during the transfer.**

Standard: C4). Observes on ERFIS group isolation screen that no half group isolations exist.

SAT/UNSAT **Step 6:** **Insert a manual Group 3 isolation per OP 2115.**

Standard: C5). Operator recalls initiating cues that a Group 3 was previously inserted in accordance with procedure OP 2115.

Evaluation	Performance Steps	
SAT/UNSAT	*Step 7:	**Transfer the RPS BUS 'A' PWR SUPP SEL Switch to ALTERNATE.**
	Standard:	6). Quickly transfers the RPS BUS A PWR SUPP SEL Switch to the ALTERNATE position.
SAT/UNSAT	Step 8:	**Check that the AEOG radiation monitor indicates correctly and associated CRP 9-3 alarms clear.**
	Standard:	6a). Observes on ERFIS group isolation screen that no half group isolations exist. Checks that power has been restored to the AEOG recorder on CRP 9-2 and/or the AEOG meter on CRP 9-10, indications are correct and associated CRP 9-3 alarms are clear.
SAT/UNSAT	*Step 9:	**Instruct the AO to transfer the power supply for the RPS "A" APRMs from Alternate to Normal supply.**
	Standard:	6b). Instruct the AO to transfer power supply for the RPS "A" APRMs to the Normal supply IAW OP 2134, Section C.4.

Booth Operator Interim Cue: Return RPS "A" power supply to RESET using **rfRP_10**.

NOTE: Below steps 10, 11, 12, 13, and 14 are completed in accordance with Section H of OP 2134.

SAT/UNSAT	Step 10:	**Verify the following: All applicable scram initiation conditions have cleared.**
	Standard:	H.1.a) Reviews existing annunciators and determines all applicable scram initiation conditions have cleared.
SAT/UNSAT	Step 11:	**Verify the following: Both RPS buses energized.**
	Standard:	H.1.b) Verifies both RPS buses energized based on previous actions and reviews of 9-15 and 9-17.
SAT/UNSAT	Step 12:	**Verify the following: APRM power is being supplied from RPS.**
	Standard:	H.1.c) Verifies APRM power supplied from RPS based on previous action & annunciator 5-M-6 APRM BUS A/B ALT PWR SOURCE clear.

Evaluation **Performance Steps**

SAT/UNSAT ***Step 13:** **Place the SCRAM RESET switch to the "Group 2 and 3" position, then to the "Group 1 and 4" position, and then back to the Group 2 and 3 position.**

Standard: Positions Scram Reset Switch on CRP 9-5 positioned to Group 2, 3; 1, 4 and then back to 2, 3.

SAT/UNSAT **Step 14:** **Verify the following relays are Energized:**

CRP 9-15:
- RY-5A-K13J,
- RY-5A-K14E,
- RY-5A-K14G,
- RY-5A-K13L

CRP 9-17:
- RY-5A-K13K,
- RY-5A-K14F,
- RY-5A-K14H,
- RY-5A-K13M

Standard: H.5) Verifies CRP 9-15 and CRP 9-17 relays energized.

Interim Cue: When Operator indicates he will check all the relays, after he has **located the correct panel(s)** and the first relay, inform him that another Operator has verified them energized.

Note: When the actuator relays deenergize, their associated scram contacts are opened

---

SAT/UNSAT **Step 15:** **Reset Group III isolation per OP 2115.**

Standard: C.6.d) Obtains OP 2115 in preparation for reset of Group III isolation.

Interim Cue: When Operator indicates he will reset the Group III isolation, inform him that another Operator will complete the remaining steps.

---

* Critical Step

TIME FINISH: _____

Terminating Cue: RPS "A" supplied from the alternate power supply and the half scram reset.

Evaluators Comments: _____

_____

_____

_____

_____

_____

System: 212000 Reactor Protection System

K/A: 2.2.44
Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.
| (CFR: 41.5 / 43.5 / 45.12)

IMPORTANCE:
RO 4.2 SRO 4.4

EXAMINEE HANDOUT

Initial Conditions:

The plant is at power, undergoing normal operation. Both RPS Buses are supplied from their normal sources. An AO is standing by to assist with this evolution.

Initiating Cues:

The CRS has directed you to place RPS Bus "A" on alternate power to allow for MG maintenance and reset the half scram in accordance with OP-2134. A Group 3 isolation has already been inserted in accordance with procedure OP 2115.

VERMONT YANKEE
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Manually Initiate SBGT Train "A"
Failure Mode: Fan 2A Starts but provides no flow
Reference: OPOP-SGT-2117, Standby Gas Treatment, Rev. 1
ARS 21001, CRP 9-3 Alarm Response Sheets

Task Performance: AO/RO/SRO ___ RO/SRO Only _X_ SE Only ___

Sequence Critical: Yes ___ No _X

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:_____ _____
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 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 **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 reactor is at power; normal plant operation

Initiating Cues:

The CRS directs you to start SBGT "A" and take suction on the Reactor Building using Section 7.2 of OPOP-SGT-2117.

Task Standards:

SBGT Train "A" is in normal standby mode after Fan 2A no flow condition.

Required Materials:

OPOP-SGT-2117, Standby Gas Treatment, Rev. 1
ARS 21001, CRP 9-3 Alarm Response Sheets

Simulator Setup:

Any at-Power IC. Put on Key 1: rfPC_38A f:0, manual filter 'A' outlet damper closed.

TIME START: _____

Evaluation	Performance Step	
SAT/UNSAT	**Step 1:**	**Obtain Procedure review precautions, administrative limits, and prerequisites**
	Standard:	OPOP-SGT-2117 Section 7.2 obtained (Manual Initiation), administrative limits, precautions and prerequisites are reviewed.
Interim Cue:	Inform operator prerequisites are met.	
SAT/UNSAT	**Step 2:**	**Check any open Chemical or Fire Permits for location and existing status of work.**
	Standard:	Operator checks on open Chemical or Fire permits.
Interim Cue:	Inform operator there are no open Chemical or Fire permits that could have a harmful effect on the SBGT System..	
SAT/UNSAT	**Step 3:**	**Close/Verify Closed the following:** • **SGT-2A** • **SGT-3A** • **SGT-2B** • **SGT-3B**
	Standard:	Operator Closes SGT-2A & SGT-3A and verifies Closed SGT-2B, & SGT-3B and observes on CRP 9-26 the red light Off, green light On for each valve.
SAT/UNSAT	***Step 4:**	**Place SBGT Fan A REF-2A control switch in the START Position on CRP 9-26**
	Standard:	SBGT Fan "A" Switch taken to START on CRP 9-26; verifies fan running by observing red light On and Flow.
SAT/UNSAT	***Step 5:**	**Operator acknowledges 3-R-1 'SGTS Train A Trouble' alarm (received on CRP 9-3 after 50sec time delay) and notices low flow on FI-1-125-1A on CRP 9-26 after REF-2A start. Operator reports**

condition to CRS.

Standard: After SBGT Fan "A" Switch taken to START on CRP 9-26; fan will start but provide no flow. SGTS Train A Trouble alarm received on CRP 9-3 (after 50sec time delay). Operator recognizes either condition.

Interim Cue: If informed as CRS that SGTS Train "A" Trouble alarm received and/or low flow on FI-1-125-1A, acknowledge report.

SAT/UNSAT ***Step 6: Operator refers to ARS 21001, CRP 9-3 Alarm Response Sheets for 3-R-1 'SGTS Train 'A' Trouble Alarm'**

Standard: Operator refers to ARS 2100 for operator actions.

SAT/UNSAT **Step 7: Verify low flow condition**

Standard: Operator verifies SGTS Train 'A' low flow per FI-1-125-1A on CRP 9-26

SAT/UNSAT **Step 8: Verify proper system lineup per OPOP-SGT-2117**

- **SGT-2A Open**
- **SGT-3A Open**
- **REF-2A SBGT Fan A running**
- **SGT-2B Closed**
- **SGT-3B Closed**

Standard: Operator verifies SGT-2A & SGT-3A open (opened automatically upon REF-2A start), verifies REF-2A SBGT Fan A running (green light Off, red light On). Operator Verifies closed SGT-2B & SGT-3B.

Interim Cue: After operator verifies system lineup and confirms low flow condition, CRS instructs operator to shutdown SBGT Train 'A' and place in normal Standby mode per OPOP-SGT-2117, Sections 7.4 & 7.1. (Note: operator may also back out of Section 7.2 in lieu of shutting down SBGT and placing in normal standby lineup.)

SAT/UNSAT **Step 9:** **Operator references Section 7.4 of OPOP-SGT-2117 and secures SGT Train 'A'**

Standard: Operator references section 7.4 of OPOP-SGT-2117 to secure SGT Train 'A'

SAT/UNSAT ***Step 10:** **Place SBGT Fan 'A' REF-2A control switch in the STOP Position on CRP 9-26**

Standard: SBGT Fan "A" REF-2A Switch taken to STOP on CRP 9-26; verifies fan secured by observing red light Off, green light On.

SAT/UNSAT **Step 11:** **Open/Verify Open the following:**

- **SGT-2A**
- **SGT-3A**

Standard: Operator opens SGT-2A and SGT-3A and observes on CRP 9-26 the red light On, green light Off for each valve. (Note: SGT-2A & SGT-3A will close automatically upon securing of SBGT Fan A REF-2A)

SAT/UNSAT **Step 12:** **Close/Verify Closed SGT-1A Inlet Bypass**

Standard: Operator closes SGT-1A and observes on CRP 9-26 the red light Off, Green light On.

SAT/UNSAT **Step 13:** **Operator references Section 7.1 of OPOP-SGT-2117 and places SBGT Train 'A' in Normal Standby mode:**

Standard: Operator references section 7.1 of OPOP-SGT-2117 to place SBGT Train 'A' in Normal Standby Mode.

SAT/UNSAT **Step 14:** **Close/Verify Closed the following:**

- **SGT-1A**
- **SGT-4A**
- **SGT-5**
- **SGT-1B**
- **SGT-2B**
- **SGT-3B**
- **SGT-4B**

Standard: Operator Verifies Close SGT-1A, SGT-4A, SGT-5, SGT-1B, SGT-2B, SGT-3B, and SGT-4B by observing on CRP 9-26 the red light OFF, green light ON for each valve.

SAT/UNSAT **Step 13:** **Open/Verify Open the following:**

- **SGT-2A**
- **SGT-3A**

Standard: Operator Verifies Open SGT-2A & SGT-3A on CRP 9-26 and observes the red light On, green light Off for each valve.

SAT/UNSAT **Step 14:** **Verify/Place REF-2A SBGT Fan 'A' and REF-2B SBGT Fan 'B' in AUTO**

Standard: SBGT Fan 'A' and SBGT Fan 'B' Switches verified in AUTO on CRP 9-26.

SAT/UNSAT **Step 15:** **Verify/Place 9kW Duct Heaters EUH-2 SBGT-A Elec HTR and EUH-4 SBGT-A Elec HTR are in AUTO**

Standard: Operator verifies/places EUH-2 and EUH-4 HTR switches to AUTO on CRP 9-26.

SAT/UNSAT **Step 16:** **Locally verify 1KW Heaters EUH-1 and EUH-3 are energized**

Standard: Operator dispatches AO to verify 1KW heaters EUH-1 and EUH-3 are energized.

Interim Cue: AO reports back that heaters have been verified energized.

SAT/UNSAT **Step 17: Verify demister loop seals filled per Filling SGT Demister Loop Seals section of procedure**

Standard: Operator references Section 7.6 of OPOP-SGT-2117 & dispatches AO to perform steps 7.6.1 through 7.6.4

Interim Cue: AO acknowledges request and reports back that steps 7.6.1 through 7.6.4 have been completed.

SAT/UNSAT **Step 18: Place Keeping and STAR used consistently throughout.**

Standard: Steps are circled as performed crossed out as complete and N/A'd as appropriate. STAR used consistently for each simulated manipulation

Terminating Cue: SBGT Train "A" is in normal standby mode.

TIME FINISH: _____

Evaluator Comments: _____

System: 261000 Standby Gas Treatment System

K/As: A4. Ability to manually operate and/or monitor in the control room:

(CFR: 41.7 / 45.5 to 45.8)

K1.01 (3.4/3.6)	K1.09 (3.2/3.4)	
	K1.12 (3.1/3.2)	K3.01 (3.3/3.6)
	K4.01 (3.7/3.8)	K4.03 (2.5/2.7)
	K5.02 (2.3/2.5)	A1.01 (2.9/3.1)
	A1.04 (3.0/3.3)	A2.01 (2.9/3.1)
	A2.02 (2.9/3.1)	A3.01 (3.2/3.3)
	A3.02 (3.2/3.1)	A3.03 (3.0/2.9)
	A4.03 (3.0/3.0)	A4.06 (3.3/3.6)
	A4.07 (3.1/3.2)	
Generic K/As:	2.1.2 (3.0/4.0)	2.1.10 (2.7/3.9)
	2.1.20 (4.3/4.2)	2.1.23 (3.9/4.0)
	2.1.27 (2.8/2.9)	2.1.28 (3.2/3.3)
	2.1.30 (3.9/3.4)	2.1.32 (3.5/3.8)
	2.4.10 (3.0/3.1)	2.4.50 (3.3/3.3)

EXAMINEE HANDOUT

Initial Conditions:

The reactor is at power; normal plant operation

Initiating Cues:

The CRS directs you to start SBGT "A" and take suction on the Reactor Building using Section 7.2 of OPOP-SGT-2117.

SIMULATOR EVALUATION GUIDE

2012 NRC Examination

NRC Evaluators:

_____

_____

_____

_____

_____

ILO Candidates

CRS _____

OATC _____

BOP _____

RPV-1, Loss of HP injection, RPV-ED

Critical Task Performance: SAT UNSAT
(Circle One)

Date Administered: _____

Prepared by: _____ Date: _____
Lead Exam Developer

Reviewed by: _____ Date: _____
Operations Representative

Approved by: _____ Date: _____
Facility Reviewer

CREW BRIEF:

-Power level: 100% RTP

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

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

1. 'B' CRD pump OOS

-Reason For Equipment out of Service or tagged:

1. 'B' CRD pump OOS for maintenance

-Applicable Tech Spec LCO's:

1. N/A

-EOOS Color: Green

-Plant evolutions in progress/Scheduled Shift Evolutions:

1. Perform OP 0150, Section E, "Operations Department Weekly and Monthly Task Performance Listing", surveillance of swapping the TBCCW and RBCCW pumps IAW RP4183 and OP 2182. The TBCCW Heat Exchangers have been swapped and temperatures have stabilized.

SCENARIO SUMMARY:

Vermont Yankee 2012 NRC Scenario #1

The crew takes the watch with the reactor operating at 100% RTP. They will perform OP 0150, Section E, "Operations Department Weekly and Monthly Task Performance Listing", surveillance of swapping the TBCCW and RBCCW pumps IAW RP 4183 and OP 2182. VYOPF 0150.08 will be documented when the surveillances are completed.

The crew will respond to an electrical short in SRV-71A, causing the 'ADS Power Failure' annunciator to alarm. The crew will evaluate Tech Specs and determine that a 7-day LCO exists per TS 3.5.F.2 and that alternate testing is required per TS 4.5.F.2.

The crew will respond to a trip of the running RBCCW pump with failure to Auto start of the standby pump. The crew will manually start the standby RBCCW pump and enter ON 3147 for the loss of RBCCW.

The crew will respond to annunciator 3-U-5 'HPCI INVERT CIRCUIT FAILURE' and discover failure of the HPCI Inverter, resulting in a 14 day LCO. The CRS will declare the HPCI system inoperable and will enter TS 3.5.E.2.

The 'A' Condensate pump will trip due to an electrical fault. The operators will recognize that the automatic recirc runback to 40% does not occur and will take manual control to lower recirc pump speed to 40%.

The CRD flow control valve will fail in Auto. The crew will transfer control to manual, adjust CRD system parameters and continue with the power reduction.

The crew will then be evaluated responding to a loss of offsite power. This will require entry into OT 3122, LNP and OT 3100, Reactor Scram.

The crew will attempt to line up alternate high pressure injection systems to maintain RPV level above 6 inches. A small break LOCA will occur inside containment accelerating the rate of RPV level decrease. The crew will enter OT 3111 and EOP-3 to mitigate the effects of the small break LOCA. The RCIC auto controller will fail in auto. Manual control will be required. The crew will stabilize pressure below 1055 psig with the bypass valves. The crew will attempt to spray the drywell. RHR-39A(B) will fail to open. The CRS will direct spraying the drywell with the opposite loop prior to exceeding the drywell spray initiation limit **(CRITICAL TASK)**. The RCIC turbine will subsequently trip and the crew will attempt to maintain level using Preferred and Alternate high pressure injection sources (CRD pumps and SLC).

When RPV level reaches 6 inches the crew will lineup all available trains of Core Spray and RHR for injection with pumps running. When RPV level reaches -19 inches the crew will enter EOP-5 and Emergency Depressurize **(CRITICAL TASK)**. When the RPV low pressure interlock clears, the crew will note the LPCI and Core Spray injection valves fail to auto open and take manual action to open them to restore and maintain RPV water level above 127 inches. (**CRITICAL TASK)**.

TERMINATING CONDITIONS:

1. All control rods inserted, EOP-5 entered with Reactor Water Level maintained above 127" and cooldown to cold shutdown commenced.

REFERENCES:

1. OP 0105, "Reactor Operations"
2. EN-OP-115, "Conduct of Operations"
3. DP 0166, "Operations Department Standards"
4. OP 0150, "Conduct of Operations and Operator Rounds"
5. RP 4183, "TBCCW Surveillance"
6. OP 2182, "Reactor Building Closed Cooling Water"
7. OT 3100, "Reactor SCRAM"
8. OT 3113, "Reactor Low Level"
9. OT 3175, "Recirculation Pump Runback Due to Condensate or Feed Pump Trip"
10. OP 2121, "Reactor Core Isolation Cooling System"
11. Technical Specifications
12. Technical Requirements Manual
13. OT 3111, "High Drywell Pressure"
14. EOP-1 "RPV Control"
15. EOP-3 "Primary Containment Control"
16. EOP-5 "RPV-ED"

SIMULATOR OPERATOR INSTRUCTIONS

Simulator Set Up: 100% RTP

1. IC-950 on LOR Exam Load; RUN Scenario File "NRC Scenario 1"
2. Master FWLC setpoint set for 160 inches and displaying the "S" parameter
3. Individual FWLC controllers are displaying the "V" parameter
4. Master Recirculation Flow Controller selected for FINE adjust
5. Individual Recirculation controllers are displaying the "P" parameter
6. Rapid Shutdown Sequence latched
7. TS tracking sheet filled out (VYAPF 0152.02)
8. OP 0150, Section E placekept through step 1.b
9. VYOPF 0150.08 form filled out with the exception of steps 9, 13, and signature block.

Discretionary Distractor Malfunctions/IDAs/IOs:

No.	Malf. #	Severity	Ramp	Key #	Act. Time	Description
1.	**mfSW__23B**					'B' SW pump fails to auto start
2.	**mfRC__02**	Active		-	Preinsert	RCIC Auto Controller Failure
3.	**IOR RRIo04cprfpoper** **IOR RRIo04cprfpoper_1**	Active				Failure of 40% Recirc Runback on both recirc pumps
4.	**mfRH__07A/B** **mfCS__03A/B**	Active				Failure of low pressure injection valves to automatically open after the S/D cooling pressure interlock clears (CS-12A, CS-12B, RHR-27A & RHR-27B)
5.	**AD09A**	Active		1	After TBCCW Pump Swap	Relief valve electrical short (RV2-71A)
6.	**mfSW__01A**	Active		2	After pump swaps	Trip of the 'A' RBCCW pump with failure of 'B' to start in standby
7.	**mfHP_10**	Active		3	After flow converter failure actions complete	Failure of HPCI Inverter
8.	**mfCD__01B**	Active		4	After HPCI TS call	Failure of 'B' Condensate Pump
9.	**mfRD__15**	20	-	5		CRD flow controller fails in Auto
10.	**mfRR_01A**	0.5%	300 D:180	6		Recirc loop rupture (Small break LOCA)

11.		Active		7		RHR-39A(B) fails to open
12.	**mfRC__01**	Active		8	After DW sprays	RCIC Turbine Trip
13.	**mfRR_01A**	2.0%	600	9	~10 min after RCIC turbine trip	Recirc loop rupture (Medium break LOCA)

SIMULATOR OPERATOR INSTRUCTIONS

Additional Instructions:

1. A call to the Work Week Manager (WWM) or Field Support Supervisor (FSS) will initiate all expected activities (including Duty Manager, 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. Perform OP 0150, Section E, "Operations Department Weekly and Monthly Task Performance Listing", surveillance of swapping the TBCCW and RBCCW pumps IAW RP 4183 and OP 2182. VYOPF 0150.08 will be documented when the surveillances are completed. The TBCCW Heat Exchangers have been swapped and temperatures have stabilized.

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. When called for RBCCW Pump failure, after 3 minutes, as RBAO/FSS report: **"The pump breaker is tripped and the motor is hot to the touch."**
8. When Maintenance called for RBCCW Pump failure, report: **"Maintenance will develop a troubleshooting plan IAW EN-MA-125."** No failure mode will be reported during the scenario.

9. When asked as AO to investigate the HPCI inverter failure, report that DC-1C, circuit 5 is closed.

10. If contacted as AO to investigate the cause of the 'B' Condensate pump trip, report that the Condensate pump motor is hot and the breaker has tripped on overcurrent.

11. If asked as TBAO, HWC is lined up to RFP's 'A' and 'C'.

12. If contacted as AO to investigate RCIC turbine trip, report that RCIC overspeed trip has actuated and is mechanically bound and cannot be reset.

OPERATOR ACTIONS
EVENT NUMBER 1

Crew Task Description:
Monthly TBCCW and RBCCW pump swap.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRS	Directs BOP to complete OP 0150 surveillance of swapping the TBCCW and RBCCW pumps IAW RP 4183 and OP 2182.				
2.	BOP	Completes TBCCW and RBCCW pump swaps IAW RP 4183 and OP2182				
3.		Starts the stby RBCCW pump from CRP 9-6				
4.		After system pressure stabilizes, secure the first pump and place its control switch in AUTO				
5.		Starts the stby TBCCW pump from CRP 9-6				
6.		After system pressure stabilizes, secure the first pump and place its control switch in AUTO				
7.	BOP OATC	Record required data on VYOPF 0150.08				
8.	**When both TBCCW and RBCCW pumps have been swapped and at the discretion of the lead evaluator, initiate Event 2.**					

NOTES: 1) S = Satisfactory; U - Unsatisfactory; N/O = Not Observed
All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 2

Crew Task Description:
Respond to electrical short in SRV-71A, causing 'ADS Power Failure' annunciator (TS Entry)

Step	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	BOP	Acknowledges 'ADS Power Failure' annunciator, and responds per ARS 3-A-4				
2.		Identifies SRV-71A indication loss of power				
3.		Advises CRS to consult Tech Spec 3.5				
4.	CRS	Directs verification that DC-1 is energized and that DC-1C Ckt 8 breaker is shut				
5.		Directs verification that DC-2 is energized and that DC-2C Ckt 2 breaker is shut				
6.		Requests I&C investigate				
Role Play: If contacted as I&C, 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. 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.	CRS	Consults Tech Spec 3.5 and determines that a 7-day LCO exists per 3.5.F.2				
When CRS makes Tech Spec entry, initiate Event 3.						

NOTES: 1) S = Satisfactory; U - Unsatisfactory; N/O = Not Observed
All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 3

Crew Task Description:

Respond to 'A' RBCCW pump trip and failure of 'B' pump to auto start.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC	Recognize and report trip of the 'A' RBCCW pump				**KEY 1**_____
2.		Recognize and report failure to AUTO start of the 'B' RBCCW pump				
3.		Manually start the 'B' RBCCW pump				Immediate Action
4.	CREW	Dispatch RBAO to investigate RBCCW pump trip				
5.	CRS	Enter and direct actions of ON 3148, for loss of RBCCW				
6.	CREW	Request WWM / I&C investigate the cause of pump trip				
7.	OATC	Report RBCCW parameters stabilized				
8.	CRS	Brief the crew on the trip of the RBCCW pump.				
9.	**Role Play:** When called for RBCCW Pump failure, after 3 minutes, as RBAO/FSS report: **"The pump breaker is tripped and the motor is hot to the touch."** When Maintenance called for RBCCW Pump failure, report: **"Maintenance will develop a troubleshooting plan IAW EN-MA-125."** No failure mode will be reported during the scenario.					
10.	**When plant parameters have stabilized and at the discretion of the lead evaluator, initiate Event 4.**					

NOTES: 1) S = Satisfactory; U - Unsatisfactory; N/O = Not Observed
All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 4

Crew Task Description:

Respond to a failure of the HPCI inverter (TS Entry)

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRO / BOP	Acknowledge and respond to HPCI Relay Logic Pwr Failure annunciator (3-U-5):				**Key 2**_____
		Verify red light on front of inverter is OFF				
		Report inverter has failed				
		Attempt to reset HPCI Inverter				
		Place Aux Oil pump in 'Pull-to-Lock' (P-85-1A)				
		Request I&C assistance				
		Dispatch an AO to check the breaker on DC-IC, CKT 5				
		Prompt CRS to consult TS 3.5				
2.	CRS	Evaluate Tech Specs and determine that a 14-day LCO has been entered per TS 3.5.E.2				
Role play: When asked as AO to investigate the HPCI inverter failure, report that DC-1C, circuit 5 is closed.						
When plant parameters have stabilized and at the discretion of the lead evaluator, initiate Event 5.						

NOTES: 1) S = Satisfactory; U - Unsatisfactory; N/O = Not Observed
All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 5

Crew Task Description:
'B' Condensate Pump Trips w/ Failure of 40% Recirc Runback

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC	Responds to annunciator 6-F-2 'COND. PUMP B TRIP' and refers to appropriate ARS.				**Key 3**_____
2.		Confirms pump trip by observing amber trip light and zero current indications on CRP 9-6.				
3.	CRS	Enters OT 3113 'Reactor Low Level'.				
4.	OATC	Recognizes failure of Recirc Pumps to runback to 40%.				
5.	CRS	Directs OATC to manually runback Recirc pumps.				
6.	OATC	Runback both Recirc Pumps to 40% (~35Mlbm/hr) by depressing the PB-1 pushbutton on both PUMP A(B) CONTROLLER 2-184-16A(B)				
7.	BOP	Verifies that master level controller sets down to 155 inches.				
8.	CRS	Dispatches TBAO to visually inspect the 'B' Cond't pump and motor and check the tripped breaker for flags.				
Role play: If contacted as TBAO, report that 'B' Cond't pump motor is hot and the breaker has tripped on overcurrent.						
9.	BOP	After receiving the report from the TBAO that the pump and motor appear normal and the breaker has tripped on overcurrent, inform the CRS.				
10.	CRS	Enters OT 3175 'Recirculation Pump Runback Due to Condensate or Feed Pump Trip' concurrently with OT 3133.				
11.		Verifies that 'B' FW Pump tripped				
12.	BOP	Places 'B' FW Pump control switch in PULL-TO-LOCK				
13.		Closes PUMP DISCHARGE FDW-4B				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
14.	OATC	Verifies that both Recirc Pump speeds are within 5%				
15.	BOP	Slowly raise FW Level Control System setpoint to ~160inches.				
16.		Throttle SW Dish from A(B) MG Oil Cooler SW-22C(D) to maintain oil temperature between 110-130F as indicated on TI-2-184-24A(B).				
17.	OATC	Lower RTP IAW OT 3175 (3rd Condensate pump not available)				
18.	CRS	Notifies the Ops Manager/Reactor Engineering Superintendent/ISO of event.				
Role Play: If contacted as Ops Manager/RE Superintendent/ISO, acknowledge report.						
When plant parameters have stabilized and at the discretion of the lead evaluator, initiate Event 6.						

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 6

Crew Task Description:

CRD FCV fails in Auto

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC	Recognize failure of the CRD FCV in Auto (FCV-19A closed inadvertently)				
2.		Informs CRS of FCV failure in Auto				
3.		Enters OPON-FCV-3145-01				
4.		Transfer CRD FCV to Manual ('V' setting)				
When plant parameters have stabilized and at the discretion of the lead evaluator, initiate Event 7.						

NOTES: 1) S = Satisfactory; U - Unsatisfactory; N/O = Not Observed
All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 7 and 8

Crew Task Description:
Respond to a Loss of Off Site Power, a small drywell leak, RCIC auto controller failure, RHR-39A(B) failure to open, and RCIC Turbine Trip.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC	Report reactor scram.				**KEY 4**_____
2.	CREW	Recognize and inform CRS of Loss of Off Site Power				
		Report power on buses 3,4,8,9 from the Diesels				
3.	OATC	Report feed and condensate are unavailable.				
4.	CRS	Enter and direct actions IAW OT 3122, LNP				
5.	CREW	Respond to LNP IAW OT 3122.				
		Verify both DGs start and power busses				
		Verify SW pumps start				
		Restart station Air Compressors A & B				
6.	CRS	Enter and direct crew actions IAW OT 3100, Rx Scram and EOP-1, RPV Control				
7.	OATC	Verify all rods fully inserted				
		When steam flow < 0.5 Mlbm/hr per steamline, place the mode switch in S/D				Note: This step is an Immediate Action, and may be performed without direction
8.	CRS	Direct reactor water level maintained 127" - 177" using RCIC				
		Direct pressure maintained 800 - 1050 psig using SRVs				
9.	CREW	Recognizes failure of RCIC Auto controller				
10.	CRS	Directs BOP to transfer to manual RCIC controller and maintain RPV level between 127" and 177" IAW OP 2121 App C				
11.	OATC	Manually control RCIC IAW OP 2121 and attempt to maintain level 127-177"				

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All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

12.	CREW	Verify Table A: ECCS/PCIS actuations				
13.	CRS	Enter EOP-3 on high drywell pressure				
14.	CREW	Report rising drywell pressure.				
15.	CRS	If not already done, enter EOP-3 on High Drywell Pressure.				
16.	CRS	Direct BOP to restart drywell RRU's.				
17.	BOP	Restart drywell RRU's.				
18.	CRS	Before torus pressure reaches 10 psig, direct torus sprays				
19.	BOP	Spray the torus, as directed.				
20.	***CREW CCT-1**	**Prior to RPV-ED, when torus pressure exceeds the suppression chamber spray initiation pressure, initiate drywell containment spray while in the safe region of the drywell spray initiation limit.** **Standard:** Spray the drywell within 10 minutes of exceeding 10 psig torus pressure AND RPV level not an overriding priority				**>10 psig in Torus_____** **DW Spray Initiated_____**
21.	CRS	When torus pressure exceeds 10 psig:				
22.		Verify drywell pressure and temperature in the safe region of the DWSIL graph				
23.		Verify drywell RRUs secured				
24.		Direct drywell sprays.				
25.	BOP	Secure drywell RRUs.				
26.		Spray the drywell as directed.				
27.	CRS/ BOP	Recognize failure of RHR-39A(B) to open.				
28.	CRS	Direct starting of drywell spray with the opposite loop				
29.	BOP	Spray the drywell as directed.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
30.	OATC	Responds to 4-T-1, RCIC Tur Trip, alarm and refers to ARS				**Key 5**_____
31.	CRS	Dispatches RBAO to investigate cause of trip				
Role Play: If contacted as RBAO, report that RCIC turbine overspeed trip has actuated and is mechanically bound and cannot be reset.						
32.	BOP	Informs CRS that RBAO reports that the RCIC turbine overspeed trip has actuated and is mechanically bound and cannot be reset.				
33.	CRS	Directs maximizing of CRD flow IAW OT 3100				
34.	OATC	Maximizes CRD flow IAW 3100				
35.	CRS	Enters EOP-1 RPV Control (RPV Level <127")				
36.	OATC	Actuates SLC and attempts to maintain level above 6" with SLC and CRD flow				
When high pressure injection flow has been maximized & at the discretion of the lead evaluator, initiate Event 9.						

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 9

Crew Task Description:
Medium break LOCA -> EOP-5 Emergency Depressurize

STEP	POS	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CREW	Recognizes continued rising Drywell pressure and/or temperature				**Key 6**_____
2.	CRS	When RPV level cannot be restored and maintained above 6", directs BOP to inhibit ADS and lineup both trains of RHR and both trains of CS for injection with pumps running per EOP-1				
3.	BOP	Inhibits ADS				
4.		Lines up both trains of RHR and both trains of CS for injection				
5.	CRS	Before RPV level reaches -19", transitions to EOP-5, 'RPV-ED'				
6.		Directs OATC to verify that reactor is shutdown under all conditions				
7.	OATC	Verifies that reactor is shutdown under all conditions				
8.	CRS	Verifies torus water level above 5.5ft				
9.	***CREW CCT-2**	**With the reactor shutdown and reactor pressure greater than the shutoff head of the low pressure systems, initiate RPV-ED BEFORE RPV level reaches -19"** **Standard:** Initiate RPV-ED (begin opening valves) BEFORE RPV level reaches -48"				
10.	CRS	Directs BOP to open all SRVs and depressurize the RPV				
11.	BOP	Opens all SRVs and depressurizes the RPV				

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All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 10

Crew Task Description:
Respond to failure of low pressure injection valves to open

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	***CREW CCT-3**	**Action is taken to restore RPV water level above -19" by operating available low pressure ECCS system(s) when RPV pressure decreases below the shutoff head of the low pressure systems.** **Standard:** At least two ECCS subsystems are lined up for injection and running prior to RPV pressure reaching the injection valve open permissive pressure. No pumps are secured until adequate core cooling is assured Initiate manual opening of injection valves within 1 minute of reaching valve open permissive pressure.				
2.	CREW	Recognizes failure of low pressure injection valves to automatically open after the S/D cooling pressure interlock clears @ ~350psig (CS-12A, CS-12B, RHR-27A & RHR-28B)				
3.	CRS	Directs BOP to manually open CS-12A, CS-12B, RHR-27A & RHR-28B				
4.	BOP	Manually opens CS-12A, CS-12B, RHR-27A & RHR-28B				
5.	BOP/ OATC	Prevent injection of CS and RHR Pumps not required for adequate core cooling.				
6.		Control RPV pressure and level and restore RPV level to above 127" and commence RPV cooldown to cold shutdown				
7.	CRS	Classifies the event IAW AP 2135: EAL FA1.1 (Alert)				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
Evaluator Note: This EAL classification may be evaluated at the completion of the scenario.						
Terminate scenario when RPV level maintained above 127" and stable and cooldown to cold shutdown commenced.						

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All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

SCENARIO 1 EVALUATOR NOTES:

SIMULATOR EVALUATION GUIDE

2012 NRC Examination

NRC Evaluators:

_____

_____

_____

_____

ILO Candidates:

CRS _____

OATC _____

BOP _____

Scenario Template: RPV-6

Template Title: ATWS- Power/Level control

Critical Task Performance: SAT UNSAT
(Circle One)

Lead Evaluator: _____
Signature

Date Administered: _____

Activity Code: _____

Prepared by: _____ Date: _____
Lead Exam Developer

Reviewed by: _____ Date: _____
Operations Representative

Approved by: _____ Date: _____
Facility Reviewer

CREW BRIEF:

-Power level: 90%, Winter, MOC

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

-Equipment out of service and/or tagged:

1. LPRM 2A-32-33 (APRM A) is INOP and bypassed.
2. Circulating Water Pump 'C' is out of service.

-Reason For Equipment out of Service or tagged:

1. LPRM 2A-32-33 has been spiking; I&C will replace during the next refueling outage.
2. Circulating Water Pump 'C' Motor brush inspection.

-Applicable Tech Spec LCO's:

1. 7 Day LCO, 3.5.A.4, with one RHR loop in Torus Cooling Mode in accordance with OPOP-RHR-2124, Step 7.3.2, Rev. 05

-Plant evolutions in progress/Scheduled Shift Evolutions:

1. Awaiting instructions from Reactor Engineering to restore to 100% (Power was reduced earlier for a rod pattern exchange).
2. An electrician is walking down a Work Order regarding the 'B' Diesel Generator Outage work week. It requires him to open the Diesel Generator panel for observations only, no wiring will be touched. The electrician will inform the Shift Manager when he is completed with his walkdown. He received an EN-OP-119, Protected Plant Equipment, from the Shift Manager.
3. "A" RHR Loop is in Torus Cooling Mode with "A" RHR and "A" RHRSW pumps in service in accordance with OPOP-RHR-2124, Section 7.3, Rev. 05.
4. Secure RHR from Suppression Cooling Mode in accordance with OPOP-RHR-2124, Section 7.4, Rev. 05

EOOS Risk:

1. Green

SCENARIO SUMMARY:

The plant is operating normally at 90% power. LPRM 2A-32-33 is out of service due to repeated spiking. #2 Circulating Water Pump Motor brush inspection was performed satisfactory last shift and clearance tags are in the process of being removed this shift as scheduled. Last shift the operators took advantage of reduced SW temperatures to cool the Torus temperature. The "A" RHR and "A" RCSW pumps are in service in accordance with OPOP-RHR-2124, Section 7.3.

At turnover the operating crew was told that they need to secure suppression pool cooling. During the shutdown of suppression pool cooling, the "A" RHR pump will trip. Dispatch of an AO will produce a local report of "A" RHR pump breaker charring. The CRS will declare the RHR Subsystem inoperable. Tech. Spec review determines entry into LCO 3.5.A.3.

Next, an alarm indicating lockout of the "B" Emergency Diesel Generator will be received in the control room. The electrician in the field will report a problem with the differential over current relay. The CRS will enter a 7-day LCO.

"A" Stator Cooling pump will trip and the BOP Operator will have to take manual actions due to the alternate pump not starting.

The 'B' Steam Packing Exhaust Blower trips and the BOP Operator will have to take immediate Operator actions to start the standby 'A' Steam Packing Exhaust Blower.

'B' Reactor Recirc motor will experience high vibrations. The crew will respond IAW ARS 4-G-7 and reduce recirc flow in an attempt to stop vibrations. When this power reduction is started, 'B' recirc MG will trip causing an entry into OT-3118 while the 'A' recirc MG controller will fail to the minimum speed position. Subsequently this puts the plant in a high power and low recirc flow condition.

RPS Scram set points are exceeded without a resulting automatic Scram. The RO should execute a manual scram resulting in a hydraulic ATWAS. Core oscillations will commence and escalate to the crew entering OT-3117 and scram the plant if exceeded RPS set points are not recognized.

The ATWS will be at a power reduction due to a SDV blockage. OT-3100, EOP-1, & 2 will be entered due to scram required. ATWS RPV Control will be entered with focus on power leg actions resulting in the start of a SLC pump. SLC injection will fail resulting with both SLC pumps failing after approximately one minute.

Due to the Hydraulic ATWS the SDV will need to be drained, scram reset and a manual scram initiated several times to eventually get all the rods in. While waiting for the SDV to drain, the OATC will attempt to drive rods. The operator will experience low drive pressure and will have to diagnosis and take action to swap to the alternate CRD flow controller.

The ATWS RPV Control level leg will be exercised by first terminating and preventing injection sources followed by re-injection at a reduced RPV water level band.

The control rod insertion success path will require resetting the scram signal, draining the SDV and re-inserting a manual scram or swapping CRD FCV's. Control rod insertion with the RMCS while the SDV is draining is expected. Eventually, all control rods will be reported full-in and the scenario will be terminated.

TERMINATING CONDITIONS:

1. Control rods inserted.
2. Reactor Level controlled in band between -19 and 90 inches (-19 to +6 inches if Torus temperature is above 110F).
3. Primary Containment Sprays initiated.

REFERENCES:

1. OP 0105, Rev. 94, Conduct of Operations and Operator Rounds, Event 5
2. OP 2111, Rev.66, Control Rod Drive System, Event 10
3. OP 2124, Rev. SLC, Event 8
4. OT 3100, Scram Procedure
5. OE 3107, Rev. 27, EOP/SAG Appendices, Events 5, 8 & 10
6. OT 3117, Reactor Instability, Event 6
7. OPOT 3118-01, Rev. 3, Recirculation Pump Trip, Event 5
8. OT 3119, Rev. 16, Loss of Stator Cooling, Event 3
9. OP 3125, E Plan Classification and Action Level Scheme, Event 7
10. OP 3140, Alarm Response
11. OPON-3145-01, Rev.4, Loss of CRD Regulating Failure, Event 10
12. OPOP-RHR-2124, Rev. 6, Residual Heat Removal System, Event 9
13. EOP-1, RPV Control
14. EOP-2, ATWS RPV Control, Event 7
15. EOP-3, Primary Containment Control, Event 9
16. Technical Specifications: 3.5.A.3 & 4, 3.1.1 and Table 3.2.5
17. – 3.6.G, Event 5

SIMULATOR OPERATOR INSTRUCTIONS

Simulator Set Up: 90%, MOC

1. Place LPRM 2A-32-33 switch in BYPASS on CRP 9-14 (APRM A)
2. Assure that the "A" RHR pump, "A" Stator cooling pump and the "A" Steam packing Exhauster pump are running.
3. Assure Stator amps are greater than 4667 amps.

Enter Malfunctions/RFs/IOs:

No.	Malfunction	Severity	Ramp	Delay	Key	Actuation Time	Description
1.	**mfRD_12A**	38	-	-	-	Pre-Insert	SDV blockage - North
2.	**mfRD_12B**	35	-	-	-	Pre-Insert	SDV blockage - South
3.	**mfRP_01A**						Auto scram failure
4.	**mfRP_01C**	Active	-	-	-	Pre-Insert	Failure of ARI/RPT
5.	**mfSW_18A**	Active	-	-	-	Pre-Insert	
6.	**mfEG_12B**	Active	-	-	-	Pre-Insert	
7.	**AET SLC pps trip after 1 min**	Active	-	-	-	Pre-Insert	Both SLC pumps trip after 1 min
8.	**mfRH_01A**	Active	-	-	**1**	When Torus Clg Valve RHR-34A indicates full closed	"A" RHR Pump Trip
9.	**mfSW_07C**	Active	-	-	**2**	Lead Examiner prompts	'B' EDG Lockout Trip Alarm 8-F-2
10.	**mfEG_05A**	Active	-	-	**3**	Just after CRS Brief w/ EDG T.S. call	"A" Stator Cooling Pump Trips and and "B" Stator Cooling does **not** auto pick up.
11.	**Over ride SPE to 'stop' MSdi23RM S11**	Stop	-	-	**4**	Just after crew confirms Stator Clg is recovered.	'B' Steam Pkg Exhauster trip
12.	**mfAN07K6**	Spurious	-	-			'B' Steam Pkg Exhauster Trip alarm
13.	**mfAN04G7**	Spurious	-	-	**5**	After the 'A' standby Steam Pkg Exhauster is started & vacuum adjusted to 12" vac.. AND Lead Examiner prompts	'B' Recirc Motor vibs 4-G-7 Alarm

14.	**mfAN04D6**	Spurious	-	-	**6**	After crew has started a power reduction to clear vibration alarms AND AO Reports vibs degrading	Pump A/B shaft vibs 4-D=6 Alarm
15.	**mfRR_05B**	Active	-	-	**7**	If crew does not trip 'B' recirc pump (insert if the pump is tripped by the crew)	Recirc pp B trip
16.	**mfRR_19**	Active	-	-			Recirc oscillations (Note: delete this after a manual scram is inserted)
17.	**mfRR_11A**	Active	-	-			'A' recirc individual controller fails to '0'
18.	**mfRD_11A**	-	-	-	**8**	After the SDV is drained and the 1st scram is re-inserted	Flow Control Valve fails close Event #10
19.	**mfRD_11A**	Spurious	-	-	**9**	After ~ 2 min of no CRD	CRD Hyd Temp High
20.	**mfAN05B9**	Inactive	-	-	**10**	2 minutes after FCV is swapped	Delete malfunction

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 used at the discretion of the Lead Evaluator. If time compression is used the crew will be notified.

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 requested to investigate "A" RHR pump following trip and receipt of alarm, Operator should dispatch operator to "Bus #4". If dispatched to "Bus #4", wait 30 seconds and report that "the "A" RHR breaker is charred with a dropped over-current relay #51 target, no smoke or fire present." If dispatched to the pump or motor, wait 30 seconds and "report that everything at the "A" RHR pump looks normal."

5. EVENT #2: When the 'B' Diesel lockout trips (8-F-2 Alarms), call as the electrician and inform the control room that some loose or old wiring on the differential overcurrent relay shorted something out when he opened the panel. If an AO or electrician is sent to attempt a lockout reset, report that the lockout relay is tripped and cannot be reset.

6. EVENT #5: **After** the Booth Operator (as AO) Reports: "B Recirc Motor Vibration has a degrading trend".
AND Booth Operator triggers Recirc Pump Shaft Vibration Alarm 4-D-6
IF Crew does NOT Trip 'B' Recirc Pump
THEN Booth Operator Trips 'B' Recirc Pump

7. When asked to trouble shoot SLC pump failure, maintenance will report that the will commence troubleshooting. ABT has failed. Due to parts unavailability, repair will take approximately two days.

8 When requested to swap CRD FCV's and level is in the prescribed ATWS band, wait five minutes and swap to the opposite control valve.

9 If requested to shut CRD-56 then after power is being controlled in the ATWS band, take **rfRD_02 to 0%**.

10 If requested to shut CRD-PCV-22 then after torus spray is in service as required by EOP-3, take **rfRD_20 to 0%**.

OPERATOR ACTIONS
EVENT NUMBER 1

Crew Task Description:

Secure Suppression pool cooling lineup with response to a trip of "A" RHR pump.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CREW	Walkdown the control room panels (5 min max.) and assume the watch.				"A" RHR Loop is in Torus Cooling Mode with "A" RHR and "A" RHRSW pumps in service in accordance with OPOP-RHR-2124, Section 7.3, Rev. 5.
2.	CRS	Directs the Shutdown of the "A" RHR subsystem using OPOP-RHR-2124, Section 7.4. May warn to Monitor DW/Torus Delta Pressure (Proc Step 7.3.14) and that Bypass Valve RHR-65A is in the Closed position.				
3.	BOP	Closes Torus Clg Valve **RHR-34A**				When Torus Clg Valve **RHR-34A** indicates full closed **TRIGGER KEY #1** **Time:**_____
4.	BOP	Recognizes "A" RHR pump has tripped and informs CRS The pump tripped annunciator will actuate. RHR system flow and pressure will reflect this loss. RESPONSES: 1. RHR PUMP CURRENT SPIKE 2. RHR PUMP TRIPS 3. AMBER TRIP LITE ON RHR PUMP ALARMS: 1. RHR PP TRIP 2. RHR PP OVLD				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
5.	CRS	Acknowledges "A" RHR pump trip				
6.	BOP	Refers to 3-J-1, RHR PUMP A TRIP, Alarm Response Sheet				Operator should dispatch operator to "Bus #4" to note if any dropped targets. - If dispatched to "Bus #4", wait 30 seconds and report that "the "A" RHR breaker is charred with a dropped over current relay #51 target, no smoke or fire present." - If dispatched to the pump or motor, wait 30 seconds and report that "Everything at the "A" RHR pump looks normal."
		Dispatch AO/FSS to investigate "A" RHR pump trip at "Bus #4 to log target(s) dropped."				
7.	INST	AO/FSS reports: - "A" RHR breaker is charred with a dropped over current relay #51 target, no smoke or fire present." OR "Everything at the "A" RHR pump looks normal."				
8.	BOP	Informs CRS of field observations accurately.				
9.	CRS	When informed of field investigation, consults Tech Specs				
		Declare "A" RHR Pump inoperable				
		Enter & Declare 7 day LCO per T.S. 3.5.A.3.				
		Direct initiation of a WOR/Tag Clearance				With all other LPCI and Containment Cooling Subsystems operable, Tech. Spec. 3.5.A.3 applies.
		Informs Senior Management				
		Evaluates Risk				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
10.	BOP	Logs (or assures logged) Relay #51 iaw ARS.				
11.	BOP	Places "A" RHR Pump control switch in "PULL-TO-LOCK"				
12.	BOP	Should report all ARS actions are complete to CRS				
		ARP marked correctly				
		CRS acknowledges				
13.	CRS	Directs the completion of Torus Cooling Shutdown Procedure.				
		BOP acknowledges				
14.	BOP	CLOSE/CHECK closed TORUS SPRAY RHR-38A				
15.	BOP	Close TORUS SPRAY/CLG RHR-39A				
16.	BOP	After 10 minutes from pump trip: Secures "A" RHRSW Pump.				**Time:**_____
		And Observes RHRSW Discharge RHR-89A auto close.				
17.	BOP	Opens HX Bypass RHR-65A				
18.	BOP	Open/Check Open Min Flow RHR-16A.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
19.	BOP	Ensures RHR system in standby per normal standby section.				
20.	BOP	Informs CRS Torus Clg Shutdown.				
		Executed Procedure Marked up correctly.				

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 2

Crew Task Description:

"B" Emergency Diesel Generator Lockout

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	BOP	Acknowledge/respond to 'B' EDG Lockout Trip annunciator (8-F-2)				**Lead Examiner Prompts** **TRIGGER KEY #2** **'B' EDG Lockout Trip Alarm** **Time:** _____
		Inform CRS				
		Dispatch an AO to investigate				
		Prompt CRS to TS 3.10				
2.	CRS	Direct the following:				
		Dispatch WWM/FSS to investigate				
3.	SM / CRS	When EDG inoperability is determined, consult TS and enter a 7-day LCO (TS 3.10.B.1)				

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 3

Crew Task Description:

Loss of Stator Cooling: 'A' Pump trips and 'B' does not auto start

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	BOP	Recognize and report trip of the "A" Stator Cooling pump:				**Just after 'B' EDG Tech. Spec Call** **TRIGGER KEY #3** **"A" Stator Clg Pump Trip** **Time:_____**
		Alarms: 7-B-5 (SC Trip Timer Initiated on Stator Clg low flow/ inlet pressure low)				
		7-C-5 (H2/Stator Clg Panel Trouble due to local alarm).				
2.	BOP	Recognize and report failure of the "B" Stator Cooling pump to auto start.				
		7-B-5 (Timer Initiated) Operator Actions: **Start standby Stator Clg pump if not running.** - **Move Selector Switch to: 'B' Run – 'A' Res** - **Confirm 'B' Stator Clg Pump starts.**				**<u>This is an IMMEDIATE OPERATOR ACTION per OT 3119</u>**
		Refer to OT 3119, Loss of Stator Cooling				
		Check Stator Clg Skid and panel indications.				
		7-C-5 (Panel Trouble) Operator Actions: Dispatch AO to determine cause of local alarm and take actions per local alarm response.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
3.	CRS	Direct BOP to manually start the "B" Stator Cooling pump				Note: Immediate Operator Action (If an Auto action did not happen, manually take control.)
4.	BOP	Positions STATOR CLG PUMP SELECTOR switch to "B-Run – A-Res".				Note: These 2 steps are OT 3119, Immediate Operator Actions.
		Confirms Pump Starts				
5.		Verify and report SC TURBINE TRIP TIMER INITIATED (9-7-B-5) clears				NOTE: If unsuccessful! Alarm 7-B-4, Stator Clg Trip annunciates due to the timer timing out following a one minute time delay and the Turbine Generator will trip and lockout.
6.	CRS	Enter and direct actions of OT 3119				
7.	CREW	Dispatch AO/FSS/WWM to investigate "A" pump trip and failure of the "B" pump to auto start				
8.	CRS	Brief /Align crew on Plant Status: Example: Reinforce crew to insert Rx SCRAM then trip the turbine within 1 min of total loss of all Stator Cooling. Status of ARP & OT 3119				

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 4

Crew Task Description:

Trip of "B" Steam Packing Exhauster Blower

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CREW	Responses to Alarm 7-K-6, STM PKG EXH BLOWER TRIP and informs the CRS.				**Just after confirming Stator Clg recovered.** **TRIGGER KEY #4** **"B" Steam Pkg Exh Blower Trip**
2.	BOP	ARS Operator Actions: Shut discharge valve (AE-12B) of the tripped ("B") blower,(GREEN LIGHT LIT ONLY), and				
		Start the standby ("A") blower				
		Adjust (OPEN) discharge valve (AE-12A) to INCREASE vacuum to approx. 12 in. H2O vacuum.				
3.		Reports that the "A" Steam Packing Exhauster has been started and system conditions have been returned to normal.				

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All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 5

Crew Task Description:

Respond to 'B' Reactor Recirc motor high vibrations, a power reduction, and pump trip:

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CREW	Recognize and respond to Recirc Pump Motor 'B' Vibration High annunciator (4-G-7)				After the 'A' standby Steam Pkg Exhauster is started & vac adjusted to 12" H2O vac.. AND Lead Examiner prompts **TRIGGER KEY #5** **Time:** _____
2.	OATC	Executes ARS 4-G-7: - Minimize differ in pump speeds				
		- If alarm continues, reduce recirc flow per OP 0105: - Reduce core flow to 47.5 – 48.0 Mlbs/hr (approx. 2 % power) - Insert Rods per OP 2111 in the reverse order using rapid shutdown sequence.				
		- Attempt Vib Monitor Reset at CRP 9-4				
		- Monitor CRP 9-4 for Abn indications				
3.	CREW	Dispatches AO to Local Vibration Alarm panel.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
4.	BOOTH INST	AO calls Control Room and reports: 'B' Recirc Motor Vibration has a degrading trend" Triggers: 4-D-6 "B" Recirc PUMP SHAFT Vibration High Alarm while AO is talking to Control Room.				After crew has started a power reduction to clear vibration alarms AND AO Reports vibs degrading **TRIGGER KEY #6** **Time:** _____
5.	CREW	Recognize & respond to Recirc Pump "A/B" pump shaft vibs hi annunciator (4-D-6)				
6.	CRS / OATC	Recognizes 'B' Reactor Recirc Pump needs to be secured				
7.	CRS	Direct trip of the "B" Recirc Pump; Enter and direct actions IAW OPOT 3118-01:				Note: Trip will occur by the BOOTH if not manually tripped
		Directs 'B' Recirc Pump discharge valve CLOSED.				
		Monitor APRM indications				
		Verify operation inside of the EXCLUSION Region of Figure 2.4.1				
8.	BOOTH INST	If 'B' Reactor Recirc pump is not manually Tripped by Crew, THEN BOOTH Inst will trip 'B' Reactor Recirc Pump.				**TRIGGER KEY #7** **Time:** _____
9.	OATC	When directed: Close Recirc Pump "B" discharge valve				
		Monitor APRM indications				
		Verify operation inside of the EXCLUSION Region of Figure 2.4.1				

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 6

Crew Task Description:

"A" Recirc pump controller fails downscale, power oscillations, RPS failure.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1	Controller Failure is triggered 60 seconds after 'B' Recirc Pump Trip at a designated ramp rate.					
2	OATC	Recognizes Power to Flow parameters are **NOT** as expected **OR** Observes "A" Reactor Recirc Pump flow reduction **AND** Informs CREW				
3	OATC	Monitors for potential operation inside EXCLUSION Region				
4	OATC	Identify operation inside EXCLUSION Region; inform CRS **AND** APRM oscillations > 10% peak to peak. **OR** Pwr/Flow APRM Scram Alarms				
5	OATC	Takes **IMMEDIATE OPERATOR** OT 3117, Reactor Instability **ACTIONS**: - Depress **Manual SCRAM** pushbuttons				
		Informs CRS of failure of control rods to fully insert				

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 7

Crew Task Description:

Failure to SCRAM with Hydraulic ATWS.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC	Depress Manual SCRAM pushbuttons				
		Informs CRS of failure of control rods to fully insert				
2.	*CREW EOP-2 CCT-2	**With reactor scram required and the reactor not shutdown, take action to reduce power by tripping the recirc pumps**				**Scram Sig** _____ **ARI/RPT** _____
		Standard:				
		Actuate the ARI/RPT logic AND ensure that the recirc drive motor breakers are tripped within 2 minutes of the scram failure (or within 1 minute of RPV pressure exceeding 1200 psig)				
3.	OATC	Depress ARI/RPT pushbuttons				
4.		Trips the RR pump drive motor breakers				
5.		Place RMCS in Shutdown				
6.		Initiate SLC injection **(SEE EVENT #8)**				See Loss of SLC, EVENT #8
7.	CRS	When informed of the scram failure enter and direct crew actions IAW EOP-2				iaw OT 3100
8.	CRS	When not needed for injection, direct BOP to secure HPCI				
9.	BOP	When directed, secure HPCI				
10.	CRS	Direct BOP to verify Table "A" automatic isolations and initiations				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
11.	BOP	When directed, verify EOP-2 Table "A" automatic actions				
12.	***CREW** **EOP-2** **CCT-5**	**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.** **Standard:** Inhibit ADS prior to automatic initiation.				
13.	CRS	Direct BOP to inhibit ADS actuation				
14.	BOP	When directed, inhibit ADS actuation.				Note: CRP 9-3 3-A-6, "ADS IN BYP" annunciates when first inhibit switch goes to "INHIBIT".
15.	CRS	Direct OATC/BOP to Bypass of Rx Lo Lo water level Isolation IAW Appendix "P"				Note: Bypasses MSIV closure isolation signal. MSIV's may be closed at this point.

16.	BOP	Bypasses Rx Lo Lo water level Isolation,iaw **Appendix "P":**
		- Install 2 CRP9-15 jumpers
		  - DD20/DD19 (CWD 1100)
		  - BB32/BB33 (CWD 1101)
		- Install 2 CRP9-17 jumpers
		  - DD20/DD19 (CWD 1102)
		  - BB20/BB19 (CWD 1103)
		- Verify One MSL Open
		- Informs CRS Appendix "P" complete.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
17.	*CREW EOP-2 CCT-6	**During an ATWS with conditions met to perform power/level control, TERMINATE AND PREVENT INJECTION (with the exception of boron, RCIC and CRD) into the RPV until conditions are met to re-establish injection.** **Standard:** Completion of Terminate and prevent injection IAW OE 3107 **Appendix GG within 5 minutes** of loss of forced circulation				**RR Pumps off**_____ **T&P Complete**_____
18.	CRS	Direct OATC/BOP to Terminate and Prevent RPV injection IAW App GG				
19.	OATC/ BOP	When directed, Terminate and Prevent RPV injection IAW App GG: - HPCI Turb Trip/Inhibit pushbutton selector switch in INHIBIT (CRP9-3) - Core Spray pumps to Pull-to-Lock (CRP9-3) - RHR pumps to Pull-to-Lock (CRP9-3) - Rx lvl Master "V" to minimum - FRVs & Aux FRV "V" to minimum - Informs CRS T&V complete.				If not exceeded already, Alarm 5-K-2 signifies an Auto Scram setpoint of 127" exceeded = Site Area Emergency Time: _____
20.	CRS	Direct OATC to report when RPV level reaches 90 inches and/or when Rx power is <2%.				Data:_____ Time: _____
21.		Direct OATC to insert control rods with one or more appropriate appendices				Appendix BB and G are available but delayed until level is maintained <90"

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
22.	OATC	When directed, attempt to insert control rods with appropriate appendices: **Appendix "G":** MANUAL INSERTION of INDIVIDUAL CONTROL RODS - Starts both CRD pumps. - RWM to "BYPASS" - Take CRD Flow Control to "Manual" and "V" to full open. - Close CRD-56, Chrg'g hdr - Adjust Drive Press DP to 300 to 500 psid. - Continuously insert rods iaw Figure 1 sequence. THEN Figure 2. - Inform CRS all rods inserted.				Local Drive Press minus Rx Press = Drive DP.
23.		When steam flow <0.5 Mlbm/hr per steam line, place Mode Switch in Shutdown.				Immediate Op Action iaw OT 3100
24.	CRS	Direct BOP to stabilize Rx pressure 800-1050 psig with: Bypass Valves / SRVs				
25.	BOP	When directed stabilize Rx pressure 800-1050 psig with Bypass Valves / SRVs				
26.	OATC	Report when RPV level reaches 90" (See Step #20 above)				
27.	*CREW EOP-2 CCT-7	**When conditions are met to re-establish injection, use available injection systems to RESTORE & MAINTAIN RPV water level above -19"** **Standard:** Restore and maintain RPV level to between -19" and the level to which it was lowered AND no significant power excursion occurs.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
28.	CRS	When conditions are met to re-establish injection, direct RPV level restored and maintained between –19" and 90" using feed and condensate				Ordered RPV water level may be -19" to +6" if torus temperature reaches 110 F
29.	BOP	When directed, restore and maintain RPV level between –19" and 90", using feed and condensate: - Throttles FRV and/or Aux FRV.				
		Informs CRS when out of directed Level Band.				
30.	CREW	Recognize and report when all rods except three are inserted				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
31.	CRS	Direct crew to perform App F & G to insert the remaining control rods: **Appendix "F",** INITIATION of a MANUAL SCRAM and INDIVIDUAL CONTROL ROD SCRAMS : - Reset RPS : - Install 2 CRP9-15 jumpers - 5A-K10A/2 to 5A-K11E/4 - 5A-K10C/2 to 5A-K11G/4 - Install 2 CRP9-17 jumpers - 5A-K10B/2 to 5A-K11F/4 - 5A-K10D/2 to 5A-K11H/4 - Reset ARI/RPT by liftg leads: - AA75 double lead (CRP9-3) - KK30 double lead (CRP9-4) - Reset SCRAM & confirm ARI/RPT is reset - Reset drift alarms - Open CRD32A(B) & 33A,B,C &D. - Verify SDV-A & SDV-B are drained - Manually SCRAM and repeat sequence if needed. Inform CRS if rods failed to move in.				
33.	CREW	As directed, perform App T & G for the remaining control rods with repeated manual scrams and manual insertion of rods.				
34.	CREW	Coordinate with AOs (as necessary) to insert rods using appropriate Appendices				
35.	CRS	Direct BOP to establish Torus Cooling or DW Spray Directed				

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STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
36.	BOP	When directed establish Torus cooling and Torus spray. **SEE ATTACHMENT #2 for** **Torus Cooling/DW Spray**				
37.	CRS	Verify RR pumps and DW RRUs are OFF				Note: Steps 38-41 are NA if Torus pressure is below 10 psig.
38.		Verify within the safe region of the DW Spray Initiation Limit curve				
39.		Direct BOP to spray the DW				
40.	BOP	When directed, spray the DW **SEE ATTACHMENT #2 for** **Torus Cooling/DW Spray**				
41.	SM / STA / CRS	Classify the event as a **Site Area Emergency** IAW AP 3125 Appendix A (SS2.1) recognizing scram failure with power remaining above 2%				Note: If Rx > 2% and HCTL exceeded = General Emergency, SG2.1

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 8

Crew Task Description:

Respond to SLC Pump Failures

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC	Initiates SLC injection				
2.	*CREW EOP-2 CCT-4	**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.** **Standard:** 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.				**Scram signal**_____ **Rod App ordered**_____
3.	CRS	Orders SLC Injection prior to Torus 110F.				
4.	OATC	Start "A" ("B") SLC Pump				
5.		Recognizes that "A" ("B") SLC Pump has failed to inject; informs CRS.				
6.	CRS	Directs OATC to start the alternate SLC pump.				
7.	OATC	Start "B" ("A") SLC Pump				
8.	OATC	Recognizes that "B" ("A") SLC Pump Tripped after running for 60 seconds; informs CRS				
9.	CREW	Direct troubleshooting of "A" and "B" SLC Pumps (OP 2124)				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
10.	CRS	Direct boron injection using Appendix J or K - Appendix J: BORON Injection using RWCU - Appendix K: BORON Injection using CRD system from SLC tank				
11.	CREW	Direct AO to implement Appendix J or K to inject SLC				

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 9

Crew Task Description:

Respond to a failure of the in-service CRD flow control valve.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIORS	S	U	N/O	COMMENTS
1.	OATC	Recognize a loss of CRD flow and Informs CRS. This malfunction will cause the selected CRD flow control valve (19A) to close. This will result in a decrease in CRD system flow and an increase in charging water header pressure. The system flow will decrease to 5 gpm and drive water header and cooling water header differential pressure will decrease to a very low value. The ability to scram the rods will not be affected. Due to a lack of cooling water the rod drive mechanism temperatures will increase and actuate the high temperature annunciator. Use of flow control valve switch via IDA will permit the unaffected valve to be selected. ALARMS: NONE				**TRIGGER KEY #8** **After 1st SDV drain and re-scram:** **"A" CRD Flow Controller Valve Fails Closed** **Time: _____** Movement of control rods by normal operation is impossible since no differential pressures can be developed across the piston in the CRD mechanism.
2.	CRS	Direct AO/I&C to investigate the closure of the CRD-19A valve				
3.		Direct actions in accordance with OPON-3145-01, Loss of CRD Regulating Function.				
4.	OATC	Take manual control of the Flow Control valve: - Verifies **RED** Manual LED Lit. - Verifies **GREEN** Auto LED Lit. - Display **"V"** w/pushbutton and attempt to open valve..				RESULTS: Valve will NOT Open

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIORS	S	U	N/O	COMMENTS
5.	OATC	Acknowledge and report CRD HYD TEMP HI alarm, 9-5-B-9				**TRIGGER KEY #9** **CRD Hyd Temperature High** **Time:** _____
6.	CREW	Dispatch RBAO/FSS to investigate CRD HI Temp alarm				
7.	OATC	When directed, place alternate CRD FCV in service				
		Turn FCV dial to zero valve position				
		Direct the AO to isolate the A FCV - Close CRD 68A & 69A				
		Direct the AO to select the B FVC: - I/P Converter Selector Switch positioned to B, & - 3 Way Supply Air positioned to B FCV				
		Direct the AO to un-isolate the B FVC				Enter **KEY #10** to delete Malfunction/ alarm 2 min after CRD FCV swapped.
		Adjust the CRD parameters to normal and return the valve to Auto/Bal				
8	CRS	If ALL Control Rods are NOT inserted at this point, CRS to DIRECT **Appendix BB,** INSERTION of CONTROL RODS Using COOLING WATER DP				
9	OATC	Execute below Attachment #3 **Appendix BB**				

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2) * = Critical Task/Step

OPERATOR ACTIONS

ADDITIONAL COMMENTS:

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2) * = Critical Task/Step

ATTACHMENT 1

E-plan Performance Statistics Data (NEI 99-02)

Classification	EAL (Alpha-Numeric)	Time EAL Reached	Time of Classification	Time of States Notification
UE				
ALERT				
SAE				
GE				

NOTES:

- Review OP 3540, Attachment 9.10 to ensure completion
- Send a copy of this Attachment and the completed OP 3540, Attachment 9.10 to the E Plan Group after the data has been recorded.

CREW_____

DATE_____

NOTES: 1) S = Satisfactory; U - Unsatisfactory; N/O = Not Observed
All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

ATTACHMENT #2

Torus Cooling/DW Spray Directed

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRS	Directs EOP-3 entry and torus cooling initiated.				CRP-3-3-A-1, RX RELIEF VLV OPEN states: Start torus cooling per OP 2124, Residual Heat Removal System.
2.	BOP	PLACE A&D OR B&C RHR PUMPS IN PTL				
3.	BOP	VERIFY ADEQUATE SW				
4.	BOP	IF a LPCI initiation signal is present, THEN **PLACE** RHRSW PP A&C (B&D) LPCI AUTOSTOP OVERRIDE SWITCH keylock switch to **MANUAL OVERRD** (3-M-2 will annunciate).				Note: RHR is in Pull to Lock during Terminate & Prevent OPOP-RHR-2124, Sec. 7.17 or Attachment 6
5.		**IF NOT ALREADY IN SERVICE:** **- START** RHRSW pump(s)				
6.	BOP	IF necessary, **ADJUST** RHRSW DISCHARGE, **RHR 89A(B)** as follows: **MAINTAIN** RHRSW heat exchanger flow 2950 to 3140 gpm. **MAINTAIN** RHRSW pressure greater than 20 psid above RHR pressure.				
7.		Secure Condensate Transfer Keep Fill.				
8.		Start one RHR pump.				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
9.	BOP	RX WATER LEVEL? **>TAF**: PLACELOGIC CTMT SPRAY VLV LPCI SIG BYPASS TO **MANUAL** **< TAF** PLACE LOGIC CMT SPRAY VLV SHROUD OVRD KEYLOCK SWITCH TO MANUAL OVERRIDE **AND** LOGIC CTMT SPRAY VLV LPCI SIG BYPASS TO **MANUAL**				
10.	CREW	IF Torus cooling is required: **OPEN** TORUS SPRAY/CLG RHR-39A(B). **OPEN** TORUS COOLING RHR-34A(B).				
11.		IF Torus Spray is required: **OPEN** TORUS SPRAY/CLG RHR-39A(B). **OPEN** TORUS Spray RHR-38A(B).				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
12.	BOP	**IF Drywell spray is required**: **OPEN** DWL SPRAY INBD RHR-31A(B). **OPEN** DWL SPRAY OUTBD RHR-26A(B). **OPEN** TORUS SPRAY/CLG RHR-39A(B). IF necessary, **THROTTLE** TORUS COOLING RHR-34A(B) to control Drywell pressure.				
13.	CRS	Directs BOP to maintain RPV level -19" to (level criteria just met) with feed and condensate or other Table "H" preferred ATWS injection systems.				

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2) * = Critical Task/Step

ATTACHMENT 3

APPENDIX BB

INSERTION OF CONTROL RODS USING COOLING WATER DIFFERENTIAL PRESSURE

OPERATOR ACTIONS

Crew Task Description:

Insert all control rods with cooling water

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRS	Directs Appendix BB once CRD Flow Controller is swapped.				
2.	RO	Start all available CRD pumps.				
		Shifts CRD flow Control to MANUAL				
		- Pushbutton to "V" & restore drive pressure.				
		-Direct AO to close CRD-56, Charging water header supply.				
		-Fully Open PCV-20, DRIVE WTR Press				
		-Adjust PCV-22, CLG WTR Press to achieve drive water DP 300 to 500 psid.				
3.	RO	When all Control Rods are inserted inform CRS.				

NOTES

- Concurrent implementation of Appendix D, Manual Isolation and Venting of the Scram Air Header, will result in the closure of the CRD flow control valves which will prevent implementation of Appendices G and BB.
- If RMCS is available, Appendix G, Manual Insertion of Individual Control Rods, can be performed concurrently with this appendix.

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2) * = Critical Task/Step

SIMULATOR EVALUATION GUIDE
2012 NRC Examination

NRC Evaluators:

_____

_____

_____

_____

ILO Candidates

CRS _____

OATC _____

BOP _____

SC-1, HPCI Leak , RPV-ED

Critical Task Performance: SAT UNSAT
(Circle One)

Date Administered: _____

Prepared by: _____ Date: _____
Lead Exam Developer

Reviewed by: _____ Date: _____
Operations Representative

Approved by: _____ Date: _____
Facility Reviewer

CREW BRIEF:

-Power level: 90% RTP, summer conditions

-Rod Sequence: RSS **-Rod Group:** 20

-Equipment out of service and/or tagged:

1. None

-Reason For Equipment out of Service or tagged:

1. None

-Applicable Tech Spec LCO's:

1. None

-EOOS color: Green

-Plant evolutions in progress/Scheduled Shift Evolutions: None

SCENARIO SUMMARY:

Shortly after the crew takes the shift, a Steam Flow transmitter will fail causing the crew to respond to lowering RPV.

RCIC will then inadvertently and incompletely isolate requiring the operator to complete the isolation. The CRS will make a tech spec call and initiate maintenance activities.

The crew will encounter and respond to a trip of the running Circ water pump, lowering vacuum and entry into ON 3173 'Loss of Circulating Water' and OT 3120 'Condenser High Back Pressure'. When the operator attempts to lower flow using the recirc master controller, they will recognize that it has failed and individual recirc controllers must be used for the flow power reduction.

A steam leak in the HPCI piping upstream of HPCI-14 will occur, with a failure of HPCI-15 and 16 to isolate. Increasing Reactor Building vent exhaust radiation levels prompt entry into EOP-4. Rising area temperatures eventually result in entry into EOP-1 and a manual scram **(CRITICAL TASK).** Once the main turbine trips, Bus 2 fails to auto transfer and EDG "A" fails to auto start. The crew will respond by recovering the electric plant and conducting a cooldown to minimize the rate of the steam leak. The automatic Group III isolation will not occur and will require manual isolation and SBGT initiation **(CRITICAL TASK).** Eventually the crew will either RPV-ED or anticipate based on exceeding two RB areas Max Safe temperatures **(CRITICAL TASK).**

TERMINATING CONDITION(S):

1. RPV level being restored 127-177"
2. RPV-ED or anticipate complete
3. Power restored to busses 2/4

REFERENCES:

1. Technical Specifications
2. AP 3125, Emergency Plan Classification and Action Level Scheme
3. OP 0105, Reactor Operations
4. OP 2110, Reactor Recirculation System
5. OT 3100, Reactor Scram
6. OPOT-3170-01, Loss of Bus 2
7. OPON-3172-01, Loss of Bus 4
8. ON 3173, Loss of Circulating Water
9. ON 3158, RB Hi Temp/Water level
10. OT 3120, Condenser High Backpressure
11. EOP-1, RPV Control
12. EOP-4, Secondary Containment Control
13. EOP-5, RPV-ED

SIMULATOR OPERATOR INSTRUCTIONS

Simulator Set Up: 90% IC, Summer conditions, Recirc master controller at 81.8% speed and 48.9 mlbs; FWLC 160" with 'P' selected,

Distracter Malfunctions/ RFs/IOs:

1. Update EOOS and turnover sheets

No.	MF/RF/IO #	Severity	Ramp	Key #	Act. Time	Description
1.	**mfPC_1HP15**	Active	-	-	Pre-insert	HPCI-15 fails to close
2.	**mfPC_1HP16**	Active	-	-		HPCI-16 fails to close
3.	**mfPC_1RC15**	Active	-	-		RCIC 15 fails to auto isolate
4.	**AET remove RCIC 15 malf**	Active	-	-		Removes RCIC-15 isolation signal
5.	**mfED_12D mfED_12B**	Active	-	-		4KV Bus 2 failure to transfer
6.	**mfDG_08A**	Active	-	-		EDG "A" fails to auto start
7.	**mfRP__08A/B**	Active	-	-		Group III isolation failure, both channels
8.	**mfFW_28C**	0%	60	1	After crew on watch	Steam flow transmitter fails downscale
9.	**mfRC__05**	Active	-	2	After steam flow malfunction	RCIC inadvertent isolation
10.	**mfAN06B6**	SPURIOUS	0	3	After RCIC Tech Spec determination	CWP cooling water low flow alarm
11.	**mfMC_01A**	Active	D:30			Circ water pump "A" trip
12.	**mfMC_08**	0.02	600	4	After backpressure stable from CW pp trip	Condenser air in-leakage
13.	**mfRD_052231**	100%		5	When major power reduction actions are complete	Rod 22-31 Drift Out

14	**mfHP_09**	5%	300	6	After actions for rod drift (instruction #4)	HPCI Steam Line Leak upstream of HPCI-14
14.	**mfHP_09**	50	600	7	After Scram	HPCI Line Leak prior to HPCI-14

Additional Instructions:

1. A call to the Work Week Manager (WWM) or Field Support Supervisor (FSS) will initiate all expected activities (including Duty Manager, 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. The HPCI leak on key 6 should be inserted prior to the crew attempting to transfer house loads or the failure of breaker 23 will be identified early.

5. When asked as I&C, report that the steam flow transmitter failure is being investigated. No cause will be given prior to scenario termination.

6. When asked as I&C, provide a time compressed report that it appears the RCIC steam line d/p cell, DPIS-13-83, has failed and the part is on order for next week.

7. When called as AO to investigate the tripped Circ Water Pump, inform them that the motor casing is hot to the touch and the breaker tripped on overcurrent.

8. When asked as I&C about the recirc master controller, inform them that a troubleshooting plan will be developed.

9. As soon as Key 5 (HPCI steam leak) is inserted, call the control room as RP and report **"There is a loud noise and steam coming from the HPCI area."**

10. If called as AO and/or FSS to investigate HPCI steam leak, inform the Control Room that **"The HPCI Room is full of steam, and leak appears to be upstream of HPCI-14."** If requested to attempt closure of the HPCI isolation valves, leak cannot be isolated during scenario.

11. If crew continues to operate the plant with a HPCI steam leak, inform them as WWM that conditions in the reactor building are making access impossible.

12. If asked as Maint to jumper the interlock for starting CW pump 'C' then wait two minutes and tell them it is done.

13. If called as AO to check out the reason why the 'A' EDG did not auto start, inform the control room that everything looks normal.

OPERATOR ACTIONS
EVENT NUMBER 1

Crew Task Description:

Respond to lowering RPV level caused by a failure of the Steam Flow Transmitter

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CREW	Recognize lowering reactor water level; inform CRS				**Key 1**_____
2.	OATC	Determine that lowering level is a result of a failure of a steam flow transmitter and shift the controller to MANUAL; inform CRS				
3.	CRS	Enter and direct actions IAW OT 3113 (Reactor Low Level):				
		Shift the FW Master Level Controller to MANUAL				
		Restore water level to pre-transient level				
4.	OATC	Observe Steam Flow and Feed Flow indications for mismatch				
		When directed: Restore water level to pre-transient level				
		Identify the cause of the problem as a steam flow transmitter failing downscale				
5.	CREW	Request WWM / I&C investigate problems with steam flow transmitter				
Role Play: If asked as I&C, report that the steam flow transmitter failure is being investigated. No cause will be given prior to scenario termination.						
6.	CRS	Direct the OATC to switch to single element and restore the controller to automatic				
7.	OATC	Transfer control to single element				
		Transfer the controller to automatic				
When FWLC is returned to Auto, initiate Event 2.						

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All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 2

Crew Task Description:

Respond to an inadvertent and incomplete isolation of RCIC and associated Tech Spec determination

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRO / BOP	Recognize/respond to 4-U-2, RCIC steam line d/p high				**KEY 2** _____
		Verify RCIC-15/16/27 close				
		Observe RCIC-15 did not auto isolate				
		Initiate closure of RCIC-15 and inform CRS				
		Refer CRS to T.S. section 3.5 for RCIC				
2.	CRS	Dispatch AO/FSS/WWM to investigate the RCIC area for steam leaks				
3.	CRS/SM	Confirm RCIC inoperability by panel indications and I&C report				
		Determine a 14 day LCO for RCIC per T.S. 3.5.G.2				
		Initiate actions with the tagging desk to have RCIC isolated and tagged				
4.	CRS	Direct the BOP to verify RCIC isolation IAW OP 2121				
5.	BOP	Verify RCIC isolation IAW OP 2121				
When Tech Spec entry is made, initiate Event 3.						

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 3

Crew Task Description:

Respond to trip of Circ water pump 'A' & lowering condenser vacuum (due to a small condenser leak).

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRO / BOP	Acknowledge/respond to Circ Wtr Pump Brg Clg Wtr Flow Lo annunciator (6-B-6)				**Key 3**_____
		Inform CRS				
		Direct AO to investigate				
Role Play: If called as AO, report that the tripped Circ Water Pump motor casing is hot to the touch and the breaker tripped on overcurrent.						
2.	CRO / BOP	Recognize CW Pump 'A' trip; inform CRS				
3.	CRS	Enter/direct actions IAW ON 3173				
		Investigate and determine cause				
4.	CRO / BOP	Recognize rising condenser back-pressure: inform CRS				
5.	CRS	Enter/direct actions IAW OT 3120				
		Reduce power at 10% per min using recirc flow to maintain back-pressure < 5" Hg or to 28.5 – 29.5 Mlbm (whichever occurs first)				
		When core flow is < 29 Mlbm/HR or if above the MELLLA boundary, stop reducing recirc flow and insert control rods in reverse order using the rapid shutdown sequence				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
6.	CRO	When directed, reduce recirc flow to maintain back-pressure < 5" Hg or to 28.5 – 29.5 Mlbm (whichever occurs first)				
7.	CREW	Alert CRS if three Feedwater Pumps are running AND power is < 83%				
8.	CRO	Stop reducing recirc flow and alert CRS when core flow is < 29 Mlbm/HR or above the MELLLA boundary				
		When core flow is < 29 Mlbm/HR or above the MELLLA boundary, insert control rods in reverse order using the rapid shutdown sequence				
9.	CRS	Inform RE that MELLLA was exceeded				
10.	CRS/SM	Inform Duty Manager/Ops Manager				
When plant conditions have been stabilized, initiate Event 4.						

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2) * = Critical Task/Step

OPERATOR ACTIONS

EVENT NUMBER 4

Crew Task Description:

Respond to control rod drift.

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	OATC/ BOP	Recognize and report control rod drift alarm, and control rod 22-31 drifting out (ARS 9-5-D-5)				**KEY 4**_____
2.	OATC	Report critical parameters				
3.	CRS	Direct crew response IAW OT 3167				
4.	CRS	Establish operator action point for multiple control rod drifts				
5.	CRS	Direct OATC to report drive water flow				
6.	OATC	Report drive water flow, FI-3-305				
7.	CRS	Direct OATC to attempt to drive rod 22-31 to its original position one time.				
8.	OATC	Using the manual RMCS, drive control rod 22-31 to its original position.				
9.	OATC	When the RMCS is released, report control rod 22-31 drifting out.				
10.	CRS	Direct BOP to manually SCRAM rod 22-31.				
11.	BOP	When directed, use the Individual Control Rod SCRAM switch to manually SCRAM rod 22-31.				
12.	CREW	Enter OT 3166 for the mis-positioned control rod.				
13.	CREW	Notify RE for assistance with rod drift				
14.	CRS	Consults Tech Spec 3.3 and enters TS 3.3.A.2				
When plant conditions have been stabilized and CRS makes TS entry, initiate Event 5.						

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 5

Crew Task Description:

Respond to an unisolable leak in HPCI steam piping and respond to RB area approaching Max Safe Operating Temp Level (EOP-4)

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	BOP	Recognize/respond to RB fire alarm; inform CRS				Note: The HPCI leak should be inserted prior to the crew attempting to transfer house loads or the failure of breaker 23 will be identified early.
2.	CREW	Identify the following and inform CRS:				**KEY 5**_____
		Rising area temperature levels				
3.	CRS	Enter/direct actions IAW ON 3158 and ARS 3-E-3:				
		Evacuate Reactor Building				
		Monitor area temperature levels				
4.	BOP	Attempt to close HPCI-15 and HPCI-16				
		Identify failure to close of HPCI-15 and HPCI-16; inform CRS				
Plant conditions/operator actions will dictate transition to Event 6.						

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2) * = Critical Task/Step

OPERATOR ACTIONS
EVENT NUMBER 6 & 7

Crew Task Description:

Initiate manual scram per EOP-1
Respond to EDG 'A' failure to auto start
Respond to PCIS Group III failure (RB Vent valves)
RPV-ED on two areas greater than Max Safe

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
1.	CRS	Direct personnel to attempt local closure of HPCI-15 and HPCI-16				
		Role Play: If called as AO and/or FSS to investigate HPCI steam leak, inform control room that the HPCI room is full of steam, and the leak appears to be upstream of HPCI-14. If requested to attempt closure of HPCI isolation valves, leak cannot be isolated during scenario.				
		When temperature levels reach the Max Normal Operating value in one area, enter and direct actions IAW EOP 4				
		Before any area reaches its Max Safe Operating temperature, enter and direct actions IAW EOP-1: Enter OT 3100				
		Insert manual scram				
2.	***CREW CCT-1**	**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**				Note: Larger HPCI leak should be inserted after the scram

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
		Standard: 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				**> Max safe**_____ **Reactor scram**_____ **Key 6**_____
3.	CRO	When directed, insert manual scram				
		Report all rods in to CRS				
		Maintain RPV level 127-177 inches with feedwater				
4.	CRS	Verify automatic actions IAW Table A				
5.	BOP	When directed:				
		Verify automatic actions IAW Table A				
		Recognize/report failure of Group III Isolation				
		Verify isolation failure and backup Group III				
6.	***CREW CCT-2**	**When PCIS Group 1, 2, 3, 5, or 6 fails to isolate with a leak present, initiate PCIS Group manually**				
		Standard: Leak or release terminated within 10 minutes of receipt of the auto isolation signal				**Gp III Isol Sig in**_____ **Group B/U'd**_____
7.	BOP	Recognize Bus 2 did NOT transfer to the Startup Transformer and the 'A' EDG did NOT auto start; inform CRS				

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All Unsatisfactory ratings require comments; a comment sheet is attached.

2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
		Energize Bus 4 from the Startup Transformer (may start EDG "A" or use Vernon Tie)				
		Manually start EDG 'A' or use Vernon Tie to energize Bus 4				
8.	CRS	Enter/direct actions IAW OPOT-3170-01 and OPON-3172-01: Direct/confirm re-energize of busses 2/4				
		Enter/direct actions IAW EOP-1 and OT 3100: Restore and maintain RPV level 127-177 inches				
		Commence plant cooldown not to exceed 100 deg F/hr				
9.	BOP	Commence plant cooldown not to exceed 100 deg F/hr				
10.	CRS	Recognize when two areas approach max safe				
11.	CRS	Direct increased cooldown irrespective of cooldown rate				
12.	CREW	Open Bypass valves to rapidly depressurize the RPV (anticipate RPV-ED)				
13.	***CREW** **CCT-3**	**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** **Standard:** Initiate RPV-ED within 5 minutes of area radiation/temperature/water level exceeding maximum safe operating levels in more than one area.				Anticipation of RPV-ED that prevents exceeding two areas above Max Safe satisfies this critical task. N/A steps 14-16. **>Max Safe_____** **RPVED_____**
14.	CREW	Recognize/report two areas above				

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2) * = Critical Task/Step

STEP	POS.	CANDIDATE ACTIONS/BEHAVIOR	S	U	N/O	COMMENTS
		max safe				
15.	CRS	Enter EOP-5 and direct RPV-ED				Note: Classification may occur after the scenario end
16.	BOP	When directed open 4 SRVs				
17.	CRS	Classify the event IAW AP 3125 Site Area Emergency FS1.1				
Terminate scenario when RPV level is restored 127-177", RPV-ED is complete and power is restored to busses 2/4 (or at lead evaluator discretion).						

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2) * = Critical Task/Step

SCENARIO 5 EVALUATOR NOTES: