

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

A1

Calculate Shutdown Margin with a Stuck CEA

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

R, D, P

Task: Calculate Shutdown Margin with a stuck CEA.

Task Standard: Applicant calculates Shutdown Margin in accordance with OP-903-090, Shutdown Margin. The results ~~must~~ conform to the answer key and conclude that reactor power is greater than the ~~allowed~~ power level.

References: OP-903-090, Shutdown Margin
Plant Data Book ~~Book 1C~~ - Vol 1 Core Physics Data
COLR

Time Critical: No / Validation Time: 15 / mins.

K/A 2.1.25, Ability to interpret reference materials, such as graphs, curves, tables, etc. Importance Rating 3.9
RO

History: 2009 NRC exam
Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____
_____ work from refs _____

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-903-090, Shutdown Margin
Plant Data Book
COLR

Rev

Description:

The applicant will be required to calculate Shutdown Margin with 1 mechanically bound CEA. The results will indicate that Shutdown Margin is NOT met and Emergency Boration is required.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.)

IC
IC ~~* Copy of procedure missing in book~~
~~* Copy of Figures?~~
~~* Copy of COLR~~

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Do not use Simulator data for this JPM

INITIAL CONDITIONS:

- Core burnup is 335 EFPD.
- T_{COLD} is 543.5 °F.
- Power is 35%.
- Power is being held due to a Chemistry hold.
- Regulating Group P CEAs are being used for ASI control as xenon builds in.
- CEA 24 failed to withdraw or insert on the last move.
- I&C has completed troubleshooting and there are no problems associated with CEDMCS.
- The Shift Manager has concluded that CEA 24 is mechanically bound.

INITIATING CUES:

The CRS directs you to perform OP-903-090, Shutdown Margin, section 7.3.

7.3.1 If an Untrippable CEA Condition exists and the other CEAs are not inserted, then determine Shutdown Margin and record on Attachment 10.3 as follows:

Caution

| TASK ELEMENT 1 | STANDARD |
|---|---------------------------|
| <p>NOTE</p> <p>(1) Use 541°F when using PDB Figure 1.5.7.</p> <p>(2) When using graphs and tables in the Plant Data Book (PDB), to obtain the necessary data, it may be necessary and is acceptable to interpolate (approximate between data points or curves). However, extrapolation (approximation outside of the bounds of the data or curves) should not be used.</p> | <p>Note reviewed.</p> |
| <p>Comment: Use Figure 1.5.7.3 for MOC.</p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 2 | STANDARD |
|---|--|
| <p>7.3.1.1 Using current Cycle Burnup and 541 °F temperature, determine Net Worth Worst Pair Stuck out (WPSO) from Figure 1.5.7.</p> | <p>5.3 – 5.4</p> |
| <p>Comment: Refer to A1 Key. Use Use 3.2.2 to obtain MOC Use Figure 1.5.7.3 for MOC. (1.172)</p> <p><i>Justify acceptable range</i></p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 3 | STANDARD |
|--|--|
| <p>7.3.1.2 Determine Shutdown Margin required by COLR.</p> | <p>5.15</p> |
| <p>Comment: Refer to A1 Key.</p> <p>Copy of ref? Use TS 3.1.1.1 COLR 3/4 1-1 <i>Cycle 18 Rev 4</i></p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 4 | STANDARD |
|---|--|
| <p>7.3.1.3 Subtract Step 7.3.1.2 from Step 7.3.1.1 to determine Shutdown Margin Allowed Power Defect %ΔK/K.</p> | <p>0.15 – 0.25</p> |
| <p>Comment: Refer to A1 Key.</p> <p>$5.3 - 5.15 = 0.15$ $5.4 - 5.15 = 0.25$</p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 5 | STANDARD |
|--|------------------------------|
| 7.3.1.4 Record current Reactor Power on Attachment 10.3. | Data recorded. <i>95.35%</i> |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|---|---|
| 7.3.1.5 Using result from step 7.3.1.3 and Power Defect vs. Power Level, Figure 1.2.1, Determine Shutdown Margin Allowed Power Level. | <i>Calc SPMA at 16% does</i> 10% - 18% |
| Comment: Refer to A1 Key. <i>Use 1.2.1.1 (p.119) justify range</i> | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|---|--|
| 7.3.1.6 Verify Shutdown Margin greater than or equal to that required by the COLR by verifying that current power level is less than or equal to the Shutdown Margin Allowed Power Level. | <i>Calculated was</i> Shutdown Margin is not met. <i>A1</i> |
| Comment: Refer to A1 Key. | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 8 | STANDARD |
|---|-------------------------------|
| 7.3.2 If Shutdown Margin does not meet the requirements of Technical Specifications, then Commence Emergency Boration and go to OP-901-103, Emergency Boration. | Communicate step to examiner. |
| Comment: | SAT / UNSAT |

END OF TASK

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

A2

Calculation For Determining The Amount Of Pure
Water That May Be Added To The Refuel Cavity

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Calculation for determining the amount of pure water that may be added to the Refuel Cavity

Calc Pure Water Addition to Refuel Cavity - put on 3d-1
R.N
↑ ↑ ↑ ↑ ↑ ↑ ↑

Task Standard: Applicant calculates the amount of pure water that can be added to the refueling cavity in accordance with OP-010-006, Outage operations. The results must conform to the answer key.

References: OP-010-006, Outage Operations
TS 3.9.1
COLR

Time Critical: No Validation Time: 20 mins.

K/A 2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. Importance Rating 4.3
RO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-010-006, Outage Operations
COLR
TS 3.9.1

Description:

The applicant will be required to calculate the amount of pure water that can be added to the refueling cavity in accordance with OP -010-006, Outage Operations. To perform this calculation, the applicant will need to determine what the Refueling Minimum Boron concentration is from Tech Specs. The results will indicate that 1413 gallons of PMU may be added to the refuel cavity.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.)

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Do not use Simulator data for this JPM

INITIAL CONDITIONS:

- Waterford 3 is in a refueling outage .
- Reactor engineering has determined that a boron concentration of 1985 ppm is required to maintain the refuel cavity at a Keff of $\leq .95$.
- Refueling Cavity Water Level is 24 ft. and will be drained to 22 ft. *MSL*
- Refueling Cavity boron concentration is 2090 ppm.

be consistent - procedure uses Refuel Cavity?

INITIATING CUES:

RP has requested that the refuel cavity walls be washed down with PMU as level in the refueling cavity is lowered to 22 ft.

The CRS directs you to determine refueling minimum boron concentration per TS 3.9.1 and perform OP-010-006, Attachment 9.24 Refueling Cavity Boron concentration.

* Copy of TS missing
 * " " procedure missing

? PMU?

| TASK ELEMENT 1 | STANDARD |
|--|-----------------------|
| <p>Note:</p> <p>(1) This attachment provides guidance for calculating the amount of pure water that may be added to the Refuel Cavity without dilution to below shutdown margin requirements. This is typically used while Radiation Protection is using CMU to wash down the Refuel Cavity walls to mitigate airborne radioactivity while performing Refuel Cavity drain down.</p> <p>(2) This calculation is only valid for water additions while the Refuel Cavity Water Level is $\geq 20'$ MSL.</p> <p>(3) This calculation includes a 50% margin.</p> | <p>Note reviewed.</p> |
| | <p>SAT / UNSAT</p> |

9.24.1 Record the following:

| TASK ELEMENT 2 | STANDARD |
|---|--------------------|
| <ul style="list-style-type: none"> Final Refuel Cavity Water Level (Lf): | <p>22 ft MSL</p> |
| <p>Comment: Refer to A2 Key.</p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 3 | STANDARD |
|--|--------------------|
| <ul style="list-style-type: none"> Initial Refuel Cavity Boron Concentration (Ci) | <p>2090 ppm</p> |
| <p>Comment: Refer to A2 Key.</p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 4 | STANDARD |
|--|---|
| <ul style="list-style-type: none"> Refueling Minimum Boron Concentration (Cf) | <p>2050 ppm ?</p> |
| <p>Comment: Refer to A2 Key.</p> <p><i>look up</i></p> <p>The applicant will determine that 2050 ppm is the most restrictive requirement per TS 3.9.1.</p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 5 | STANDARD |
|---|---|
| <p>9.24.2 Calculate the amount of pure water that may be added to the Refuel Cavity (Vw) using the following formula:</p> $Vw = (6954 \text{ gal/ft} \times Lf - 79,161 \text{ gal}) \times (1 - Cf/Ci)$ $Vw = [(6954 \times \text{ft}) - 79,161] \times [1 - (\text{ppm} / \text{ppm})]$ <p>Vw = _____ gallons</p> | <p>1402 to 1476 gallons ✓</p> |
| <p>Comment: 73827 x .019139 = <u>1413 gallons</u></p> | <p>Critical SAT / UNSAT</p> |

| TASK ELEMENT 6 | STANDARD |
|---|---|
| <p>9.24.3 Select the lower of Vw calculated in Step 9.24.2 or 1500 gallons:</p> | <p>1402 to 1476 gallons</p> |
| <p>Comment: Refer to A1 Key.</p> | <p>Critical SAT / UNSAT</p> |

END

| TASK ELEMENT 7 | STANDARD |
|--|---|
| <p>9.24.4 SM/CRS designate the allowable amount of pure water to add to the Refuel Cavity by specifying an amount that is \leq amount specified in Step 9.24.3.</p> <p>SM/CRS designated allowable pure water limit to add to cavity:</p> | <p>less than or equal to value calculated in step 9.24.2 <u>1402 - 1476</u></p> |
| <p>Comment: Refer to A1 Key.</p> <p>If asked by the applicant if the CRS desires to limit the amount specified in step 9.24.3 the answer will be that it is not desired to limit the amount designated in step 9.24.3.</p> | <p>Critical SAT / UNSAT</p> |

END OF TASK

9.24 REFUELING CAVITY BORON CONCENTRATION (KEY)

NOTE

- (1) This attachment provides guidance for calculating the amount of pure water that may be added to the Refuel Cavity without dilution to below shutdown margin requirements. This is typically used while Radiation Protection is using CMU to wash down the Refuel Cavity walls to mitigate airborne radioactivity while performing Refuel Cavity drain down.
- (2) This calculation is only valid for water additions while the Refuel Cavity Water Level is $\geq 20'$ MSL. [ER-W3-2004-0560-000]
- (3) This calculation includes a 50% margin.

9.24.1 Record the following:

- Final Refuel Cavity Water Level (L_f): 22 feet MSL ✓
- Initial Refuel Cavity Boron Concentration (C_i): 2090 ppm ✓
- Refueling Minimum Boron Concentration (C_f): 2050 ppm

9.24.2 Calculate the amount of pure water that may be added to the Refuel Cavity (V_w) using the following formula:

$$V_w = (6954 \text{ gal/ft} \times L_f - 79,161 \text{ gal}) \times (1 - C_f / C_i)$$

$$V_w = [(6954 \times \overset{152,988}{22} \text{ ft}) - 79,161] \times [1 - (\frac{2050 \text{ ppm}}{2090 \text{ ppm}})]$$

$$V_w = \underline{1413} \text{ gallons} \quad \overset{73827}{1402.7} \quad \overset{1476.5}{1476.5} \quad \begin{matrix} 1 - .980 = .02 \\ 1 - .981 = 0.019 \end{matrix}$$

9.24.3 Select the lower of V_w calculated in Step 9.24.2 or 1500 gallons: 1413 gal

9.24.4 SM/CRS designate the allowable amount of pure water to add to the Refuel Cavity by specifying an amount that is \leq amount specified in Step 9.24.3.

SM/CRS designated allowable pure water limit to add to cavity: 1413 gal

Remarks: _____

Performed: _____ Date/Time: _____

Reviewed: _____ Date/Time: _____

SM/CRS: _____ Date/Time: _____

Waterford 3

2012 RO NRC Exam

JOB PERFORMANCE MEASURE

A3

**Determine Acceptability of Containment
Temperature In Accordance With OP-903-001**

Applicant: _____

Examiner: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

- OP-903-001, Attachment 11.1 MODES 1-4 Technical Specification Surveillance Logs
- OP-903-001, Attachment 11.20 MODES 1-4 PMC Technical Specification Surveillance Logs (page 149)
- Waterford 3 Technical Specifications

Description:

This JPM requires the candidate to use Containment temperature readings from the PMC (provided on the cue sheet), calculate the average temperature using 3 of the 4 readings, and determine compliance with TS 3.6.1.5 and OP-903-001. Based on the readings of the 3 running CFC intake temperatures and tighter acceptance criteria of OP-903-001 (based on instrument error) TS 3.6.1.5 ACTION a must be complied with .

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Provide all answers on the material provided.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet and Page 149 of OP-903-001 to the applicant.)

APPLICANT CUE SHEET

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

INITIAL CONDITIONS:

- Reactor power is at 100%.
- I & C has just completed calibration of CFC Air Intake temperature loops.
- Containment Fan Coolers A, C, and D are operating.
- Primary Containment Average Air temperatures are as follows:
 - PID A51115, CFC A Air Inlet Temp reads 97°F.
 - PID A51119, CFC B Air Inlet Temp reads 100 °F.
 - PID A51123, CFC C Air Inlet Temp reads 101 °F.
 - PID A51127, CFC D Air Inlet Temp reads 98 °F.

INITIATING CUES:

- directs to*
- The CRS ~~requests that you determine compliance of Containment Average Temperature per OP-903-001.~~
 - Document results and actions required, if any, on OP-903-001, Attachment 11.20, ~~and return to the examiner.~~

Ref?

| Evaluator Note |
|---|
| The candidate will determine Containment Average Temperature using Containment Fan Cooler inlet temperatures from the PMC, Containment Fan Coolers running, and reactor power (all provided on the cue sheet) |

| TASK ELEMENT 1 | STANDARD |
|--|---|
| Determines Containment Average Temperature | 98.3°F - 99.7°F |
| <p>Comment:</p> <p>1. The applicant will use the provided CFC temperatures and average the 3 running CFC temperatures (A, C and D). The average will be 98.7°F.</p> <p>Note: Averaging the 3 <u>running</u> CFC temperatures is preferred but not required. Any 3 can be used. The range given covers the various combinations that can be averaged.</p> | <p>98.6 - 98.7 Critical</p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 2 | STANDARD |
|--|--|
| Determines Average Containment Temperature does NOT meet Acceptance Criteria. <i>of CP-963-001</i> | Determines that 3.6.1.5 entry is required. |
| <p>Comment:</p> <p>If the candidate just compares the temperature to the 3.6.1.5 LCO they will determine that no action is required and acceptance criteria is met. However, Tech Spec 3.6.1.5 does not take into account instrument uncertainties. and notes 2.0 – 2.3 of OP-903-001, Attachment 11.1 should be reviewed to determine acceptability of Containment Temperature.</p> | <p>Critical</p> <p>SAT / UNSAT</p> |

END OF TASK

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

A4

Gaseous Release Evaluation

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Meteorological conditions are evaluated for gaseous release from the GWM System.

Task Standard: Applicant concludes that a release is permitted. The conclusions must include the restrictions on wind speed, wind direction, and stability class. *which are? be specific*

References: OP-007-003, Gaseous Waste Management, Rev

Handouts None METADATA

Time Critical: No Validation Time: 10 mins.

K/A 2.3.11 Ability to control radiation releases Importance Rating 3.8

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

~~OP-007-003, Gaseous Waste Management~~ *Ref*

Description:

The setting will be in the classroom for this JPM. The applicant will be provided information from the PMC for the applicable meteorological conditions. The data will be used to evaluate the flow chart in OP-007-003, Attachment 11.5.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from this JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet, OP-007-003 attachment 11.5, and the met data printout to the applicant.)

6.4.4
 of Rest flow

PRI TWR JPM A4

| TASK ELEMENT 1 | STANDARD |
|---|--|
| Evaluate 10 meter (33 foot) wind speed. | Concluded wind speed is 2.68 (or 2.75 from the B/U met tower) m/s and continues down through the flow chart. <i>PT</i> |
| Comment: 1. The 199 foot reading (3.62 m/s) will conclude that there are no restrictions on the release without using the rest of the flowchart. The procedure directs using the 33 foot parameters. 2. 3. | Note 2 of <u>Critical</u> attach SAT / UNSAT 11.5, not cond req's |

| TASK ELEMENT 2 | STANDARD |
|---|---|
| Evaluate 10 meter (33 foot) wind direction. | Concluded wind direction is 331.1 (or 330.7 from the B/U met tower) deg and continued right through the flow chart. <i>PT</i> |
| Comment: The 199 foot reading (314.5 deg) will also continue right through the flow chart. The procedure directs using the 33 foot parameters. | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|---|---|
| Evaluate Pasquill Stability Class. | Concluded ΔT is ^{1.50} -0.77 °C or -0.78 °C, stability class C, and that the release is permitted. If using the B/U met tower, ΔT is -0.93 °C, stability class B, and that the release is permitted. |
| Comment: 1. Note PRI TWR 199-33 DELTA T A = -0.77 PRI TW need procedure DELTA T B = -0.78 | <u>Critical</u> SAT / UNSAT |

END OF TASK

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

A5

**Review and Approve a Shutdown Margin
with a Stuck CEA**

Applicant: _____

Examiner: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-903-090, Shutdown Margin
Plant Data Book
COLR

Description:

The applicant will be required to review a completed Shutdown Margin with 1 mechanically bound CEA. The review will indicate that Shutdown Margin is not met and Emergency Boration is required.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.)

IC

IC

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Do not use Simulator data for this JPM

INITIAL CONDITIONS:

- Core burnup is 335 EFPD.
- T_{COLD} is 543.5 °F.
- Power is 35%.
- Power is being held due to a Chemistry hold.
- Regulating Group P CEAs are being withdrawn for ASI control as xenon builds in.
- CEA 24 failed to withdraw or insert on the last move.
- I&C has completed troubleshooting and there are no problems associated with CEDMCS.
- The Shift Manager has concluded that CEA 24 is mechanically bound.

INITIATING CUES:

The STA has provided you with a completed OP -903-090, Shutdown Margin, for review. Review and approve the completed surveillance or correct any errors and document any actions required on the worksheet given.

7.3.1 If an Untrippable CEA Condition exists and the other CEAs are not inserted, then determine Shutdown Margin and record on Attachment 10.3 as follows:

CAUTION

| TASK ELEMENT 1 | STANDARD |
|---|---|
| <p>NOTE</p> <p>(1) Use 541°F when using PDB Figure 1.5.7. <i>p. 172</i></p> <p>(2) When using graphs and tables in the Plant Data Book (PDB), to obtain the necessary data, it may be necessary and is acceptable to interpolate (approximate between data points or curves). However, extrapolation (approximation outside of the bounds of the data or curves) should not be used.</p> | <p><i>Performance</i></p> <p>Note reviewed.</p> |
| <p>Comment: Use Figure 1.5.7.3 due to MOC. <i>as described in P&L's</i></p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 2 | STANDARD |
|--|--|
| <p>7.3.1.1 Using current Cycle Burnup and 541 °F temperature, determine Net Worth Worst Pair Stuck out (WPSO) from Figure 1.5.7.</p> | <p>Recorded correctly on surveillance.</p> |
| <p>Comment: Use Figure 1.5.7.3 due to MOC. <i>on p. 172</i></p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 3 | STANDARD |
|--|---|
| <p>7.3.1.2 Determine Shutdown Margin required by COLR.</p> | <p>5.15</p> |
| <p>Comment: Surveillance lists 4.6, the COLR Shutdown Margin for > 500 F with CEAs inserted. <i>on p. —</i></p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 4 | STANDARD |
|---|---|
| <p>7.3.1.3 Subtract Step 7.3.1.2 from Step 7.3.1.1 to determine Shutdown Margin Allowed Power Defect %ΔK/K.</p> | <p><u>0.15 – 0.25</u></p> |
| <p>Comment: Surveillance lists .751 because of previous error.</p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 5 | STANDARD |
|---|------------------------------------|
| 7.3.1.5 Using result from step 7.3.1.3 and Power Defect vs. Power Level, Figure 1.2.1, Determine Shutdown Margin Allowed Power Level. | 10% - 18% |
| Comment: Surveillance lists 58%. <i>p. 119</i> | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|--|------------------------------------|
| 7.3.1.6 Verify Shutdown Margin greater than or equal to that required by the COLR by verifying that current power level is less than or equal to the Shutdown Margin Allowed Power Level. | Shutdown Margin is not met. |
| Comment: Surveillance lists 58% allowed, which is greater than the current power level. Applicant must recognize that the actual limit is 10% - 18% which is below the current power level. | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 8 | STANDARD |
|--|------------------------------------|
| 7.3.2 If Shutdown Margin does not meet the requirements of Technical Specifications, then Commence Emergency Boration and go to OP-901-103, Emergency Boration. | Direct Emergency Boration. |
| Comment: If the candidate does not state Emergency Boration is required but states that Shutdown Margin is not met, then ask the candidate what actions are required for this condition, prior to the candidate leaving the area. | <u>Critical</u> SAT / UNSAT |

END OF TASK

10.3 SHUTDOWN MARGIN VERIFICATION WORK SHEET FOR UNTRIPPABLE CEA

A5 Student

| | | | | |
|---------|--|--|--------------------------------------|----------------|
| 7.3.1.1 | Net Worth WPSO | | <u>5.351</u> | % Δ K/K |
| 7.3.1.2 | Shutdown Margin required by COLR | | <u>5.15</u> 4.6 | % Δ K/K |
| 7.3.1.3 | Shutdown Margin Allowed Power Defect % Δ K/K step 7.3.1.1 (5.351) - step 7.3.1.2 (4.6) | | <u>.751</u> | % Δ K/K |
| 7.3.1.4 | Current Reactor Power | | <u>35</u> | %Power |
| 7.3.1.5 | Shutdown Margin Allowed Power Level | | <u>35</u> 58 | %Power |
| 7.3.1.6 | Current Power Level \leq Shutdown Margin Allowed Power Level (Circle one) | | <input checked="" type="radio"/> YES | NO |

REMARKS: None

Performed by: Joe Operator Today
 (Signature) (Date)

IV of Calculations by: Bob E Verifier Today
 (Signature) (Date)

SM/CRS Review: _____ / _____
 (Signature) (Date/Time)

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

A6

Review A Calculation For Determining The Amount
Of Pure Water That May Be Added To The Refuel
Cavity

Applicant: _____

Examiner: _____

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Do not use Simulator data for this JPM

INITIAL CONDITIONS:

- Waterford 3 is in a refueling outage .
- Reactor engineering has determined that a boron concentration of 1985 ppm is required to maintain the refuel cavity at a K_{eff} of $\leq .95$.
- Refueling Cavity Water Level is 24 ft. and will be drained to 22 ft.
- Refueling Cavity boron concentration is 2090 ppm.

INITIATING CUES:

RP has requested that the refuel cavity walls be washed down with PMU as level in the refueling cavity is lowered to 22 ft.

The CRS is to review the calculation for determining refueling minimum boron concentration per TS 3.9.1 and the performance OP-010-006, Attachment 9.24 Refueling Cavity Boron concentration. IF necessary, correct any problems found on Attachment 9.24.

9.24 REFUELING CAVITY BORON CONCENTRATION (KEY)

NOTE

- (1) This attachment provides guidance for calculating the amount of pure water that may be added to the Refuel Cavity without dilution to below shutdown margin requirements. This is typically used while Radiation Protection is using CMU to wash down the Refuel Cavity walls to mitigate airborne radioactivity while performing Refuel Cavity drain down.
- (2) This calculation is only valid for water additions while the Refuel Cavity Water Level is $\geq 20'$ MSL. [ER-W3-2004-0560-000]
- (3) This calculation includes a 50% margin.

9.24.1 Record the following:

- Final Refuel Cavity Water Level (L_f): 22 feet MSL
- Initial Refuel Cavity Boron Concentration (C_i): 2090 ppm
- Refueling Minimum Boron Concentration (C_r): 2050 ppm 1985

9.24.2 Calculate the amount of pure water that may be added to the Refuel Cavity (V_w) using the following formula:

$$V_w = (6954 \text{ gal/ft} \times L_f - 79,161 \text{ gal}) \times (1 - C_r / C_i)$$

$$V_w = [(6954 \times \underline{22} \text{ ft}) - 79,161] \times [1 - (\underline{2050}^{\text{1985}} \text{ ppm} / \underline{2090} \text{ ppm})]$$

$$V_w = \underline{1413} \text{ gallons}$$

9.24.3 Select the lower of V_w calculated in Step 9.24.2 or 1500 gallons: 1413 gal

9.24.4 SM/CRS designate the allowable amount of pure water to add to the Refuel Cavity by specifying an amount that is \leq amount specified in Step 9.24.3.

SM/CRS designated allowable pure water limit to add to cavity: 1413 gal

Remarks: _____

Performed: Michael Westin

Date/Time: Today/Now

Reviewed: Neal Caffrey

Date/Time Today/Now

SM/CRS: _____

Date/Time: _____

9.24 REFUELING CAVITY BORON CONCENTRATION

NOTE

- (1) This attachment provides guidance for calculating the amount of pure water that may be added to the Refuel Cavity without dilution to below shutdown margin requirements. This is typically used while Radiation Protection is using CMU to wash down the Refuel Cavity walls to mitigate airborne radioactivity while performing Refuel Cavity drain down.
- (2) This calculation is only valid for water additions while the Refuel Cavity Water Level is $\geq 20'$ MSL. [ER-W3-2004-0560-000]
- (3) This calculation includes a 50% margin.

9.24.1 Record the following:

- Final Refuel Cavity Water Level (L_f): 22 feet MSL
- Initial Refuel Cavity Boron Concentration (C_i): 2090 ppm
- Refueling Minimum Boron Concentration (C_r): ~~1985~~ ppm 2050

9.24.2 Calculate the amount of pure water that may be added to the Refuel Cavity (V_w) using the following formula:

$$V_w = (6954 \text{ gal/ft} \times L_f - 79,161 \text{ gal}) \times (1 - C_r / C_i)$$

$$V_w = [(6954 \times \underline{22} \text{ ft}) - 79,161] \times [1 - (\underline{1985} \text{ ppm} / \underline{2090} \text{ ppm})]$$

$$V_w = \underline{3709} \text{ gallons } \underline{1413}$$

9.24.3 Select the lower of V_w calculated in Step 9.24.2 or 1500 gallons: 1500 gal ¹⁴¹³

9.24.4 SM/CRS designate the allowable amount of pure water to add to the Refuel Cavity by specifying an amount that is \leq amount specified in Step 9.24.3.

SM/CRS designated allowable pure water limit to add to cavity: 1413 gal ~~1500~~

Remarks: _____

Performed: Michael Westin

Date/Time: Today/Now

Reviewed: Neal Caffrey

Date/Time: Today/Now

SM/CRS: _____

Date/Time: _____

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

A7

Review of Containment Pressure Calculation

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Review of Containment pressure calculation

Task Standard: Reviews Containment pressure calculation in accordance with OP-903-001, Technical Specification Surveillance Logs.

References: OP-903-001, Technical Specification Surveillance Logs
Technical Specification 3.6.1.4

Time Critical: No Validation Time: 15 mins.

K/A 2.2.12 Knowledge of Surveillance Importance Rating 4.1
procedures SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

| TASK ELEMENT 5 | STANDARD |
|---|---|
| 11.15.5 Calculate Absolute Containment Internal Pressure (CP) by performing the following: $CP(PSIA) = BP(PSIA) + C/A(PSIA)$ $CP(PSIA) = \underline{\hspace{2cm}} PSIA + \underline{\hspace{2cm}} PSIA$ $CP(PSIA) = \underline{\hspace{2cm}} PSIA$ | Recognized the error carried forward from the previous step. Corrected value should be 14.265 (14.26-14.27) |
| Comment: CP(PSIA) should be 14.265 when corrected. This number is less than TS. | <p style="text-align: center;"><u>Critical</u></p> <p style="text-align: center;">SAT / UNSAT</p> |

| TASK ELEMENT 6 | STANDARD |
|--|--|
| The applicant should identify the corrected value is less than the Technical Specification 3.6.14 limit for containment pressure (14.275 PSIA) and the actions for Technical Specification 3.6.1.4 are required. | Identified corrected value is less than 14.275 PSIA and TS 3.6.1.4 entry required |
| Comment: <i>Applicant</i> | <p style="text-align: right;"><i>and actions</i></p> <p style="text-align: center;"><u>Critical</u></p> <p style="text-align: center;">SAT / UNSAT</p> |

END OF TASK

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

A8

Authorize Emergency Exposure
as the Emergency Coordinator

Candidate: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Authorize Emergency Exposure as the Emergency Director

Task Standard: Correctly determines that authorization is not appropriate

References: EP-002-030, Emergency Radiation Exposure Guidelines and Controls *Rev*

Validation Time: 9 min 15 minutes Time Critical: No

K/A 2.3.4, Knowledge of radiation exposure limits under normal or emergency conditions. Importance Rating 3.7
SRO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

You are the Emergency Coordinator. The following conditions exist:

- A stuck valve must be operated in a high radiation area with dose rates of 45 REM/Hour.
- The job will take 15 minutes.
- The only available person to do this task is Joe Tallard, SSN # 111-22-3333, Badge # 0101, with Operations.
- Radiation Protection has reported that they can take no action to reduce the dose rate.

INITIATING CUE:

Evaluate authorizing Emergency Exposure as Emergency Director.

Document all work and results on this sheet.

| TASK ELEMENT | STANDARD |
|---|--|
| <p><i>IAW 5.2.2,</i> Emergency Director reviews EP-002-030, Emergency Exposure Guidelines & Controls, and authorizes emergency exposure if criteria is met.</p> <p style="text-align: right;"><i>Radiation</i></p> | <p><i>Applicant</i> Candidate determined that emergency exposure limit of 10 REM TEDE would be exceeded (actual <i>was</i> calculation would be 11.25 REM TEDE) and does not authorize emergency exposure.</p> |
| <p>Comment:</p> <p>Candidate may state that he could authorize Emergency Exposure if the job could be split between two personnel.</p> | <p style="text-align: center;"><u>Critical</u> SAT / UNSAT</p> |

END OF TASK

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

A9

Determine Protective Action Recommendations

Candidate: _____

Examiner: _____

| TASK ELEMENT | STANDARD |
|--|---|
| Determine Protective Action Recommendations based on available data in accordance with EP-002-052, Protective Action Guidelines. | Candidate should recommend evacuating areas A1, B1, C1, D1, and C2. Candidate should recommend sheltering all other protective response areas. <i>APW Key</i> |
| <p>Comment:</p> <p>Candidate should multiply dose rate by 2 hours (requirement for releases of unknown duration) and determine areas to evacuate. All other areas should be sheltered.</p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

END OF TASK

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

S1

Securing Emergency Boration

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

New

Task: Secure Emergency Boration in accordance with step 7 of
OP-901-103, Emergency Boration.

Task Standard: Applicant secures Emergency Boration without tripping the running
Charging Pump. *by realigning CCP suction to the VCT
and*

References: OP-901-103, Emergency Boration

Alternate Path: No ✓ Time Critical: No ✓ Validation Time: 10 ✓ mins.

K/A 004 A4.07 Boration/Dilution Importance Rating 3.9/3.7
RO/SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-901-103, Emergency Boration

Description:

The applicant will perform step 7 of OP-901-103, securing Emergency Boration. This task secures Emergency Boration and aligns the suction source of the Charging Pumps to the Volume Control Tank. All manipulations occur at CP-4. If an applicant does not follow the procedure sequence properly and trips the running Charging Pump, then that applicant would fail this task.

one or two?

The plant will be emergency borating using the Boric Acid Make-up Pumps.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.)

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

what is IC-199? shut down? how long?

INITIAL CONDITIONS:

- The plant is Emergency Borating due to an uncontrolled positive reactivity addition.
- The uncontrolled positive reactivity addition has been terminated and Emergency Boration termination criteria are met.
- The Standby Charging Pump Seal Packages have been running for the required duration and an AO is standing by. *Ready for start.*

INITIATING CUES:

- ✗ The CRS directs you to secure Emergency Boration in accordance with OP-901-103, Emergency Boration, *Step 7.*

~~- Add Step 6 to allow applicant an opportunity to determine that Emer Boration term criteria are met?~~

| Evaluator Note |
|---|
| Cue the Simulator Operator to place the Simulator in RUN. |

| TASK ELEMENT 1 | STANDARD |
|---|--|
| 7. <u>When</u> Emergency Boration termination criteria (Step 6) are met, <u>then</u> secure Emergency Boration by performing the following: | Applicant continued ^{Perf} on with the procedure. <i>PT</i> |
| Comment: Termination criteria is met as given in the initial conditions | SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|--|---|
| 7.1 Place VCT Disch Valve, CVC-183, control switch to AUTO <u>and</u> verify valve opens | <i>control switch was placed in AUTO</i> CVC-183 is opened <i>and verified</i> |
| Comment: | <u>Critical</u> — SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|---|
| 7.2 Stop <u>both</u> Boric Acid Pumps. | Boric Acid Pumps are were stopped. |
| Comment: BAM Pump B is the critical element. <i>why?</i> | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|--|---|
| 7.3 Verify the following valves closed: <ul style="list-style-type: none"> ▪ CVC-507 RWSP to Charging Pumps ▪ BAM-133 Emergency Boration Valve ▪ BAM-113A Boric Acid Makeup Gravity Feed Valve A ▪ BAM-113B Boric Acid Makeup Gravity Feed Valve B | <i>BAM-133 was closed</i> All valves in step are closed. <i>Other vlvgs were verified closed</i> |
| Comment: BAM-133 will need to be closed. Other valves are not critical because they are already in the correct position | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 5 ✓ | STANDARD |
|---|---|
| 7.4 Open the following valves: <ul style="list-style-type: none"> ▪ BAM-126A Boric Acid Makeup Pump A Recirc Valve ▪ BAM-126B Boric Acid Makeup Pump B Recirc Valve | BAM-126A and B ^{were} are opened ✓ |
| Comment: BAM-126B is the Critical Task <i>why?</i> | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 6 ✓ | <i>specific</i> STANDARD |
|--|---|
| 7.5 Operate each Charging Pump for at least 5 minutes to flush concentrated boric acid out of pump. | All Charging Pumps ^{were} are operated. <i>started (and one left running?)</i> |
| Comment: Time compression used for operation of each charging pump. EVALUATOR CUE: After the candidate starts each Charging Pump cue the candidate that 5 minutes have elapsed. | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 7 ✓ | STANDARD |
|---|-----------------------|
| 7.6 Direct Chemistry Department to take RCS Boron samples to verify RCS boron concentration. | Chemistry notified. ✓ |
| Comment: EVALUATOR CUE: After the examinee notifies Chemistry, acknowledge the request and state that the task is complete. | SAT / UNSAT |

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

1. Reset to IC-199
2. Verify Emergency Boration aligned per OP-901-103 using Boric Acid Pumps
3. There are no malfunctions or overrides for this JPM.

E₀ GENERAL (CONT'D)

| | PLACEKEEPER | | |
|---|--------------------------|--------------------------|-----|
| | START | DONE | N/A |
| 7. ✓ <u>When</u> Emergency Boration termination criteria (Step 6) are met, <u>then</u> secure Emergency Boration by performing the following: | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7.1 ✓ Place VCT Disch Valve, CVC-183, control switch to AUTO <u>and</u> verify valve Opens. | | <input type="checkbox"/> | |
| 7.2 ✓ Stop <u>both</u> Boric Acid Pumps. | | <input type="checkbox"/> | |
| 7.3 ✓ Verify the following valves closed: | <input type="checkbox"/> | <input type="checkbox"/> | |
| ✓ CVC-507 RWSP to Charging Pumps | | <input type="checkbox"/> | |
| ✓ BAM-133 Emergency Boration Valve | | <input type="checkbox"/> | |
| ✓ BAM-113A Boric Acid Makeup Gravity Feed Valve A | | <input type="checkbox"/> | |
| ✓ BAM-113B Boric Acid Makeup Gravity Feed Valve B | | <input type="checkbox"/> | |
| 7.4 ✓ Open the following valves: | <input type="checkbox"/> | <input type="checkbox"/> | |
| ✓ BAM-126A Boric Acid Makeup Pump A Recirc Valve | | <input type="checkbox"/> | |
| ✓ BAM-126B Boric Acid Makeup Pump B Recirc Valve | | <input type="checkbox"/> | |
| 7.5 ✓ Operate <u>each</u> Charging Pump for at least 5 minutes to flush concentrated boric acid out of pump. <i>define run & stop?</i> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7.6 ✓ Direct Chemistry Department to take RCS Boron samples to verify RCS boron concentration. | | <input type="checkbox"/> | |

*PEO?
leave I running?
BOTH?*

END

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

S2

Hot and Cold Leg Safety Injection

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Direct for Bank

Task: Align Hot and Cold Leg Safety Injection for Trains A and B.

Task Standard: Applicant aligns Hot and Cold Leg Safety Injection in accordance with OP-902-009, Standard Appendices, Appendix 15. *More Detail*

References: OP-902-002, Loss of Coolant Accident Recovery
OP-902-009, Standard Appendices

Alternate Path: No Time Critical: No Validation Time: 20 mins.

K/A 006 A4.07, ECCS pumps and valves Importance Rating 4.4/4.4
RO/SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

APPLICANT CUE SHEET

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

INITIAL CONDITIONS:

- A Loss of Coolant Accident occurred 2.5 hours ago.
- The crew has entered OP-902-002, Loss of Coolant Accident Recovery
- The conditions exist that require alignment of hot and cold leg injection per step 47, Hot and Cold Leg Injection. *Ref? (Copy of in book)*
- You are the BOP operator.

INITIATING CUES:

- The Control Room Supervisor directs you to establish Hot and Cold Leg Injection in accordance with OP-902-009, Standard Appendices, Appendix 15.

1.1 Establish simultaneous Hot and Cold leg injection for Train A by performing the following:

| TASK ELEMENT 1 | STANDARD |
|---|---|
| 1.1.a <u>Close</u> SI-219A, HPSI HEADER ORIFICE BYPASS valve. | SI-219A ^{WPS} is closed. |
| Comment: | <p style="text-align: center;"><u>Critical</u> ✓</p> <p style="text-align: center;">SAT / UNSAT</p> |

PT

| TASK ELEMENT 2 | STANDARD |
|---|---|
| 1.1.b <u>Open</u> SI-502A, HOT LEG 1 INJECTION ISOLATION valve. | SI-502A ^{WPS} is opened |
| Comment: | <p style="text-align: center;"><u>Critical</u></p> <p style="text-align: center;">SAT / UNSAT</p> |

| TASK ELEMENT 3 | STANDARD |
|--|---|
| 1.1.c <u>Open</u> SI-506A, HOT LEG 1 INJECTION FLOW CONTROL valve. | SI-506A ^{WPS} is opened |
| Comment: | <p style="text-align: center;"><u>Critical</u></p> <p style="text-align: center;">SAT / UNSAT</p> |

1.2 Establish simultaneous Hot and Cold leg injection for Train B by performing the following:

| TASK ELEMENT 4 | STANDARD |
|---|--|
| 1.2.a <u>Close</u> SI-219B, HPSI HEADER ORIFICE BYPASS valve. | SI-219B ^{was} is closed. |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 5 | STANDARD |
|---|---|
| 1.2.b <u>Open</u> SI-502B, HOT LEG 2 INJECTION ISOLATION valve. | SI-502B ^{was} is opened |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|--|---|
| 1.2.c <u>Open</u> SI-506B, HOT LEG 2 INJECTION FLOW CONTROL valve. | SI-506B ^{was} is opened |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|--|---|
| <p>1.3 WHEN hot and cold leg injection has been established, THEN <u>adjust</u> SI-506^A and SI-506^B to obtain the sum of ALL cold leg flows equal to the sum of the hot leg flows.</p> | <p>The sum of all cold leg flows is approximately equal to the sum of the hot leg flows.</p> |
| <p>Comment: Applicant can obtain Hot and Cold Leg flows from either the PMC, the meters on CP-8, or QSPDS. Due to the flow balance that is performed on these valves each outage flow balance between Hot and Cold Leg injection will be close. The candidate may not adjust flow. They should however, verify the flows.</p> | <p>Critical SAT / UNSAT (If adjustment is req'd)</p> |

END OF TASK

Hot and Cold Leg Injection

INSTRUCTIONS

CONTINGENCY ACTIONS

1.1 ✓ Establish simultaneous hot and cold leg injection for Train A by performing the following:

- a. ✓ Close SI-219A, HPSI HEADER ORIFICE BYPASS valve.
- b. ✓ Open SI-502A, HOT LEG 1 INJECTION ISOLATION valve.
- c. ✓ Open SI-506A, HOT LEG 1 INJECTION FLOW CONTROL valve.

PEO

1.2 ✓ Establish simultaneous hot and cold leg injection for Train B by performing the following:

- a. ✓ Close SI-219B, HPSI HEADER ORIFICE BYPASS valve.
- b. ✓ Open SI-502B, HOT LEG 2 INJECTION ISOLATION valve.
- c. ✓ Open SI-506B, HOT LEG 2 INJECTION FLOW CONTROL valve.

INSTRUCTIONS

CONTINGENCY ACTIONS

1.3 **WHEN** hot and cold leg injection has been established, **THEN** adjust SI-506A and SI-506B to obtain the sum of **ALL** cold leg flows equal to the sum of the hot leg flows.

End of Appendix 15

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

S3

OP-902-009, Restore Pressurizer Heater Control

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

New

Task: Perform OP-902-009 Appendix 25, Restore Pressurizer Heater Control.

Task Standard: Applicant completes OP-902-009 Appendix 25 and restores *all Propertand* Pressurizer heaters. *to set on and all Blue htes to AUTO*

References: OP-902-009 Appendix 25, *Title*
Title,

Alternate Path: No Time Critical: No Validation Time: 10 mins.

K/A 010 A4.02 Pzr Heaters Importance Rating 3.6, 3.4
RO/SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- The plant is shutdown following an Inadvertent Safety Injection Actuation Signal.

INITIATING CUES:

- The CRS directs you to perform OP-902-009, Appendix 25, Restore Pressurizer Heater Control.

| Evaluator Note | |
|---|--|
| Cue the Simulator Operator to place the Simulator in RUN. | |

| TASK ELEMENT 1 | STANDARD |
|---|--|
| Procedure Note Pressurizer heaters can NOT be restored with a LOOP concurrent with a SIAS. | Note reviewed. |
| Comment: Only a SIAS will be initiated. | SAT / UNSAT <i>Place Keeping Notes / Cautions ?</i> |

| TASK ELEMENT 2 | STANDARD |
|--|-----------------|
| 1.1 <u>Verify</u> pressurizer level is greater than 33%. | Level verified. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|---|---------------|
| 1.2 <u>Monitor</u> EDG loading to ensure EDG does not exceed 4 MW. | Step reviewed |
| Comment: CP-1 The EDGs will be running but not connected to the safety busses. No LOOP has occurred. | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|---|---|
| 1.3 <u>Check</u> SEQUENCER has timed out for each energized safety bus. | Verifies 200 Second Block illuminated for both Sequencers |
| Comment: CP-1 | SAT / UNSAT |

| TASK ELEMENT 5 | STANDARD |
|--|----------------------------------|
| 1.4 <u>Close</u> SST A32 FEEDER breaker. | A32 FEEDER breaker closed. |
| Comment: CP-1 | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|--|----------------------------------|
| 1.5 <u>Close</u> SST B32 FEEDER breaker. | B32 FEEDER breaker closed. |
| Comment: CP-1 | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|--|---|
| 1.6 Place PROPORTIONAL HEATER BANKS control switches to "ON" | Both Proportional Heater Bank control switches <i>were</i> taken to ON and Proportional Heaters are <i>were</i> energized. |
| Comment: CP-2 | <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 8 | STANDARD |
|---|---|
| 1.7 Momentarily <u>place</u> each BACKUP HEATER BANKS control switches to "OFF" and then to "AUTO." | <i>How many</i> All Backup Heater Bank control switches taken to OFF and then to AUTO or ON. |
| Comment: CP-2 | <u>Critical</u> SAT / UNSAT |

not in procedure

END OF TASK

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

S4

Place Shutdown Cooling Train A in Service

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

*Direct for Bank
LowPwr*

Task: Place Shutdown Cooling Train A in Service

Task Standard: Applicant places Shutdown Cooling Train A in service in accordance with OP-009-005 and secures Low Pressure Safety Injection Pump A after SI-405A fails closed. *Revise ←*

References: OP-009-005, Shutdown Cooling
OP-901-131, Shutdown Cooling Malfunction

Alternate Path: Yes Time Critical: No Validation Time: 20 mins.

K/A 005 A4.01, Controls and indication for RHR pumps Importance Rating 3.6 / 3.4
RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- The plant is in Mode 4 ✓
- Protected Train is A
- RCS temperature is 280 °F
- RCS pressure is 340 PSIA
- SDC Train A suction penetration piping has been manually vented.
- Shutdown Cooling Train A has been placed in Standby in accordance with OP-009-005, Shutdown Cooling, section 5.3.

INITIATING CUES:

- The CRS has directed you to place Shutdown Cooling Train A in service in accordance with OP-009-005, section 6.1.

↑
Title

| TASK ELEMENT 1 ✓ | STANDARD |
|--|---------------------|
| Procedure Caution: The following section has the potential to affect core reactivity | Caution reviewed. ✓ |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 2 - | STANDARD |
|--|----------------|
| Procedure Note: The Shutdown Cooling Train placed in service should be on the Protected Train. | Note reviewed. |
| Comment: Protected Train is A as given in initial conditions. | SAT / UNSAT |

| TASK ELEMENT 3 ✓ | STANDARD |
|--|-------------------|
| Procedure Caution: Following a design basis tornado event, delaying the initiation of Shutdown Cooling (SDC) for up to 7 days will be required to ensure the Component Cooling Water System is capable of removing Reactor Coolant System decay heat. The actual delay time will depend on UHS damage and ambient temperature and will be determined by engineering. Emergency Feedwater supports decay heat removal until SDC can be initiated. | Caution reviewed. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|--|---|
| 6.1.1: Verify Shutdown Cooling Train A has been aligned to Standby condition in accordance with Section 5.3, Alignment of Shutdown Cooling Train A to Standby Condition. | Notes Section 5.3 is complete and continues in procedure. |
| Comment: Cue sheet lists this as complete. | SAT / UNSAT |

Past tense

| TASK ELEMENT 5 ✓ | STANDARD |
|--|--|
| 6.1.2: Verify sufficient number of Dry Cooling Tower Fans running to accept increased heat load on CCW System. | Continues in procedure after cue. <i>Determined sufficient # of fans running</i> |
| Comment: <i>If asked,</i> EVALUATOR CUE: Leave the Dry Cooling Tower Fans in automatic, and allow Auxiliary Component Cooling Water to pick up the heat load. | SAT / UNSAT |

*- better way to say this w/o cueing applicant? *
 * how would an operator make this determination. **

| TASK ELEMENT 6 ✓ | STANDARD |
|--|-------------------|
| Procedure Caution: CC-963A is required to be maintained open while in Mode 4 to preserve the design temperature basis of piping and associated components at the CCW outlet of shutdown cooling heat exchanger A. With CC-963A open, flow through Shutdown Cooling Heat Exchanger A will be maintained above 2305 gpm. | Caution reviewed. |
| Comment: Align Note. <i>name of CC-963A?</i> | SAT / UNSAT |

| TASK ELEMENT 7 ✓ | STANDARD |
|---|------------------------------------|
| 6.1.3: Place Shutdown HX A CCW Flow Control, CC-963A, control switch to Open. | <i>opened</i> CC-963 A is open. |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 8 | STANDARD |
|---|--------------------------|
| <p>Procedure Caution: ✓</p> <p>(1) The following Reactor Coolant System limits shall be met for Shutdown Cooling Entry:</p> <ul style="list-style-type: none"> • RCS temperature limit: < 350 °F • RCS pressure limit: < 392 psia • If Containment harsh environment conditions (>200°F) have been exceeded then RCS pressure limit: <358 Psia <p>(2) If Containment Spray Header A Isolation, CS-125 A, is open while Shutdown Cooling Train A is operating, then Containment Spray A riser may fill and possibly spray water into Containment, due to leakage past Containment Spray Pump A discharge stop check, CS-117A.</p> | <p>Caution reviewed.</p> |
| <p>Comment: IC: 280F, 340 PSIA</p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 9 | STANDARD |
|---|--------------------------|
| <p>Procedure Caution: To minimize the effect of air introduction to LPSI pump, the piping between SI-405A AND SI-407A should be placed in-service with one of the following conditions:</p> | <p>Caution reviewed.</p> |
| <p>Comment:</p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 10 | STANDARD |
|--|---|
| <p>6.1.4: Verify RC Loop 2 SDC suction piping meets one of the following conditions:</p> <p>Y ✓ The SDC Train is placed in-service with RCS pressure \geq 100 PSIA by PMC indication (PIDs A12203, A12204, A12222) or \geq 110 PSIA by board indication (RC-IPI0103,-0104,-0105,-0106). 340 PSIA</p> <p>Y ✓ ^{or} The SDC Train's suction penetration has been manually vented. IC</p> <p>NX ^{or} The SDC Train was previously in-service since the unit has been shutdown.</p> | <p>at least 1</p> <p>Verified 2 of 3 conditions met</p> <p>One of the conditions is verified. Cue sheet lists SDC Train A suction penetration has been manually vented.</p> |
| <p>Comment:</p> | <p>SAT / UNSAT</p> |

| TASK ELEMENT 11 | STANDARD |
|---|--------------------------------------|
| 6.1.5: Unlock and Open RC Loop 2 SDC Suction Outside Containment Isol, SI-407A. | <i>Opened</i> SI-407 A is open: ← |
| Comment: Key 133 required. <i>from where?</i> | <u>Critical</u> ✓ SAT / UNSAT PT |

| TASK ELEMENT 12 | STANDARD |
|---|---|
| 6.1.6: Notify Radiation Protection Department that Shutdown Cooling Train A is being placed in service. | <i>was</i> Call is made. <i>to RP</i> |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 13 | STANDARD |
|--|--|
| 6.1.7: Start LPSI Pump A. | <i>Started</i> LPSI Pump A is started. |
| Comment: Annunciator LPSI Pump A Flow Lost (Cabinet M, F-3) is expected. It will clear when the applicant raises flow > 2900 gpm. | ✓ <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 14 | STANDARD |
|---|--|
| 6.1.8: Raise Shutdown Cooling flow by Manually adjusting LPSI Header Flow controller 2A/2B, SI-IFIC-0307, output until Shutdown Cooling Header A Flow indicates 4100 GPM, as indicated by RC Loop 2 Shdn Line Flow Indicator, SI-IFI-1307-A1. | <i>was</i> Flow is raised to ~ 4100 GPM. <i>as indicated on SI-IFI-1307-A1</i> |
| Comment: | ✓ <u>Critical</u> SAT / UNSAT |

| TASK ELEMENT 15 | STANDARD |
|---|--|
| 6.1.9: Adjust LPSI Header Flow Controller 2A/2B, SI-IFIC-0307, setpoint potentiometer to 73%, and place controller to AUTO. | <i>Adjusted to</i> Setpoint potentiometer is ~ 73%, and controller is in AUTO |
| Comment: | ✓ <u>Critical</u> <i>was placed</i> SAT / UNSAT |

| TASK ELEMENT 16 | STANDARD |
|---|--|
| 6.1.10: Verify LPSI Header Flow Controller 2A/2B, SI-IFIC-0307, is maintaining 4100 GPM Shutdown Cooling Header A flow, as indicated by RC Loop 2 Shdn Line Flow Indicator, SI-IFI-1307-A1. | <i>was</i> Flow is verified. <i>at SI-IFI-1307-A1</i> |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 17 | STANDARD |
|---|----------------|
| Procedure Note: <u>If</u> a sample was drawn prior to shutdown <u>and</u> no interim shutdown has occurred where SDC was placed in service and boron concentration could have been reduced, <u>then</u> sampling is not required. | Note reviewed. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 18 | STANDARD |
|---|---|
| 6.1.11: At SM/CRS discretion, direct Chemistry Department to sample Shutdown Cooling Train A for boron concentration. | Note <i>Determined at Chem results met. and proceeded to next step</i> |
| Comment: EVALUATOR CUE: When requested, provide information to applicant that all required Chemistry requirements are met. <i>Shutdown Cooling Train A is 2250 ppm</i> | SAT / UNSAT |

| TASK ELEMENT 19 | STANDARD |
|---|----------------|
| Procedure Note: Shutdown Cooling Train A requires one operable Low Pressure Safety Injection Flow Control Valve for the train to be operable. | Note reviewed. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 20 ✓ | STANDARD |
|--|-------------------|
| Procedure Caution: The Reactor Coolant System shall not exceed the 100 °F per hour cooldown rate of Technical Specification 3.4.8.1. | Caution reviewed. |
| Comment: <i>If asked, Cue: Inform applicant that CRS will evaluate TS.</i> | SAT / UNSAT |

6.1.12 Raise Shutdown Cooling Train A temperature to within 100 °F of Reactor Coolant Hot temperature as follows:

| TASK ELEMENT 21 ✓ | STANDARD |
|---|---|
| 6.1.12.1: Open the following valves: <ul style="list-style-type: none"> • SI-139A LPSI Header to RC Loop 2A Flow Control • SI-138A LPSI Header to RC Loop 2B Flow Control | <i>opened</i> SI-139 A and SI-138 A are <i>opened</i> <i>PT</i> |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 21 ✓ | STANDARD |
|--|---|
| 6.1.12.2: Throttle Closed RC Loop 2 Shdn Cooling Warmup, SI-135A, <u>until</u> one of the following is within 100°F of Shutdown Cooling Train A temperature, as indicated by LPSI Pump A Discharge Header Temperature Indicator, SI-ITI-0351X: <ul style="list-style-type: none"> ▪ Hot Leg 2 temperature, as indicated by RC Loop 2 Hot Leg Temperature Indicator, RC-ITI-0122-HA <u>or</u> ▪ Hot Leg 1 temperature, as indicated by RC Loop 1 Hot Leg Temperature Indicator, RC-ITI-0122-HA | <i>SI-135A throttled closed until SDC</i> ← Temperature is within 100 °F of <i>HL 1 or 2</i> |
| Comment: SI-135 A is a large gate valve with a very long stroke. | <i>Critical</i> ← SAT / UNSAT |

| TASK ELEMENT 22 ✓ | STANDARD |
|--|-------------------------------------|
| 6.1.12.3: Close RC Loop 2 Shdn Cooling Warmup, SI-135 A. | <i>closed</i> SI-135 A is closed |
| Comment: | <u>Critical</u> SAT / UNSAT |

| |
|--|
| Evaluator Note |
| Coordinate with the simulator operator ^{will} to initiate trigger 1 to close SI-405 A. <i>5 secs after SI-135A closes.</i> |

The AP portion of the JPM.

| TASK ELEMENT 23 | STANDARD |
|--|---|
| Secure LPSI Pump A | <i>50.1 sec</i> LPSI Pump A is off <i>within</i> <i>secs</i> |
| Comment: This is an immediate operator action in accordance with OP-901-131, Shutdown Cooling Malfunction, section D.1. | Critical SAT / UNSAT |

Rick Williams

Copy of Ref?

END OF TASK

~~Add Procedure Caution?~~

*how long does applicant have to secure pump?
OP Dept expectation?*

CAUTION ✓

- (1) THE FOLLOWING REACTOR COOLANT SYSTEM LIMITS SHALL BE MET FOR SHUTDOWN COOLING ENTRY:
- RCS TEMPERATURE LIMIT: <350°F *TC: 280F*
 - RCS PRESSURE LIMIT: <392 PSIA *340 psia*
 - IF CONTAINMENT HARSH ENVIRONMENT CONDITIONS ($\geq 200^\circ\text{F}$) HAVE BEEN EXCEEDED THEN RCS PRESSURE LIMIT: <358 PSIA
- (2) IF CONTAINMENT SPRAY HEADER A ISOLATION, CS-125A, IS OPEN WHILE SHUTDOWN COOLING TRAIN A IS OPERATING, THEN CONTAINMENT SPRAY A RISER MAY FILL AND POSSIBLY SPRAY WATER INTO CONTAINMENT, DUE TO LEAKAGE PAST CONTAINMENT SPRAY PUMP A DISCHARGE STOP CHECK, CS-117A.

CAUTION ✓

TO MINIMIZE THE EFFECT OF AIR INTRODUCTION TO A LPSI PUMP, THE PIPING BETWEEN SI-405A AND SI-407A SHOULD BE PLACED IN-SERVICE WITH ONE OF THE FOLLOWING CONDITIONS: *LISTED IN STEP 6.1.4.*

PEO
←

6.1.4 ✓ Verify RC Loop 2 SDC suction piping meets one of the following conditions:

- The SDC Train is placed in-service with RCS pressure ≥ 100 PSIA by PMC indication (PIDs A12203, A12204, A12221, A12222) or ≥ 110 PSIA by board indication (RC-IPI0103, -0104, -0105, -0106).

or

- The SDC Train's suction penetration piping has been manually vented. Venting should be accomplished through SI-4051A using RCS/Cavity as water source in accordance with Attachment 11.7, Manual Venting of SDC Train Suction Penetration Piping.

or

- The SDC Train was previously in-service since the unit has been shutdown.

6.1.5 ✓ Unlock and Open RC Loop 2 SDC Suction Outside Containment Isol, SI-407A.

6.1.6 ✓ Notify Radiation Protection Department that Shutdown Cooling Train A is being placed in service.

6.1.7 ✓ Start LPSI Pump A.

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

S5

**Balance of Plant Operator Immediate Operator
Actions on Control Room Evacuation**

Applicant: _____

Examiner: _____

- ① Alt Path, ~~As~~ App C, must be procedure driven ...
- ② Will an instructor perform ATC actions? JPM S5
- ③ Mod JPM - DATA PAGE where is Original?

Task: Perform balance of plant operator's immediate operator action on Control Room evacuation with fire conditions.

Task Standard: Applicant performs ^{ed} immediate operator actions for BOP position for a fire in the Control Room in accordance with OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown. Applicant manually trips ^{to} the turbine due the turbine failing to trip on a Reactor trip. _{from CP-1}

Post tense

References: OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown

? Alternate Path: Yes Time Critical: No Validation Time: 5 mins.

K/A 039 A4.01 Main Steam Supply Valves Importance Rating 2.9 / 2.8
RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

None

Description:

The applicant will be cued that there is a fire in CP-33. The CRS will direct him to carry out his immediate operator actions as BOP operator. The main turbine will not trip when the reactor is tripped. The applicant will be required to manually trip the main turbine using the turbine trip buttons. The task will end when the applicant goes to the key locker.

*An instructor/surrogate^{at CP-1} will perform the ATC immediate
of actions.*

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet and then give the cue sheet to the applicant.)

| Evaluator Note |
|--|
| Cue the Simulator Operator to place the Simulator in RUN and initiate Trigger 1. |

| Evaluator Note |
|--|
| The Alternate Path becomes applicable when the applicant addresses the turbine not tripping on a Reactor Trip. |

| TASK ELEMENT 1 | STANDARD |
|--|----------------------------------|
| 2.1 Verify Turbine trip: <ul style="list-style-type: none"> • Governor valves Closed • Throttle valves Closed | Turbine tripped. |
| Comment: <i>recognize Gov & Throttle valves NOT closed and then will</i> The applicant will trip the turbine using the trip buttons at CP-1 | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|--|--|
| 2.2 Verify Generator trip: <ul style="list-style-type: none"> • Exciter Field Breaker Tripped • Generator Breaker A Tripped • Generator Breaker B Tripped | <i>fail one of these to trip</i> Verification complete. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|---|
| 2.3 RESET Moisture Separator Reheater controls. | RESET pushbutton depressed and Temperature Control Valves are closed. |
| Comment: <i>identify all Temp Control values by number</i> | <u>Critical</u> SAT / UNSAT |

2.4 IF evacuating the Control Room due to fire, THEN perform the following:

inside Task Element?

| TASK ELEMENT 4 | STANDARD |
|--|---|
| 2.4.1 IF <u>EITHER</u> of the following valves has spuriously Opened, THEN place the applicable controller(s) in MANUAL AND lower the output to zero: <ul style="list-style-type: none"> MS-116A SG 1 Atmospheric Dump MS-116B SG 2 Atmospheric Dump | Valves are verified operating properly. <i>define exact state</i> |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 5 | STANDARD |
|--|---|
| 2.4.2 Close the following valves: <ul style="list-style-type: none"> MS-124A Main Steam Isol Valve #1 MS-124B Main Steam Isol Valve #2 | closed MS-124A & MS-124B are closed. <i>using hand switches at CP?</i> |
| Comment: | OK Critical <i>action?</i> SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|--|----------------------------------|
| 2.5 Obtain Operations Security Key Ring <u>AND</u> proceed to RAB +35 Relay Room. | Keys obtained. |
| Comment: The examinee should obtain a Key Locker key from the ^{ring} key locker on left side of the Control Room Desk and simulate getting key from the locker in the Shift Manager's Office represented by the photo posted in the SM office. <i>Examiner Cue: ASK Applicant where he is going.</i> | Critical <i>←</i> SAT / UNSAT |

Location

END OF TASK

Is it a Key or Key ring?

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

S6

**Perform OP-903-037, Containment Cooling
Fans Operability Check**

Candidate: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Direct from Bank

Task: Perform OP-903-037, Containment Cooling Fans Operability Check

Task Standard: Candidate completed OP-903-037, Containment Cooling Fans Operability Check and determined all CCFans met Accept Criteria and aligned CCFans A,B,D running

References: OP-903-037, Containment Cooling Fans Operability Check
OP-008-003, Containment Cooling System

Alternate Path: No / Time Critical: No / Validation Time: 15 mins.

K/A 022 A4.01 CCS Fans / Importance Rating 3.6/3.6
RO/SRO

** Change to 100% per? if done w/ another JPM at Mode 3*

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

- Plant is in Mode 3



INITIATING CUES:

- The CRS ~~has~~^s directed you to perform OP-903-037, Containment Cooling Fans Operability Check.
- Align the final Containment Fan Cooler configuration for the month of October.



| TASK ELEMENT 1 | STANDARD |
|---|---|
| 7.1 Record differential pressure (DP) and CCW flow rate for operating CFC units on Attachment 10.1, CFC Data Sheet. | Values are recorded on Att. 1. |
| Comment: | Critical Criteria SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|--|--|
| Procedure Note: Attachment 10.2, Run Time Equalization Schedule Sheet, should be referenced in determining which CFC operating unit(s) is secured. | Determine correct alignment for the month of October. <i>(A, B, D)</i> ← |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|------------------------|
| Procedure Caution: To prevent vibration alarms, and damage to containment cooling unit duct work, limit configuration to only three (3) of four (4) units operating at a time. | Caution referenced to. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|---|--|
| 7.2 Adjust CFC operating unit configuration to operate idle CFC unit(s). | CCS Fan C is off and CCS Fan D is running. |
| Comment: Evaluator: This is written for the candidate to secure CCS Fan C, which is the most reasonable fan for him to stop. It is acceptable for the candidate to secure CCS Fan A or B at this point. This would require the candidate to maneuver fans later in the task to leave fans A, B, and D running. | Critical ✓ SAT / UNSAT |

*C Switched to On
Used SOP —
placed Control
Switch to
Start/Fast
etc*

| TASK ELEMENT 5 | STANDARD |
|---|--|
| 7.3 Record CFC unit(s) start time and CCW flow rate, for unit(s) started in Step 2, on Attachment 10.1, CFC Data Sheet. | Attachment 10.1 data updated for start time and flow rate. <i>By D fan</i> |
| | Critical ✓ <i>Critical</i> SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|---|--|
| 7.4 When CFC unit(s) have operated for ≥ 15 minutes, <u>then</u> record CFC unit(s) differential pressure for unit(s) started in Step 2, on Attachment 10.1, CFC Data Sheet. | Attachment 10.1 data updated for differential pressure. <i>for 'D' fan</i> |
| <i>Examine case:</i> Perform Time Compression and state that the fan has been running for > 15 minutes. | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|---|--|
| 7.5 Verify all <u>four</u> CFC units were operated <u>and</u> data recorded on Attachment 10.1, CFC Data Sheet. | Attachment 10.1 data updated for all CCS Fans. |
| | <u>Critical</u> SAT / UNSAT <i>Should have recorded any data.</i> |

| TASK ELEMENT 8 | STANDARD |
|--|---|
| 7.6 Verify each CFC Unit CCW flow rate is ≥ 625 GPM | Satisfactory flow rates verified. |
| | <u>Critical</u> SAT / UNSAT <i>no action</i> |

| TASK ELEMENT 9 | STANDARD |
|--|---|
| 7.7 Refer to Attachment 10.2, Run Time Equalization Schedule Sheet, to obtain CFC unit alignment for the upcoming month. | Determine that CFC A, B and D to be left running. <i>past tense</i> |
| <i>Examine Note: May have determined from Proc. Note before step 7.2.</i> | SAT / UNSAT |

| TASK ELEMENT 10 | STANDARD |
|---|--|
| 7.8 Verify that CFC units are aligned as required on Attachment 10.1, CFC Data Sheet. | <i>verified</i> CFC A, B and D running. |
| <i>TE 11 -</i> | SAT / UNSAT |

*Completes Attach 10.1
10.1.2 initialed
10.1.2 " performed by - signed* **END OF TASK**

CRITICAL

7.0 PROCEDURE

- 7.1 ✓ Record differential pressure (DP) and CCW flow rate for operating CFC units on Attachment 10.1, CFC Data Sheet.

NOTE

Attachment 10.2, Run Time Equalization Schedule Sheet, should be referenced in determining which CFC operating unit(s) is secured .

CAUTION

TO PREVENT VIBRATION ALARMS, AND DAMAGE TO CONTAINMENT COOLING UNIT DUCT WORK, LIMIT CONFIGURATION TO ONLY THREE (3) OF FOUR (4) UNITS OPERATING AT A TIME.

- 7.2 ✓ Adjust CFC operating unit configuration to operate idle CFC unit(s).
- 7.3 ✓ Record CFC unit(s) start time and CCW flow rate, for unit(s) started in Step 7.2 on Attachment 10.1, CFC Data Sheet.
- 7.4 ✓ When CFC unit(s) have operated for ≥ 15 minutes, then record CFC unit(s) differential pressure for unit(s) started in Step 2, on Attachment 10.1, CFC Data Sheet.
- 7.5 ✓ Verify all four CFC units were operated and data recorded on Attachment 10.1, CFC Data Sheet.
- 7.6 ✓ Verify each CFC Unit CCW flow rate is ≥ 625 GPM.
- 7.7 ✓ Refer to Attachment 10.2, Run Time Equalization Schedule Sheet, to obtain CFC unit alignment for the upcoming month.
- 7.8 ✓ Verify that CFC units are aligned as required on Attachment 10.1, CFC Data Sheet.

PEO - no steps
to complete 10.1.1
10.1.2
sign

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

S7

Energize 4.16 KV Safety Bus from Offsite Power
following a Station Blackout

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Energize 4.16 KV Safety Bus from Offsite Power following a Station Blackout.

Task Standard: *Applicant energized*
4.16 KV Safety Bus energized from offsite power *through by energizing*
A1 & A2 buses.

References: OP-902-009 Attachment 12-A: 6.9 KV and 4.16 KV Nonsafety Bus Restoration
OP-902-009 Attachment 12-B: Energize 4.16 KV Safety Bus from Offsite Power

Alternate Path: No ✓ Time Critical: No ✓ Validation Time: 15 mins.

K/A 062 A4.01, All breakers (including available switchyard) Importance Rating 3.3 / 3.1
RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- The plant is performing actions in OP-902-005, Station Blackout, *and all time critical actions have been completed.*
- Power to the Offsite Grid has been restored.
- *8657A ~~reset~~ is lockout relay has been reset*

INITIATING CUES:

- The plant is in a station blackout. The station blackout has been occurring for 30 minutes. ~~All time critical actions required by OP-902-005, Station Blackout, have been completed.~~
- The CRS directs you to energize the A1 and A2 busses from offsite power and then energize the 3A bus in accordance with OP-902-009, Appendices 12A and 12B.

- ① Do not handcut procedure copies - must use SIM copy.
- ② How many Crit Steps? Enough or ~~do~~ more to restore elect. power?

| Evaluator Note |
|---|
| When Applicant is ready, cue the simulator operator to place the simulator in RUN. Task element 1-4 are applicable to OP-902-009 Appendix 12-A, 6.9 KV and 4.16 KV Nonsafety Bus Restoration |

1.1 IF offsite power is available **AND** 6.9 KV and 4.16 KV nonsafety buses A1 and A2 are deenergized, **THEN** energize the 6.9 KV and 4.16 KV nonsafety buses as follows:

| TASK ELEMENT 1 | STANDARD |
|--|------------------------------|
| a. Locally <u>reset</u> lockout relay 86STA handswitch on 7KV-ESWGR-1A-3. | local relay reset |
| Comment: Relay is reset in the field <i>Reset per 86STA handswitch</i> EVALUATOR CUE: After the examinee tells the Auxiliary Operator to reset the relay, cue the examinee that the 86STA Lockout Relay is RESET . | SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|--|--|
| b. <u>Verify</u> SUT A DISCONNECT closed. | disconnect closed |
| Comment: Indication is in the control room on CP-1. | <i>Perf.</i> CRITICAL SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|-------------------------|
| c. <u>Verify</u> loads have stripped from SWGR A1 and SWGR A2. | loads verified stripped |
| Comment: Verified in the field. EVALUATOR CUE: After the examinee requests verification from the Auxiliary Operator, cue the examinee that all loads have stripped from Busses A1 and A2. | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|---|---------------------------------------|
| d. <u>Place</u> BUS A TRANSFER switch to "SUT". | Switch taken to SUT. |
| Comment: Switch on CP-1 | <i>critical</i> SAT / UNSAT |



NO verifiable PM 87 behavior/action

| TASK ELEMENT 5 | STANDARD |
|---|------------------------------------|
| e. Locally <u>reset</u> lockout relays: <ul style="list-style-type: none"> 86A1/HR on 7KV-ESWGR-1A-2 86A2/HR on 4KV-ESWGR-2A-2 | relays reset |
| Comment: Relays are reset in the field. <i>←</i> EVALUATOR CUE: After the examinee requests the Auxiliary Operator reset the relays, cue the examinee that the 86A1/HR and 86A2/HR relays are reset. | Critical SAT / UNSAT |

←

| Evaluator Note |
|--|
| The following steps are applicable to OP-902-009, Appendix 12B, Energize 4.16KV Safety Bus from Offsite Power. |

| TASK ELEMENT 6 | STANDARD |
|---|--|
| 1.1 IF containment pressure is less than 17.7 PSIA, THEN <u>verify</u> BOTH CS pump control switches are in "OFF". | Both CS Pump control switches are in OFF |
| Comment: Control switches are on CP-8. | Critical SAT / UNSAT |

pumps are already off?

| TASK ELEMENT 7 | STANDARD |
|--|---|
| 1.2 IF CCW flow to the RCP seals has been interrupted for greater than 10 minutes, THEN <u>close</u> the following valves: <ul style="list-style-type: none"> CC 641, COMPONENT COOLING WATER RCP INLET OUTSIDE ISOL CC 710, COMPONENT COOLING WATER RCP OUTLET INSIDE ISOL CC 713, COMPONENT COOLING WATER RCP OUTLET OUTSIDE ISOL | Critical Required valves closed |
| Comment: Control switches on CP-8. | Critical SAT / UNSAT |

off? If yes, would someone have started them by now?

Add Examinee NOTE: From IC, SBS has been occurring for 30 min.

Look up for Art/ Jim

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

S8

Reset Emergency Feedwater Actuation

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Direct from Bank

Task: Reset Emergency Feedwater Actuation

Task Standard: EFAS actuation were reset in accordance with OP-902-009, Standard Appendices, Appendix 5 - C.

by pressing EFAS-1 and 2 push buttons, placing EFWS Pump A/B control switch to normal, closing MS-401A/B, and placing EF Flow control valves in AUTO

References: OP-902-009, Standard Appendices, Appendix 5 - E
OP-902-001, Reactor Trip Recovery

Alternate Path: No ✓ Time Critical: No ✓ Validation Time: 10 mins.

K/A 012 A4.04, Bistable, trips, reset and test switches

Importance Rating 3.3 / 3.3
RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-902-009, Standard Appendices, Appendix 5 – C, *EFAS Reset Procedure*
OP-902-001, Reactor Trip Recovery

Description:

The JPM begins after a Reactor trip on an Inadvertent Safety Injection. EFAS-1 and EFAS-2 are actuated. Steam Generator Levels are being controlled by Main Feedwater. The applicant will be directed to reset EFAS 1 and 2. Actions for this task take place at CP-7, CP-8 and CP-33.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet and then give the cue sheet to the applicant.)

APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

*A manual activation of EFAS¹ and an automatic
action of EFAS² has occurred.*

- A reactor trip has occurred on an Inadvertent Safety Injection Actuation Signal.
- The crew is implementing OP-902-001, Reactor Trip Recovery
- Emergency Feedwater is not required to maintain Steam Generator levels.

INITIATING CUES:

- The CRS directs you to perform OP-902-009, Standard Appendices, Appendix 5-C and reset EFAS 1 and 2.

↑ EFAS Reset Procedure,

*EFAS-1 - feeds S/G1 w/ 2 motor
1 stem*

EFAS-2. " " w/ 2 motor

| Evaluator Note |
|--|
| When Applicant is ready, cue the simulator operator to place the simulator in RUN. |

| TASK ELEMENT 1 | STANDARD |
|---|------------------|
| 1.1 <u>Verify</u> steam generator level is being maintained or restored to 50% to 70% NR using MFW. | Levels verified. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|---|--------------------------------|
| 1.2. <u>Verify</u> EFAS-1 manual actuation switches in "NORM" position. (CP-7 and CP-8) ^{hard break} | Verify switches. |
| Comment: <i>How many switches? 4 switches each</i> | <i>Critical</i> SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|------------------|
| 1.3 <u>Verify</u> EFAS-2 manual actuation switches in "NORM" position. (CP-7 and CP-8) | Verify switches. |
| Comment: <i>" " " "</i> | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|---|----------------------------------|
| 1.4 <u>Press</u> BOTH EFAS-1 reset pushbuttons. (CP-33) | Pushbuttons depressed. |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 5 | STANDARD |
|---|----------------------------------|
| 1.5 <u>Press</u> BOTH EFAS-2 reset pushbuttons. (CP-33) | Pushbuttons depressed. |
| Comment: | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|---|--|
| 1.6 <u>Verify</u> EFW Pump A is secured and <u>place</u> the control switch to normal. (mid position) | EFW Pump A secured and switch in mid position. |
| Comment: | <u>Critical</u> ? critical SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|---|--|
| 1.7 <u>Verify</u> EFW Pump B is secured and place the control switch to normal (mid position) | EFW Pump B secured and switch in mid position. |
| Comment: | <u>Critical</u> ? critical SAT / UNSAT |

check & verify.
~~verify - consistent~~

be consistent (follow procedure)

| TASK ELEMENT 8 | STANDARD |
|--|--------------------------------------|
| 1.8 <u>Verify</u> MS-401A, EFW PUMP AB TURB STM SUPPLY SG 1 is closed. | MS-401A is closed. |
| Comment: Control switch must be taken to OPEN and then to CLOSE . <i>CLOSE MID</i> | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 9 | STANDARD |
|--|--------------------------------------|
| 1.9 <u>Verify</u> MS-401B, EFW PUMP AB TURB STM SUPPLY SG 2 is closed . | MS-401B is closed. |
| Comment: Control switch must be taken to OPEN and then to CLOSE . <i>CLOSE MID</i> | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 10 | STANDARD |
|--|--------------------|
| 1.10 <u>Verify</u> EMERGENCY FEEDWATER FLOW control valves closed: <ul style="list-style-type: none"> ▪ EFW 223A, SG1 BACKUP ▪ EFW 224A, SG1 PRIMARY ▪ EFW 223B, SG2 BACKUP ▪ EFW 224B, SG2 PRIMARY | Valves are closed. |
| Comment: <i>valve position indication displays on Pmc and Flow Control valve controller output.</i> | SAT / UNSAT |

| TASK ELEMENT 11 | STANDARD |
|--|--|
| 1.11 <u>Place</u> EMERGENCY FEEDWATER FLOW control valves in "AUTO." <ul style="list-style-type: none"> ▪ EFW 223A, SG1 BACKUP <i>(critical)</i> ▪ EFW 224A, SG1 PRIMARY <i>(critical)</i> ▪ EFW 223B, SG2 BACKUP ▪ EFW 224B, SG2 PRIMARY | Valves in AUTO. <i>[Handwritten mark]</i> |
| Comment: <i>[Handwritten mark]</i> | <u>Critical</u> <i>[Handwritten mark]</i> SAT / UNSAT |

SIMULATOR OPERATOR INSTRUCTIONS

Reset to IC-197

Verify EFAS1 ^{manually actuated} and EFAS2 ^{auto} ~~are~~ initiated

Place the Simulator in Run on the lead examiner's cue.

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

P1

Atmospheric Dump Valve Local Operation

~~DISCUSS ~~with~~ with
pictures (if possible) prior
to going to plant.
(All Examinees)~~

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

A, D, E, L

Task: Locally Operate Atmospheric Dump Valve A

Task Standard: Open Atmospheric Dump Valve A to 25% open in accordance with OP-005-004, Main Steam. Local pneumatic control will fail during the evolution, requiring local handwheel control.

make better!

References: OP-005-004, Main Steam

Alternate Path: Yes ✓ Time Critical: No ✓ Validation Time: 15 ✓ mins.

K/A 041 A4.06 Atmospheric relief valve controllers ✓ *Stm Dump Sys & Turb Bypass Control?* Importance Rating 2.9 / 3.1
RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-005-004, Main Steam

Description:

Applicant will be directed to open Atmospheric Dump Valve A to 25% open. During the task, local pneumatic control will not function, this requires local handwheel operation. Task will occur in Main Steam Isolation Valve A room and does require climbing ladders to access the platform. Gloves are required.

?

* When performing JPM validation, actions are necessary to ensure exam security is maintained. *

Prior to commencing in plant JPM validation, contact Health Physics and direct them to disable all cameras in the CAA in a manner that prevents anyone from viewing any of the CAA cameras. RCA

After all in plant JPMs are complete, contact Health Physics to restore the disabled cameras. RCA

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps for this JPM will be simulated; do not manipulate any plant components. Make all necessary communications to me. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet and procedure copy to the applicant.)

APPLICANT CUE SHEET

Do Not Manipulate Any Plant Components

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- The plant is in Mode 3
- RCS temperature is being controlled by Atmospheric Dump Valve A and B.

INITIATING CUES:

- The CRS called and informed you that the CP-8 controller for Atmospheric Dump Valve A is not responding.
- The CRS directs you to locally open MS-116A, Atmospheric Dump Valve A to 25% open using OP-005-004, Main Steam, section 8.7 using pneumatic operation.
- All necessary Tech Spec actions will be performed by the Control Room.

events handled as Evaluator Cue in Task Element 1

| TASK ELEMENT 1 ✓ | STANDARD |
|---|----------------|
| Procedure Note Refer to T.S. 3.7.1.7 <u>prior</u> to performing this section. | Note reviewed. |
| Comment: EVALUATOR CUE: The Control Room staff is addressing all Tech Specs. | SAT / UNSAT |

| TASK ELEMENT 2 ✓ | STANDARD |
|---|-------------------|
| Procedure Caution OPENING ADV MAY CAUSE AN RCS COOLDOWN, RESULTING IN A CHANGE IN REACTIVITY <u>AND</u> STEAM GENERATOR LEVELS. | Caution reviewed. |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|-------------------------|
| 8.7.1 Establish communications with the <u>Control Room</u> . | Control Room contacted. |
| Comment: EVALUATOR CUE: The Control Room is standing by for local operation of MS-116A, ADV 1. | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|--|--|
| 8.7.2 If desired to operate MS-116A locally using pneumatic operation, <u>then</u> perform the following : 8.7.2.1 Record the pressure at the outlet of the transducer: | <i>Transducer outlet</i> Pressure recorded. |
| Comment: <i>Indicate (by pen/painter) that</i> EVALUATOR CUE: Pressure reads as it is displayed (~ 3 psig). | SAT / UNSAT |

| TASK ELEMENT 5 | STANDARD |
|---|--|
| 8.7.2.2 Adjust the pressure at Air Regulator outlet on the front of the panel to the pressure noted in step 8.7.2.1. | Pressure adjusted to pressure from preceding step. |
| Comment: Turning the regulator operator <u>counter</u> clockwise will <u>lower</u> pressure. EVALUATOR CUE: When handle is turned in the correct direction, cue that pressure lowers to required pressure. | SAT / UNSAT |

| TASK ELEMENT 6 ✓ | STANDARD |
|--|--|
| 8.7.2.3 Turn the Pneumatic Permissive Valve above the Transducer to Manual. | Pneumatic Permissive Valve is in manual. |
| Comment: EVALUATOR CUE: Valve handle is rotated from Auto to Manual. | is in manual. <i>turned to</i> Critical ✓ SAT / UNSAT |

| TASK ELEMENT 7 ✓ | STANDARD |
|--|--|
| 8.7.2.4 Turn the Pneumatic Permissive Valve above the Air Regulator to Manual. | Pneumatic Permissive Valve is in manual. |
| Comment: EVALUATOR CUE: Valve handle is rotated from Auto to Manual. | is in manual. <i>turned to</i> Critical ✓ SAT / UNSAT |

| TASK ELEMENT 8 | STANDARD |
|---|----------------|
| Procedure Note The ADV will be closed when pressure at outlet of Air Regulator is < 4.5 PSIG and full open when pressure at outlet of Air Regulator is > 15 PSIG. | Note reviewed. |
| Comment: | SAT / UNSAT |

| Evaluator Note |
|--|
| The next step introduces the fault. When the air regulator is adjusted, provide the cue that there is no change in pressure and that MS-116A, ADV 1 is not moving. |

| Evaluator Note |
|---|
| If the applicant reports to the Control Room that local pneumatic control is not functioning without a recommendation, ask the applicant if there is an alternate method to operate the ADV. If local handwheel operation is identified, then direct the applicant to open ADV A to 25% open using the handwheel. |

| TASK ELEMENT 9 | STANDARD |
|---|--|
| 8.7.2.5 Adjust the Air Regulator pressure to obtain desired valve position by performing any of the following: <ul style="list-style-type: none"> Open MS-116A by turning air regulator adjusting screw in the clockwise direction to raise air pressure. Close MS-116A by turning the air regulator adjusting screw in the counterclockwise direction to lower air pressure. | Applicant attempts to adjust pressure. <i>PT</i> |
| Comment: <i>Note: Applicant attempts to open ADV by turning the Regulator in CW direction</i> EVALUATOR CUE: Air regulator pressure and ADV position are not changing. Applicant should go to step 8.7.4. | SAT / UNSAT |

8.7.4 →

| TASK ELEMENT 10 | STANDARD |
|---|--------------------------------------|
| 8.7.4.1 Close Local ^{NG?} NG/IA Isolation to the positioner MS-116A SG 1 MS Atm Dump Valve: NG-8271C , NG/IA Isolation to MS-116A | Applicant closed NG-8271 C is closed |
| Comment: EVALUATOR CUE: Valve closes when operated. | Critical ✓ SAT / UNSAT |

MVAAA

| TASK ELEMENT 11 ✓ | STANDARD |
|---|---|
| 8.7.4.2 Open Filter Petcock Drain and bleed off Air/N2 pressure by opening Filter Petcock Drain. | Filter Petcock Drain is open. <i>PT</i> |
| Comment: <i>NOTE: Applicant opens drain by turning screw.</i> EVALUATOR CUE: Air is heard coming from the drain when opened. Pressure lowers to zero and air flow stops. <i>Indicate</i> <i>^ sound of</i> | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 12 ✓ | STANDARD |
|--|--|
| 8.7.4.3 Open MS-116A SG 1 MS Atm Dump Valve Local Valve Positioner Equalizing Valve. | Positioner Equalizing Valve is open. <i>PT</i> |
| Comment: EVALUATOR CUE: Valve open when operated. | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 13 ✓ | STANDARD |
|---|---|
| 8.7.4.4 Engage local handwheel <u>and</u> Open MS-116A SG 1 MS Atm Dump Valve to desired position by performing the following: 8.7.4.4.1 Unscrew clevis from top of the Manual Override Shaft. | Clevis removed. |
| Comment: EVALUATOR CUE: Clevis unscrews when operated counter clockwise. | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 14 ✓ | STANDARD |
|--|---|
| 8.7.4.4.2 Turn handwheel to expose actuator shaft above manual override shaft. | Actuator shaft exposed. |
| Comment: EVALUATOR CUE: As handwheel is turned counter-clockwise, actuator shaft is exposed. When shaft is fully exposed, notch at the bottom of the shaft is visible. | Critical ✓ SAT / UNSAT |

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

P1 *or P4* **SROU**

Restore Normal Cooling to Instrument Air
Compressors

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

N, E, L

Task: Restore Normal Cooling to Instrument Air Compressors

Task Standard: Applicant restores normal cooling to Instrument Air Compressors A and B and both compressors are left in AUTO
one at a time, etc *detail?*

References: OP-902-009, Standard Appendices, Attachments 18 -B

Alternate Path: No / Time Critical: No / Validation Time: 10 mins.

| | | | |
|-----|---|-------------------|------------------|
| | <i>IA Sys</i> | | |
| K/A | <u>078, K1.04 Cooling Water to Compressor</u> | Importance Rating | <u>2.6 / 2.9</u> |
| | <u>000056 AA1.37 Instrument Air</u> | RO / SRO | <u>3.4 / 3.5</u> |

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

APPLICANT CUE SHEET**Do Not Manipulate Any Plant Components****(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

- A loss of offsite power occurred
- Instrument Air Compressor A and B cooling was aligned to Potable Water
- Normal power, Turbine Cooling Water, and Circulating Water have been restored

INITIATING CUES:

- The CRS ^{directs} ~~has directed~~ you to align Turbine Cooling Water to Instrument Air Compressors A and B in accordance with OP-902-009, Standard Appendices, Attachment 18-B.

1.1 Restore TCW to Instrument Air Compressor A as follows:

| TASK ELEMENT 1 | STANDARD |
|--|---|
| a. <u>Place</u> IA Compressor A Control Switch in PULL TO LOCK. | IA Compressor A Control Switch placed in PULL TO LOCK |
| Comment: EVALUATOR CUE: After the candidate simulates rotating the control switch to the PULL-TO-LOCK position and pulling the control switch out, cue the applicant it is in PULL TO LOCK | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|--|---|
| b. <u>Close</u> the following valves: • TC-231A, Potable Water to IA Compressor A HX Inlet • TC-325A, IA Compressor A Potable Water Outlet • PW-9017A, Potable Water to IA Compressor A | Valves closed <i>Detail</i> |
| Comment: EVALUATOR CUE: After the candidate simulates rotating the handwheel for the respective valve in the clockwise direction, cue the candidate that the valve rotated several turns, resistance increased and rotation stopped. | Critical ✓ SAT / UNSAT |

Use this cue for all valve manipulations

| TASK ELEMENT 3 | STANDARD |
|--|---|
| c. <u>Open</u> the following valves: • TC-230A, TCW to IA Compressor A • TC-326A, IA Compressor A TCW Outlet | Valves open <i>Detail, PT</i> |
| Comment: EVALUATOR CUE: After the candidate simulates rotating the handwheel for the respective valve in the counter-clockwise direction, cue the candidate that the valve rotated several turns, resistance increased and rotation stopped. | Critical SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|--|--|
| d. <u>Place</u> IA Compressor A Control Switch to Auto | IA Compressor A Control Switch placed in Auto |
| <p>Comment:</p> <p>EVALUATOR CUE: After the candidate simulates pushing the control switch in and rotating the Control Switch to Auto, cue the candidate that the control switch is in Auto.</p> <p>The candidate may take the control switch to START and then allow it to return to AUTO, this is acceptable. <i>why?</i></p> | <p>Critical ✓</p> <p>SAT / UNSAT</p> |

1.2 Restore TCW to Instrument Air Compressor B as follows:

| TASK ELEMENT 5 | STANDARD |
|---|---|
| a. <u>Place</u> IA Compressor B Control Switch in PULL TO LOCK. | IA Compressor B Control Switch placed in PULL TO LOCK |
| <p>Comment:</p> <p>EVALUATOR CUE: After the candidate simulates rotating the control switch to the PULL-to-Lock position and pulling the control switch out, cue the applicant it is in PULL TO LOCK</p> | <p>Critical</p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 6 | STANDARD |
|--|--|
| <p>b. <u>Close</u> the following valves:</p> <ul style="list-style-type: none"> • TC-231B, Potable Water to IA Compressor B HX Inlet • TC-325B, IA Compressor B Potable Water Outlet • PW-9017B, Potable Water to IA Compressor B | Valves closed |
| <p>Comment:</p> <p>EVALUATOR CUE: After the candidate simulates rotating the handwheel for the respective valve in the clockwise direction, cue the candidate that the valve rotated several turns, resistance increased and rotation stopped.</p> | <p>Critical</p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 7 | STANDARD |
|---|---|
| <p>c. <u>Open</u> the following valves:</p> <ul style="list-style-type: none"> • TC-230B, TCW to IA Compressor B • TC-326B, IA Compressor B TCW Outlet | <p>Valves open <i>Detail</i> <i>PT</i></p> |
| <p>Comment:</p> <p>EVALUATOR CUE: After the candidate simulates rotating the handwheel for the respective valve in the counter-clockwise direction, cue the candidate that the valve rotated several turns, resistance increased and rotation stopped.</p> | <p>Critical ✓ SAT / UNSAT</p> |

| TASK ELEMENT 8 | STANDARD |
|--|--|
| <p>d. <u>Place</u> IA Compressor B Control Switch to Auto</p> | <p>IA Compressor B Control Switch placed in Auto</p> |
| <p>Comment:</p> <p>EVALUATOR CUE: After the candidate simulates pushing the control switch in and rotating the Control Switch to Auto, Cue the candidate that the control switch is in Auto.</p> <p>The candidate may take the control switch to START and then allow it to return to AUTO, this is acceptable. <i>why?</i></p> | <p>Critical ✓ SAT / UNSAT</p> |

END OF TASK

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

P2

Placing Shutdown Cooling Purification in Service

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

D, L, R

Task: Placing Shutdown Cooling Purification in service

Task Standard: Applicant places Shutdown Cooling Purification in service

References: OP-009-005, Shutdown Cooling

Alternate Path: No ✓ Time Critical: No ✓ Validation Time: 20 ✓ mins.

| | | | |
|-----|-----------------------|-------------------|------------------|
| K/A | <i>RHR Sys</i> | Importance Rating | <u>2.9/3.1</u> ✓ |
| | <u>005 K1.04 CVCS</u> | | RO/SRO |
| | <u>G2.1.30</u> | | |

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-009-005, Shutdown Cooling

Description:

This task is performed on the -4 and -15 levels of the RCA.

When performing JPM validation, actions are necessary to ensure exam security is maintained.

Prior to commencing in plant JPM validation, contact Health Physics and direct them to disable all cameras in the CAA in a manner that prevents anyone from viewing any of the CAA cameras.

After all in plant JPMs are complete, contact Health Physics to restore the disabled cameras.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps for this JPM will be simulated, do not manipulate any plant components. Make all necessary communications to me. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet and then give the cue sheet and procedure copy to the applicant.)

APPLICANT CUE SHEET

Do Not Manipulate Any Plant Components

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- Shutdown Cooling Train A is in service.
- Shutdown Cooling Purification Ion Exchanger A is aligned for service.
- RCS [↑] temperature is 105° F

"aligned" or "in"
(procedure says "in")

Hot Leg

INITIATING CUES:

- The CRS directs you to place Shutdown Cooling Purification ⁱⁿ to service using Purification IX A in accordance with OP-009-005, Shutdown Cooling Purification, section 6.6.

?

All pre-reqs are met.



Caution

6.6 Procedure Caution prior to Section 6.6 ?

| TASK ELEMENT 1/2 | STANDARD |
|--|---------------|
| Procedure Note The following are prerequisites for placing Shutdown Cooling Purification System in service: (1) Reactor Coolant System is at atmospheric pressure. (2) Normal Letdown and Charging is secured. (3) One Shutdown Cooling train in service. (4) Sufficient room in Boron Management System to flush Chemical and Volume Control System Purification Ion Exchanger(s). | Note reviewed |
| Comment: EVALUATOR CUE: All prerequisites are met for placing Shutdown Cooling Purification in service. <i>add to Exit Case</i> | SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|---|------------------|
| Procedure Caution Placing Shutdown Cooling Purification in service with either hydrogen peroxide or hydrazine present in reactor coolant will damage chemical and volume control system Purification Ion Exchanger(s). | Caution reviewed |
| Comment: EVALUATOR CUE: <i>If asked,</i> There is no hydrogen peroxide or hydrazine present in the reactor coolant system. | SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|---|--|
| 6.6.1 Verify Letdown Stop Valve, CVC-101, Closed. | Contact Control Room to <i>verify CVC-101 closed</i> |
| Comment: EVALUATOR CUE: Letdown Stop Valve, CVC-101, is Closed. | SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|---|---------------|
| Procedure Note Both of the following valves must be open to meet the <i>Open</i> permissive interlock for Letdown HX Temperature Control, CC-636: <ul style="list-style-type: none"> ▪ CVC-103 Letdown Inside Containment Isolation ▪ CVC-109 Letdown Outside Containment Isolation | Note Reviewed |
| Comment: | SAT / UNSAT |

| TASK ELEMENT 5 ✓ | STANDARD |
|---|---|
| 6.6.2 If RCS Hot Leg temperature is $\geq 120^{\circ}\text{F}$, then perform the following: 6.6.2.1 Verify the following valves Open: <ul style="list-style-type: none"> ▪ CVC-103 Letdown Inside Containment Isolation ▪ CVC-109 Letdown Outside Containment Isolation 6.6.2.2 Verify Regen HX Outlet Header to Letdown HX Temperature Indicator Controller, CVC-ITIC-0223, in Auto, and set potentiometer to maintain $< 120^{\circ}\text{F}$. | Contacts Control Room to determine RCS Hot Leg temperature. <i>Determine & set temp was N/A</i> |
| Comment: EVALUATOR CUE: RCS Hot leg temperature is 105°F . <i>Initial Conditions</i> | SAT / UNSAT |

| TASK ELEMENT 6 ✓ | STANDARD |
|--|---|
| 6.6.3 Unlock <u>and</u> Open Letdown to LPSI Pumps Suction Isol, CVC-164. | Valve is unlocked and opened CVC-164 <i>Visual indication</i> |
| Comment: EVALUATOR CUE: Provide cue to the applicant of valve position moving from closed to open. | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 7 ✓ | STANDARD |
|--|--|
| 6.6.4 Unlock <u>and</u> Open Shdn Cooling Purification Supply Isol, SI-423. | Valve is unlocked and opened SI-423 |
| Comment: EVALUATOR CUE: Provide cue to the applicant of valve position moving from closed to open. | <u>Critical</u> ✓ SAT / UNSAT |

| TASK ELEMENT 8 ✓ | STANDARD |
|---|---|
| 6.6.5 Place Letdown Backpressure Controller, CVC-IPIC-0201, to Manual, and adjust output to Zero. | Contacts Control Room and directed steps 6.5 |
| Comment: EVALUATOR CUE: Letdown Backpressure Controller, CVC-IPIC-0201, is in Manual, and output is adjusted to Zero. | SAT / UNSAT |

| TASK ELEMENT 9 | STANDARD |
|--|--|
| 6.6.6 Unlock and slowly open RC Loop 2(1) Shdn Cooling Purification Supply Isol, SI-418A(B). | Valve is open. <i>unlock & slowly opened</i> |
| Comment: <i>Visual indication that</i> EVALUATOR CUE: RC Loop 2, Shdn Cooling Purification Supply Isol, SI-418A is open. | Critical ✓ SAT / UNSAT |

*Eval. Note: Loop 2 - SI-418A X tie note
Loop 1 - SI-418B*

| TASK ELEMENT 10 | STANDARD |
|--|--|
| 6.6.7 Verify Letdown HX Outlet temperature < 120°F, as indicated by Letdown HX Tube Outlet Temperature indicator, CVC-ITI-0224. | Contact Control Room <i>to verify...</i> |
| Comment: <i>CR reports</i> EVALUATOR CUE: Letdown HX Outlet temperature is 105°F, as indicated by Letdown HX Tube Outlet Temperature indicator, CVC-ITI-0224. - in CR? | SAT / UNSAT |

| TASK ELEMENT 11 | STANDARD |
|---|--|
| 6.6.8 Verify Purification Ion Exchanger(s) is in service, in accordance with appropriate section of this procedure. | Recognized Purification Ion Exchanger A is in service. |
| Comment: EVALUATOR CUE: Purification Ion Exchanger A is in service per the initial conditions. | XXXXXXXXXX SAT / UNSAT |

| TASK ELEMENT 12 | STANDARD |
|---|--|
| 6.6.9 Verify Letdown to Ion Exchangers Inlet/Bypass, CVC-140, control switch in AUTO. | Contact Control Room <i>to verify...</i> |
| Comment: <i>CR reports</i> EVALUATOR CUE: Letdown to Ion Exchangers Inlet/Bypass, CVC-140, control switch is in AUTO. | SAT / UNSAT |

| TASK ELEMENT 13 | STANDARD |
|--|--|
| 6.6.10 At SM/CRS discretion, direct Chemistry Department to sample CVC Ion Exchanger effluent for boron, chlorides, and fluorides as follows: | Contacts control room and applicant recognizes that steps 6.6.10.1 through 6.6.10.6.3 are not required since sampling is completed with SAT results. |
| Comment: <i>CR reports of</i> EVALUATOR CUE: Chemistry has completed their sample for CVC Ion Exchanger effluent and samples indicate that fluorides and chlorides are within limits and boron concentration is greater than Reactor coolant boron concentration. | SAT / UNSAT |

| Evaluator Note |
|--|
| The next step directs the applicant to Unlock and Close Purification Ion Exchs Outlet Header Isolation, CVC-1661. CVC-1661 is in the VCT room which is a High Radiation Room. The room is not accessible but the applicant should have knowledge that CVC-1661 is in the VCT room. |

| TASK ELEMENT 14 | STANDARD |
|---|--|
| 6.6.11 Unlock <u>and</u> Close Purification Ion Exchs Outlet Header Isolation, CVC-1661. | Applicant identifies that CVC-1661 is in the VCT room and indicates that he would unlock and close CVC-1661. |
| Comment: <i>After applicant identifies location of CVC-1661,</i> EVALUATOR CUE: Purification Ion Exchs Outlet Header Isolation, CVC-1661 is unlocked and closed. <i>inform that</i> | Critical ? SAT / UNSAT |

| TASK ELEMENT 15 | STANDARD |
|--|---------------------------------------|
| 6.6.12 Unlock <u>and</u> Open Letdown to LPSI Pump A (B) Suction Isol, CVC-1654A(B). | Valve ^{was} is opened |
| Comment: <i>Provide visual cue/indication</i> EVALUATOR CUE: Letdown to LPSI Pump A (B) Suction Isol, CVC-1654A(B) is unlocked and open. <i>(How unlocked? Opened by turning CSW?)</i> | Critical SAT / UNSAT |

X-tie note

| TASK ELEMENT 16 | STANDARD |
|---|------------------------------------|
| 6.6.13 Verify Letdown HX Outlet temperature < 120°F, as indicated by Letdown HX Tube Outlet Temperature indicator, CVC-ITI-0224. | Contact ^{to} Control Room |
| Comment: <i>CR reports</i> | <i>Verify...</i> |
| EVALUATOR CUE: Letdown HX Outlet temperature is 105°F, as indicated by Letdown HX Tube Outlet Temperature indicator, CVC-ITI-0224. | SAT / UNSAT |

| TASK ELEMENT 17 | STANDARD |
|--|------------------|
| Procedure Caution Flow rate through CVC Ion Exchanger(s) should not exceed 126 GPM. | Caution reviewed |
| Comment: <i>Provide visual cue that</i> | |
| EVALUATOR CUE: Flow rate through CVC Ion Exchanger A is 80 GPM. | SAT / UNSAT |

RX

| TASK ELEMENT 18 | STANDARD |
|---|------------------------------------|
| 6.6.14 Adjust Letdown Backpressure Controller, CVC-IPIC-0201, to obtain flow as required by SM/CRS | Contact ^{to} Control Room |
| Comment: <i>CR reports</i> | |
| EVALUATOR CUE: Letdown Backpressure Controller, CVC-IPIC-0201, has been adjusted to desired flow . <i>what is it? 40 gpm.</i> | SAT / UNSAT |

| TASK ELEMENT 19 | STANDARD |
|--|--|
| 6.6.15 Verify Purification Ion Exchanger A(B)(C) differential pressure, as indicated on CVC-IDPI-0207(0205)(0203) is <20 PSID. | <i>Verified was</i> Satisfactory D/P is verified |
| Comment: <i>Provide visual cue..</i> | <i>< 20 PSID</i> |
| EVALUATOR CUE: Purification Ion Exchanger A differential pressure, as indicated on CVC-IDPI-0207 is reading 5 PSID. | SAT / UNSAT |

| TASK ELEMENT 21 | STANDARD |
|--|------------------------------------|
| 6.6.16 If Alternate Shutdown Cooling Purification is required, then perform Section 6.14, Alternate Shutdown Cooling Purification. | Contact ^{to} Control Room |
| Comment: <i>CR reports</i> | |
| EVALUATOR CUE: Alternate Shutdown Cooling Purification is not desired. | SAT / UNSAT |

END OF TASK

Waterford 3

2012 NRC Exam

JOB PERFORMANCE MEASURE

P2 or PS
SROU

Reset Emergency Diesel Generator A
Following an Overspeed Trip

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

A, M, R

Task: Reset Emergency Diesel Generator A [↑] following an Overspeed Trip

Task Standard: Applicant resets Emergency Diesel Generator A in accordance with OP-009-002, Emergency Diesel Generator, Section 8.8.

References: OP-009-002, Emergency Diesel Generator

Alternate Path: Yes ✓ Time Critical: No ✓ Validation Time: 10 ✓ mins.

K/A EDG 064, K4.02 Trips for ED/G while operating Importance Rating 3.9 / 4.2 ✓
(normal or emergency) RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

OP-009-002, Emergency Diesel Generator, [↑] section 8.8.

Description:

This task is performed on the +21 level in Emergency Diesel Generator Room A. The applicant will simulate all actions in ~~the~~ EDG Room A. Manipulations 1 through 3 take place on the upper level of EDG A. The Turbocharger Butterfly Valve will fail to latch open using air requiring the candidate to manually latch open the butterfly valve.

Does this meet App C criteria for Alt Path?

When performing JPM validation, actions are necessary to ensure exam security is maintained.

Prior to commencing in plant JPM validation, contact Health Physics and direct them to disable all cameras in the CAA in a manner that prevents anyone from viewing any of the CAA cameras.

After all in plant JPMs are complete, contact Health Physics to restore the disabled cameras.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps for this JPM will be simulated; do not manipulate any plant components. Make all necessary communications to me. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

(Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet and procedure copy to the applicant.)

APPLICANT CUE SHEET

Do Not Manipulate Any Plant Components

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- Emergency Diesel Generator A tripped on overspeed during a test
- The Emergency Diesel Generator has been inspected for damage
- The cause of the overspeed condition has been corrected

INITIATING CUES:

- The CRS ^{directs} ~~has directed~~ you to reset Emergency Diesel Generator A in accordance with OP-009-002, Emergency Diesel Generator, *Section 8.8.*

- 1) Procedure Section 8.8 missing!
- 2) Are there any precautions & limitations of interest?
- 3) Need copy of orig JPM (since this is Modified)

| TASK ELEMENT 1 | STANDARD |
|--|---------------------------|
| <p>NOTE</p> <p>(1) If the EDG was running in Emergency Mode <u>and</u> the signal for the EDG to Start still exists, <u>then</u> the EDG will automatically start when Steps 8.8.1 & 8.8.2 are completed.</p> <p>(2) Resetting the Combustion Air Intake Butterfly valve may take up to 30 seconds.</p> | <p>Notes reviewed.</p> |
| <p>Comment:</p> | <p>SAT / UNSAT</p> |

8.8.1 Reset the Turbocharger Butterfly Valve by performing one of the following:

| TASK ELEMENT 2 | STANDARD |
|--|--|
| <ul style="list-style-type: none"> Depress <u>and</u> hold the EG A(B) Combustion Air Overspeed Trip Reset, EGA-418A(B), pushbutton on the Governor <u>until</u> the Combustion Air Intake Butterfly Valve is reset. (pushbutton is located below the overspeed trip plunger on the side of the Overspeed Trip Block) | <p>Depresses pushbutton, checks valve position</p> |
| <p>Comment:</p> <p>EVALUATOR CUE: When the candidate simulates depressing the pushbutton, cue the examinee that he doesn't hear any air flow to the Turbocharger Butterfly Actuator.</p> <p>EVALUATOR CUE: When the candidate checks the Turbocharger Butterfly Valve position, state ^{state} that the valve indicates unlatched in the closed position.</p> <p><i>state</i> <i>show or visually cue</i></p> | <p>SAT / UNSAT</p> |

8.8.1 Reset the Turbocharger Butterfly Valve by performing one of the following:

| TASK ELEMENT 3 | STANDARD |
|--|--|
| <ul style="list-style-type: none"> Manually at the Combustion Air Intake Butterfly Valve. | Valve latched open |
| <p>Comment: (Alternate Path) EVALUATOR CUE: When the candidate simulates moving the Turbocharger Butterfly Valve to the open position and verifies that it latches, state <i>cue</i> that the valve is open and latched.</p> | <p>Critical ✓ SAT / UNSAT</p> |

| TASK ELEMENT 4 | STANDARD |
|---|--|
| <p>8.8.2 Reset the Fuel Oil Overspeed Trip by pushing in the plunger on the Governor Overspeed Trip Block.</p> | Overspeed plunger is reset. ✓ <i>PT</i> |
| <p>Comment: EVALUATOR CUE: When the candidate simulates pushing the Overspeed Trip Plunger in, state <i>cue</i> that the plunger moved in.</p> | <p>Critical ✓ SAT / UNSAT</p> |

| TASK ELEMENT 5 | STANDARD |
|--|-------------------|
| <p>NOTE</p> <p>(1) <u>If</u> the EDG restarted <u>and</u> is running in the Emergency Mode <u>after</u> the Overspeed Trip has been reset, the System Reset pushbutton should still be depressed to prevent an EDG trip when the engine goes from Emergency Mode to Test Mode during paralleling operations.</p> <p>(2) <u>If</u> the EDG is <u>not</u> running but is still coasting down, depressing the System Reset pushbutton before the EDG has come to a complete stop may cause the unit to attempt to crank.</p> | Notes reviewed. ✓ |
| <p>Comment: <i>Notes are N/A since EDG is not running.</i></p> | SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|---|---|
| 8.8.3 When Emergency Diesel Generator A(B) has come to a complete stop, then push the System Reset pushbutton on the Emergency Diesel Generator A(B) Control Panel. | Reset depressed. |
| Comment: EVALUATOR CUE: When the candidate simulates pushing the System Reset, state that all alarms cleared on Emergency Diesel Generator A. <i>cue</i> | <u>Critical</u> ✓ SAT / UNSAT |

END OF TASK

Waterford 3
2012 NRC Exam
JOB PERFORMANCE MEASURE

P3

SUPS 014 AB Operation

*Go thru using
diagram and Indications
sheet prior to validation*

Applicant: _____

Examiner: _____

JOB PERFORMANCE MEASURE
DATA PAGE

A, D, P

Task: Transfer SUPS 014 AB from Alternate to Normal AC power

Task Standard: SUPS 014 AB was transferred from Alternate to Normal AC alignment in accordance with OP-006-005, Inverters and Distribution. *All Path? more detail*

References: OP-006-005, Inverters and Distribution

Alternate Path: Yes ✓ Time Critical: No Validation Time: 20 ✓ mins.
AC Elect Distrib.

K/A 062, A3.04, Operation of inverter Importance Rating 2.7 / 2.9
RO / SRO

Applicant: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT UNSAT

Comments: _____

Examiner: _____
Signature

Date: _____

APPLICANT CUE SHEET**Do Not Manipulate Any Plant Components****(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

- SUPS 014 AB is in the Alternate AC alignment
- The inverter was isolated in accordance with OP-006-005, Inverters and Distribution, Step 6.5.2.7.

INITIATING CUES:

- The CRS directs you to place SUPS 014 AB in the Normal AC alignment in accordance with OP-006-005, Inverters and Distribution, section 6.5.3.

G.5.3 —
 G.5.3.1 — applicant determined per Initial Conditions



| TASK ELEMENT 1 | STANDARD |
|---|---|
| 6.5.3.1.1 Place Normal Feeder breaker to ON. Comment: EVALUATOR CUE: Breaker will be OFF on arrival, provide cue of breaker being moved from OFF to ON. Meters M1 and M2 move to read as is after this step is performed. <i>Initial:</i> <i>Final:</i> | Breaker is ON. <i>PT</i> Critical ✓ SAT / UNSAT |

| TASK ELEMENT 2 | STANDARD |
|---|---|
| 6.5.3.1.2 Verify Inverter Input Voltage > 121 VDC, then place Emergency Feeder breaker to ON. Comment: EVALUATOR CUE: When meter checked Inverter Voltage reads as you see it. EVALUATOR CUE: Breaker will be OFF on arrival, provide cue of breaker being moved from OFF to ON. <i>Initial:</i> <i>Final:</i> | Breaker is ON. <i>PT</i> Critical ✓ SAT / UNSAT |

| TASK ELEMENT 3 | STANDARD |
|--|--|
| 6.5.3.1.3 Depress and release Inverter Operate pushbutton. Comment: EVALUATOR CUE: Pushbutton moved in when depressed and popped out when released. <i>where is this on diagram?</i> | Pushbutton is pressed and released. <i>PT</i> Critical ✓ SAT / UNSAT |

| TASK ELEMENT 4 | STANDARD |
|---|--|
| 6.5.3.2 Verify SUPS 014AB Static Switch Retransfer toggle switch in INHIBIT. Comment: EVALUATOR CUE: The Static Switch Retransfer toggle switch is in INHIBIT. <i>Initial:</i> <i>Final:</i> | Verification completed <i>more detail</i> SAT / UNSAT |

| TASK ELEMENT 5 | STANDARD |
|---|--------------------------------------|
| 6.5.3.3 Place SUPS 014AB Alternate Feeder breaker to ON. | Breaker is ON. |
| Comment: EVALUATOR CUE: Breaker will be OFF on arrival, provide ^{visual} cue of breaker being moved from OFF to ON. The <u>Static Switch Inhibited</u> light goes OFF when this is performed. <i>CB-3</i> | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 6 | STANDARD |
|---|---|
| 6.5.3.4 Depress <u>and</u> release SUPS 014AB Static Switch Transfer Test pushbutton. <i>(PB-4 on diagram)</i> | Test pushbutton depressed and released. |
| Comment: EVALUATOR CUE: Pushbutton moved in when depressed and popped out when released. The <u>Static Switch On Reserve</u> light illuminates when this is performed. | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 7 | STANDARD |
|--|---|
| 6.5.3.4.1 Verify Static Switch On Reserve light Illuminates. | Verification complete. <i>more detail</i> |
| Comment: EVALUATOR CUE: The Static Switch On Reserve light is illuminated. <i>where on diagram?</i> | SAT / UNSAT |

| TASK ELEMENT 8 | STANDARD |
|--|--------------------------------------|
| 6.5.3.5 Depress <u>and</u> release SUPS 014AB Lamp Test/Reset pushbutton. | Pushbutton depressed and released. |
| Comment: EVALUATOR CUE: Pushbutton moved in when depressed and popped out when released. <i>where on diagram?</i> | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 9 | STANDARD |
|---|------------------------|
| 6.5.3.5.1 Verify Static Switch On Reserve light remains illuminated. | Verification complete. |
| Comment: EVALUATOR CUE: The Static Switch On Reserve light is illuminated. <i>where?</i> | SAT / UNSAT |

| TASK ELEMENT 10 | STANDARD |
|---|---------------------------|
| 6.5.3.6 Place SUPS 014AB Output To PDP014AB breaker to ON. | Breaker is ON. |
| Comment: EVALUATOR CUE: Breaker will be OFF on arrival, provide cue of breaker being moved from OFF to ON. <i>ID-EBKR9335-4</i> <i>CB-2</i> | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 11 | STANDARD |
|--|---------------------------|
| 6.5.3.7 Place SUPS 014AB Bypass breaker to OFF. | Breaker is OFF. |
| Comment: EVALUATOR CUE: Breaker will be ON on arrival, provide cue of breaker being moved from ON to OFF. <i>IE-EBKR9335-3</i> <i>CB-3</i> | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 12 | STANDARD |
|--|--|
| 6.5.3.8 Place SUPS 014AB AC Voltage Select Switch to INVERTER. | Select Switch is verified in INVERTER. |
| Comment: EVALUATOR CUE: AC Voltage Select Switch is in INVERTER The AC Voltage Select Switch could be in what ever position the last watch stander left it in. <i>where?</i> | CNT? SAT / UNSAT |

Is this the AP?

| Evaluator Note |
|---|
| <p>When applicant observes the SUPS Output Voltage meter, provide indication of zero volts.</p> <p>If the applicant presses the Operate pushbutton, provide the indications provided in Task Element 13.</p> <p>If the applicant does not press the Operate pushbutton, then provide the indication that the Static Switch On Reserve light is still illuminated at Task Element 16. <i>skip 14 & 15?</i></p> |

| TASK ELEMENT 13 | STANDARD |
|---|---|
| <p>6.5.3.9 <u>If no</u> voltage is indicated, <u>then</u> depress <u>and</u> release SUPS 014AB Inverter Operate pushbutton, <u>and</u> verify the following:</p> <ul style="list-style-type: none"> • Inverter Phase Locked light Illuminated • Inverter Output voltage CN ~120 VAC (118.8 to 121.2 VAC) • Inverter Output voltage AN ~120 VAC (118.8 to 121.2 VAC) • Inverter Output voltage BN ~120 VAC (118.8 to 121.2 VAC) • Inverter Output frequency ~60 Hz (59.97 to 60.03 Hz) | <p>Observed <i>no</i> voltage in any Inverter position and pressed and released the Operate pushbutton. <i>PT</i></p> |
| <p>Comment: The applicant must use the multi-selector switch and move through these positions.</p> <p>EVALUATOR CUE: There is no voltage indicated in any Inverter position.</p> <p>EVALUATOR CUE: If the applicant observes any UPS position, voltage will be as indicated.</p> <p>EVALUATOR CUE: Pushbutton moved in when depressed and popped out when released. <i>where?</i></p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 14 | STANDARD |
|---|---|
| <p>6.5.3.10 Place SUPS 014AB Static Switch Retransfer toggle switch to AUTO.</p> | <p>Toggle Switch is in Auto. <i>PT</i></p> |
| <p>Comment: EVALUATOR CUE: Static Switch Retransfer toggle switch will be in INHIBIT at this point, cue that the switch is moved from INHIBIT to AUTO. <i>provide visual</i></p> | <p><u>Critical</u></p> <p>SAT / UNSAT</p> |

| TASK ELEMENT 15 | STANDARD |
|---|---|
| 6.5.3.11 After approximately 30 seconds, depress <u>and</u> release SUPS 014AB Lamp Test/Reset pushbutton. | Pushbutton pressed and released. |
| Comment: EVALUATOR CUE: 30 seconds have elapsed. After this pushbutton is depressed, the Static Switch On Reserve light will extinguish. <i>No time compression</i> | Critical ✓ SAT / UNSAT |

| TASK ELEMENT 16 | STANDARD |
|--|------------------------|
| 6.5.3.11.1 Verify Static Switch On Reserve light Extinguished. | Verification complete. |
| Comment: EVALUATOR CUE: The Static Switch On Reserve light is extinguished. <i>Where?</i> | SAT / UNSAT |

END OF TASK

B/A

Facility: Waterford 3 Scenario No.: 1 Op Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: Reactor power is 100%, EOC

Turnover: _____
Protected Train is B, AB Busses are aligned to Train B, HPSI Pump A is OOS, maintain 100% power
TS 3.5.2 a. 7 day
Cab M. A-3

TC
 541-44
 543
 TS
 3.5.2
 a. 7 day
 Cab M. A-3
 4
 3
 5
 850 w/p
 1400 a/c
 2250
 610
 542
 57
 TS
 2
 7/10/1
 Turn - 1.

| Event No. | Malf. No. | Event Type* | Event Description |
|-----------|-----------|--------------------------------|---|
| 1 | SG04G | I - BOP I - SRO TS - SRO | Steam Generator 1 Pressure Instrument, SG-IPT-1013C, fails low requiring Technical Specification entry and bypass of multiple Plant Protection System C trip bistables. |
| 2 | RC21A | I - All | Hot Leg 1 Temperature, RC-ITI-0111X, fails low affecting PZR level setpoint. OP-901-110, Pressurizer Level Control Malfunction. |
| 4 | H H08 | TS - SRO | Power Dependent Insertion Limit Alarm fails ON requiring Technical Specification actions. |
| 5 | FW35B | R - ATC N - BOP N - SRO | Feedwater Heater 5B tube leak from Condensate to heater shell causing isolation of the Low Pressure heater string. OP-901-221, Secondary System Transient and OP-901-212, Rapid Plant Power Reduction to 72% power. |
| 3 | RC08C | C - BOP C - SRO | Reactor Coolant Pump 2A Lower Seal fails. OP-901-130, Reactor Coolant Pump Malfunction. |
| 6 | RC09C | C - ATC | Reactor Coolant Pump 2A Middle Seal fails, requiring a manual reactor trip, and securing of Reactor Coolant Pump 2A. |
| 7 | RC11A1 | M - All | Pressurizer Code Safety, RC-317A, fails open. OP-902-002, Loss of Coolant Accident Recovery. All Reactor Coolant Pumps must be secured. (Critical Task 1) |
| 8 | SI02B | C - BOP C - SRO | High Pressure Safety Injection Pump B fails to AUTO start on the Safety Injection Actuation Signal requiring a manual start. (Critical Task 2) |
| 9 | RP09D | I-ATC I-BOP | RC-606, Control Bleedoff Containment Isolation and FP-601B, Fire Water B Containment Isolation fail to auto close. |

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

REFERENCES

*

REVISION

| Event | Procedures |
|-------|---|
| 1 | OP-009-007, Plant Protection System OP-903-013, Monthly Channel Checks Technical Specification 3.3.1 Technical Specification 3.3.2 Technical Specification 3.3.3.5 Technical Specification 3.3.3.6 |
| 2 | OP-901-110, Pressurizer Level Control Malfunction OP-901-501, PMC or Core Operating Limits Supervisory System Malfunction |
| 3 | OP-500-008, Annunciator Response Procedure, Control Room Panel H, Att. 4.78 OP-901-501, PMC or Core Operating Limits Supervisory System Malfunction Technical Specification 3/4.1.3.6 |
| 4 | OP-901-221, Secondary System Transient OP-901-212, Rapid Plant Power Reduction |
| 5 | OP-901-130, Reactor Coolant Pump Malfunction |
| 6 | OP-901-130, Reactor Coolant Pump Malfunction OP-902-000, Standard Post Trip Actions OP-902-009, Standard Appendices, Appendix 1, Diagnostic Flow Chart |
| 7 | OP-902-002, Loss of Coolant Accident Recovery Procedure OP-902-009, Standard Appendices, Appendix 2 OP-902-009, Standard Appendices, Appendix 1, Diagnostic Flow Chart |
| 8 | OP-902-000, Standard Post Trip Actions OI-038-000, Emergency Operating Procedures Operations Expectation/Guidance |
| 9 | OP-902-000, Standard Post Trip Actions OI-038-000, Emergency Operating Procedures Operations Expectation/Guidance |

Op Test No.: 1 Scenario # 1 Event # 1 Page 1 of 25

Event Description: SG 1 Pressure Instrument SG-IPT-1013C fails low.

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| Time | Position | Applicant's Actions or Behavior |
|------|----------|--|
| | ATC/BOP | Recognizes and reports indications of failed channel. |
| 0738 | | Alarms: |
| | | • RPS CHANNEL TRIP SG 1 PRESSURE LO (Cabinet K, E-15) |
| | | • SG 1 PRESSURE LO PRETRIP A/C (Cabinet K, F-15) |
| | | • RPS CHANNEL C TROUBLE (Cabinet K, G-18) |
| | | • ESFAS CHANNEL TRIP PRESS SG 2 > SG 1 (Cabinet K, L-16) |
| | | • PRESS SG 2 > SG 1 ESFAS PRETRIP A/C (Cabinet K, M-16) |
| | | Indications: |
| | | • 0 PSIA indicated on SG 1 Pressure Instrument SG-ILI-1013C on CP-8 |
| | | • SG 1 Pressure Instruments, SG-ILI-1013A, B, and D reading ~800 PSIA on CP-8 |
| | | • SG 1 Press LO Trip and Pretrip Bistable lights illuminated on PPS Channel C ROM on CP-7. |

Examiner NoteAll BOP manipulations for OP-009-007 are located at CP-10 except as noted. *Rev 15***OP-009-007, Plant Protection System, Section 6.2, Trip Channel Bypass Operation**

| | | |
|------|-------|--|
| 0746 | SRO ✓ | 6.2.1 Refer to Attachment 11.11, PPS Bistable Bypass Chart to assist in determination of Trip Channels requiring placement in bypass. Determines the following bistables are affected and need to be bypassed: • 11 - LO SG-1 PRESS • 19 - HI SG-1 ΔP • 20 - HI SG-2 ΔP |
| | SRO ✓ | Directs BOP to bypass the LO SG 1 Pressure, HI SG 1 ΔP, and HI SG 2 ΔP bistables in PPS Channel C within 1 hour in accordance with OP-009-007, Plant Protection System. |
| | BOP | 6.2.2 To place a bistable in or remove a bistable from bypass, go to Attachment 11.10, Trip Channel Bypass Operation. |
| | BOP | 11.10.1 To Bypass a Trip Channel, perform the following: 11.10.1.1 Circle the bistable numbers selected for bypass under Step 11.10.1.4. (Circles bistable numbers 11, 19, and 20 in Step 11.10.1.4 table) |
| | BOP | 11.10.1.2 Check desired Trip Channel is <u>not</u> Bypassed on another PPS Channel. |

Op Test No.: 1 Scenario # 1 Event # 1 Page 2 of 25

Event Description: SG 1 Pressure Instrument SG-IPT-1013C fails low.

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|---|------|---|
| | BOP | 11.10.1.3 Open key-locked portion of BCP in desired PPS Channel. |
| 0751 | | (annun. cabl B-1) |
| | BOP | 11.10.1.4 Depress Bypass push buttons for the desired Trip Channels |
| | BOP | 11.10.1.5 Check all selected bistable Bypass push buttons remain in a Depressed state. |
| | BOP | 11.10.1.6 Check all selected bistable Bypass lights illuminate on BCP for the desired Trip Channels. |
| | CREW | 11.10.1.7 Check all selected bistable Bypass lights illuminate on ROM for the desired Trip Channels. (Verifies correct bistables lit on CP-7 PPS Channel C Remote Operator Module) |
| | SRO | Reviews the following Technical Specifications and determines applicable actions: <ul style="list-style-type: none"> • 3.3.1 action 2 • 3.3.2 actions 13 and 19 • 3.3.3.5 – no actions required • 3.3.3.6 – no actions required |
| <p>Examiner Note</p> <p>This event is complete after the BOP bypasses the associated Trip Bistables in PPS Channel C</p> <p>Or</p> <p>As directed by the Lead Evaluator</p> | | |

Op Test No.: NRC Scenario # 1 Event # 2 Page 3 of 25

Event Description: Hot Leg 1 Temperature fails low (affecting PZR level setpoint)

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|---|-------|--|
| 0754 | ATC | Recognize and report indications of failed instrument. |
| | | Alarms: |
| | | <ul style="list-style-type: none"> PRESSURIZER LEVEL HI/LO (Cabinet H, B-1) PRESSURIZER LEVEL HI-HI (Cabinet H, A-1) LETDOWN FLOW HI/LO (Cabinet G, C-1) <i>Letdown Press Hi/Lc</i> REACTOR COOLANT TAVG/TREF LO (Cabinet H, L-1) <i>G, A-2, B-2</i> |
| | | Indications |
| | | <ul style="list-style-type: none"> Mismatch between Charging (CVC-IFI-0212) AND Letdown (CVC-IFI-0202) flow indications. Letdown rises to maximum, with 1 charging pump running Deviation between actual level AND programmed level as indicated on Pressurizer level recorder (RC-ILR-0110). Pressurizer level slowly lowering toward setpoint Deviation of setpoint on Pressurizer level controller (RC-ILIC-0110) from programmed level Pressurizer Backup Heaters energize Hot Leg Loop 1 RC-ITI-0111 reads < 525 °F on CP-2 |
| | SRO | May direct the ATC to take manual control of Pressurizer Level Controller, RC-ILIC-0110 and match Letdown flow and Charging flow prior to entering procedure. |
| 0754 | SRO ✓ | Enter and direct the implementation of OP-901-110, Pressurizer Level Control Malfunction. |
| OP-901-110, E0 - General Actions | | |
| | N/A | 1. Stop Turbine load changes. |
| | N/A | 2. IF malfunction is due to failure of Letdown Flow Control valve, THEN GO TO OP-901-112, CHARGING/LETDOWN MALFUNCTION. |
| | N/A | 3. IF malfunction is due to failure of Pressurizer Level Control Channel (incorrect readings on EITHER RC-ILI-0110X OR RC-ILI-0110Y), THEN GO TO Subsection E ₁ , Pressurizer Level Control Channel Malfunction. |
| | SRO | 4. IF malfunction is due to failure of Pressurizer Level Setpoint (RC-ILIC-0110), THEN GO TO Subsection E ₂ , Pressurizer Level Setpoint Malfunction. |

Op Test No.: NRC Scenario # 1 Event # 3 Page 7 of 25

Event Description: Power Dependent Insertion Limit Alarm fails ON

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|---|---------|--|
| 0819 | ATC | Recognize and report indications of failed annunciator Alarms |
| | | <ul style="list-style-type: none"> POWER DEPENDENT INSERTION LIMIT (CABINET H, H-8) |
| | | Indications |
| | | <ul style="list-style-type: none"> No change in actual or indicated Rod Position (CEAC CRT, CEACs, CPCs) Reactor Power stable (CP-2, CP-7, PMC) PREPOWER DEPENDENT INSERTION LIMIT ALARM (Cabinet H, H-8) is not actuated |
| | SRO/ATC | Enter and direct the implementation of OP-500-008, Attachment 4.78, POWER DEPENDENT INSERTION LIMIT. <i>Row 26</i> |
| OP-500-008, Annunciator Response Procedure Cabinet H, Att. 4.78, Power Dependent Insertion Limit | | |
| | N/A | 1. One or more CEA Regulating subgroups or Group P inserted below the Transient Insertion Limit 1.1 Refer to Technical Specification. 3.1.3.6. |
| NOTE | | |
| Technical Specification 4.1.3.6 requires CEA group positions verification every 4 hours. | | |
| | SRO | 2. PDIL alarm inoperable 2.1 Refer to OP-901-501, PMC or Core Operating Limit Supervisory System Inoperable. |
| 0822 | SRO ✓ | 2.2 Contact Electrical Maintenance. |
| | N/A | 3. PMC/MUX hardware or software problem 3.1 Refer to OP-901-501, PMC or Core Operating Limit Supervisory System Inoperable. 3.2 Direct CS&S Maintenance Group to repair failed equipment. |
| | N/A | 4. Possible dilution occurring 4.1 Inform SM/CRS. 4.2 Secure any dilution in progress. 4.3 Refer to OP-901-104, Inadvertent Positive Reactivity Addition. |

Op Test No.: NRC Scenario # 1 Event # 4 Page 12 of 25

Event Description: FW Heater 5B tube leak from Condensate to Heater Shell/
OP-901-212, Rapid Plant Down Power (to 72 %)

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

0843 Brief CRS

OP-901-212, Rapid Plant Down Power

NOTE

- (1) A rapid power reduction is defined as approximately 30 MW/minute load reduction on the main turbine.
- (2) Power Reduction may be stopped at any point. *809 MWe*
- (3) Some Steps of this procedure may not be applicable due to plant conditions. In these cases SM/CRS may NA the step.
- (4) Steps within this procedure may be performed concurrently or out of sequence with SM/CRS concurrence.
- (5) During power reduction PMC PID C24650, COLSS DESCENDING PWR TRACK (DUMOUT19), will automatically select and display the correct power indication. OP-010-003, Plant Startup, provides greater detail on which power indications are displayed by PID C24650 based on power level and whether or not the UFM is in service.

| | | |
|-------------|---------|---|
| | ATC | 1. Begin RCS Boration by one of the following methods: |
| <i>6847</i> | N/A | 1.1 0 up to 170 EFPD: 1.1.1 <u>Direct Boration</u> Or 1.1.2 Emergency Boration using two Charging Pumps <i>600 gal 15 gpm</i> |
| | N/A | 1.2 171 up to 340 EFPD: 1.2.1 Direct Boration Or 1.2.2. Emergency Boration using one Charging Pump |
| | SRO/ATC | 1.3 ≥341 EFPD: 1.3.1 <u>Direct Boration</u> Or 1.3.2 Borate from the RWSP using one Charging Pump as follows: 1.3.2.1 Open RWSP to Charging Pumps Suction Isolation, CVC-507. 1.3.2.2 Close Volume Control Tank Outlet Isolation, CVC-183. |

Steps for direct and emergency

NOTE

To prevent Pressurizer heater cutout, avoid operating with Pressurizer pressure near the heater cutout pressure of 2270 PSIA while on Boron Equalization. **CR-WF3-2012-01861]**

Op Test No.: 1 Scenario # 1 Event # 5/6 Page 15 of 25

Event Description: RCP 2A Lower Seal fails followed shortly thereafter by failure of the Middle Seal

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|--|-------|---|
| | ATC | Recognizes and reports indications of failed lower seal on RCP 2A |
| | | Alarms: <i>upper</i> |
| | | <ul style="list-style-type: none"> • RCP 2A Lower Seal Pressure (PMC) |
| | | <ul style="list-style-type: none"> • RCP 2A Middle Seal Pressure (PMC) |
| | | <ul style="list-style-type: none"> • RCP 2A CBO Flow (PMC) |
| | | Indications: |
| | | <ul style="list-style-type: none"> • RCP Controlled Bleedoff temperature slowly rising on CP-2 • RCP 2A seal pressures outside of normal parameters on CP-2 and PMC |
| <i>0903</i> | SRO | Enters and Implements OP-901-130, Reactor Coolant Pump Malfunction |
| OP-901-130, Reactor Coolant Pump Malfunction, Section E0, Subsequent Operator Actions | | |
| | N/A | 1. IF Reactor Coolant Pump trips, THEN verify Reactor tripped AND GO TO OP-902-000, STANDARD POST TRIP ACTIONS. |
| | N/A | 2. IF loss of Component Cooling Water to Reactor Coolant Pumps occurs, THEN GO TO OP-901-510, COMPONENT COOLING WATER SYSTEM MALFUNCTION. |
| | SRO ✓ | 3. IF Reactor Coolant Pump Seal has failed, THEN GO TO section E1, Seal Failure. |
| OP-901-130, Reactor Coolant Pump Malfunction, Section E1, Seal Failure | | |
| NOTE | | |
| <p>1. RCP Seal pressure and Control Bleedoff temperature and flow are normally as follows: (assuming normal operating RCS temperature and pressure):</p> <ul style="list-style-type: none"> • Vapor Seal pressure: 25 to 45 PSIG • Upper Seal pressure: 585 to 915 PSIG • Middle Seal pressure: 1237 to 1815 PSIG • CBO temperature: 135° to 190°F • CBO flow: 1.2 to 1.8 GPM <p>2. (If only one Reactor Coolant Pump Seal has failed on a Reactor Coolant Pump, THEN pump operation may continue provided the seal package is monitored for further degradation.</p> | | |
| | SRO | 1. Inform System Engineer of Reactor Coolant Pump Seal failure. |

6.4 CONTROL ROOM TURNOVER SHEET AND CHECKLIST

Date: 10/02/2012

- Prior to turnover, review the Station Log (since last shift or two weeks minimum), and Critical Parameters in allowable limits (Modes 1 and 2):

| | |
|--------------------------|----------------|
| Pressurizer Level | 33-56% |
| Pressurizer Pressure | 2125-2275 psia |
| Steam Generator Level | 60-70% NR |
| Steam Generator Pressure | 800-970 psia |
| Tcold | 543-544 °F |
| Reactor Power | MODE 1 - 100% |

- As soon as possible after turnover review the following:

| Parameter: | Positions required to review: |
|---|-------------------------------|
| Daily Instructions | NPO, CRS, SM |
| Waterford 3 Watch Station Deficiency Database [P-23974] | NPO, CRS, SM |
| Equipment Out of Service Log | NPO, CRS, SM |
| ODMI Index | NPO, CRS, SM |
| Control Room Cleanliness | CRS |
| NAO Turnover Sheets | CRS |
| Clearance Logs / Active Tagouts | CRS, SM |
| Weekly Surveillance Schedule | CRS, SM |
| TAR Log | SM |
| Key Log | SM |
| RCS Perturbation Log Index (Applicable in Modes 5 and 6) | SM |
| Containment Impairment Log | SM |
| EOOS (Risk assessment program)--verify current plant status | SM |

- Perform a Control Board Walkdown in accordance with EN-OP-115 [P-24954]
- NRC Authentication Codes:

| | | | | | | |
|--------------|----------------------|--|---------|----------------------|--|-------------|
| From 0700 on | 10/02/2012 | | 0700 on | 10/03/2012 | | DE34 |
| | (date ¹) | | | (date ²) | | (code) |
| From 0700 on | 10/03/2012 | | 0700 on | 10/04/2012 | | R6L6 |
| | (date ²) | | | (date ³) | | (code) |

1: Date at start of current night shift. 2: Date after midnight of current night shift.
3: Second day following start of current night shift.

- Operations Spotlight Issue:

Risk Evaluation in Decision Making and Engaged Thinking

Op Test No.: 1 Scenario # 2 Event # 2 Page 8 of 20

Event Description: Letdown Flow Control Valve, CVC-113A, fails closed

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---|
| | | NOTE If all Charging Pumps are secured, then LETDOWN STOP VALVE (CVC 101) will close on high REGEN HX TUBE OUTLET temperature if RCS is $\geq 470^{\circ}\text{F}$. |
| | ATC | Operate Charging Pumps as necessary to maintain Pressurizer level in accordance with Attachment 1, Pressurizer Level Versus Tave Curve. |
| | NOTE | This should not be applicable. If the crew delays taking action due to the failure, Pressurizer level will rise and they may choose to take action. |
| | SRO/ATC | IF Pressurizer level falls below the minimum level for operation of Attachment 1, THEN perform the following: 1. Trip the Reactor. 2. Manually initiate Safety Injection Actuation. 3. Go to OP-902-000, STANDARD POST TRIP ACTIONS. |
| | NOTE | This should not be applicable. |
| | N/A | IF a leak exists in Letdown System, THEN attempt to locate AND isolate leak. |
| | N/A | IF leak has been isolated, THEN re-establish Letdown in accordance with OP-002-005, CHEMICAL AND VOLUME CONTROL. |
| | ATC | IF the in service Letdown Flow Control valve (<u>CVC 113A</u>) OR (<u>CVC 113B</u>) is NOT controlling, THEN place standby Letdown Flow Control valve in service as follows: |
| | | NOTE To minimize thermal transients in the system, Letdown and Charging flows should be started as close together as possible. |
| | ATC | IF restoring Letdown, THEN verify at least one charging pump in operation. |
| | ATC ✓ | IF necessary to maintain Letdown Backpressure, THEN Letdown Backpressure Controller (CVC-IPIC-0201) may be controlled in MAN. |
| 6.3 | ATC | Place Letdown Flow Control Valve Selector switch to BOTH. |
| 6.4 | SRO | Verify open standby Letdown Flow Cntrl Vlv A(B) Outlet Isolation (CVC 114A) OR (<u>CVC 114B</u>). (Coordinates with NAO to perform) |

Op Test No.: 1 Scenario # 2 Event # 2 Page 9 of 20

Event Description: Letdown Flow Control Valve, CVC-113A, fails closed

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
| | | 113 |

| | | |
|-----|-----|---|
| 6.5 | SRO | Slowly open standby Letdown Flow Control Valve Inlet Isolation (CVC 111A) OR (CVC 111B). (Coordinates with NAO to perform) |
| 6. | SRO | Close in service Letdown Flow Cntrl Vlv A(B) Outlet Isolation (CVC 114A) OR (CVC 114B). (Coordinates with NAO to perform) |
| | ATC | Position Letdown Flow Control Valve Selector switch to select operable flow control valve placed in service. |
| | ATC | IF letdown is still in service and Letdown Flow Control valve operates properly, THEN place Letdown Flow Controller (RC-IHIC-0110) in AUTO. |

steps

Brief: 1058

113A in service
 then verify open 114B 6.4
 open 111B 6.5
 close 114A 6.6
 close 114A 6.7

Examiner Note
 This event is complete when Letdown Flow Control Valve is in Service
 Or
 As directed by the Lead Evaluator

Op Test No.: 1 Scenario # 2 Event # 4 Page 12 of 20

Event Description: Channel D ENI Safety Channel middle detector fails low

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|------|-----|---|
| 1112 | | Recognize and report indications of Log Channel Failure. |
| | | Alarms |
| | | <ul style="list-style-type: none"> RPS CHANNEL TRIP LOCAL PWR DENSITY HI (Cabinet K, A-11) RPS CHANNEL TRIP DNBR LO (Cabinet K, A-12) RPS CHANNEL D TROUBLE (Cabinet K, H-18) STARTUP CHANNEL 1 NEUTRON FLUX HI (Cabinet H, K-3) / RCS BORON CHNL 1 DILUTION HI (Cabinet G, L-3) / |
| | | Indications |
| | | <ul style="list-style-type: none"> Startup Channel 1 energized CP-2, RRS 1 Cabinet Channel D Log Power Indicator on CP-7 failed low Channel D Linear Power recorder reading low on CP-7 CPG D Sensor Failure light illuminated |
| | SRO | Directs BOP to select High Volts Select Switch in Startup Channel 1 drawer to non-faulted channel (PRIMARY). |

OP-500-008, Attachment 4.83, STARTUP CHANNEL 1 NEUTRON FLUX HI

| | | |
|--|-----|--|
| | BOP | <p>1. Either failure of log channel governing $5.3 \times 10^{-6}\%$ relay or failure of $5.3 \times 10^{-6}\%$ relay.</p> <p>1.1 If reactor power is $> 5.3 \times 10^{-6}\%$ then select Primary (Log Channel C) or Alternate (Log Channel D) as appropriate in Startup Channel 1 drawer to de-energize Startup Channel 1.</p> |
| | N/A | <p>1.2 If reactor power $< 5.3 \times 10^{-6}\%$ then allow continued operation of Startup Channel 1.</p> |

Examiner Note

All BOP manipulations for OP-009-007 are located at CP-10 except as noted.

OP-009-007, Plant Protection System, Section 6.2, Trip Channel Bypass Operation

| | | |
|--|-----|--|
| | SRO | <p>6.2.1 Refer to Attachment 11.11, PPS Bistable Bypass Chart to assist in determination of Trip Channels requiring placement in bypass.</p> <p>Determines the following bistables are affected and need to be bypassed:</p> <ul style="list-style-type: none"> 1 - HI LN POWER 2 - HI LOG POWER+ 3 - HI LOCAL POWER 4 - LOW DNBR |
|--|-----|--|

Op Test No.: 1 Scenario # 2 Event # 5 / 6 / 7 Page 15 of 20

Event Description: Main Steam line break outside Containment, SG 1, FW-184A fails to AUTO close on MSIS/ CC-ILS-7013A fails low, isolating Component Cooling Water to the Reactor Coolant Pumps

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|---|-----------|--|
| 1/28 | ATC / BOP | Recognize and report indications of a Main Steam Line Break. |
| | | Alarms |
| | | <ul style="list-style-type: none"> EXCORE /CPC CHNL D POWER DEVIATION (Cabinet, K-14) EXCORE /CPC CHNL B POWER DEVIATION (Cabinet, K-12) EXCORE /CPC CHNL C POWER DEVIATION (Cabinet, K-13) EXCORE /CPC CHNL A POWER DEVIATION (Cabinet, K-11) |
| | | (Cab K C-11) |
| | | Indications |
| | | <ul style="list-style-type: none"> Lowering Steam Generator Pressure CP-1, CP-8 Lowering Steam Generator Level CP-1, CP-8 Lowering Reactor Coolant System temperatures Tavg, Th, Tc CP-2, CP-7 Reactor Power Rising CP-2, CP-7 |
| 1/28 | SRO | TRIP the Reactor |
| | Note | The following steps are applicable after the reactor is tripped and the crew is performing Standard Post Trip Actions. |
| | | Emergency Rotation |
| OP-902-000, Standard Post Trip Actions | | |
| 1/33 | ATC | Determine Reactivity Control acceptance criteria are met: <ul style="list-style-type: none"> Check reactor power is dropping. Check startup rate is negative. Check less than TWO CEAs are NOT fully inserted. |
| | BOP | Determine Maintenance of Vital Auxiliaries acceptance criteria are met: Check the Main Turbine is tripped: <ul style="list-style-type: none"> Governor valves closed Throttle valves closed |
| | BOP | Check the Main Generator is tripped: <ul style="list-style-type: none"> GENERATOR BREAKER A tripped GENERATOR BREAKER B tripped EXCITER FIELD BREAKER tripped |

Facility: Waterford Scenario No.: 3 Op Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: ~ 4% Reactor Power, MOC

Turnover:

Protected Train is B, AB Bus is aligned to Train B, Raise power to ~ 10% to roll the Main Turbine

| Event No. | Malf. No. | Event Type* | Event Description |
|--|--------------------------------------|--------------------------------|--|
| 1 | N/A | R - ATC N - BOP N - SRO | Secure the Auxiliary Feedwater Pump and raise power to 10% to roll the Main Turbine in accordance with OP-010-003, Plant Startup and OP-010-004, Power Operations. <i>400 gal PW</i> |
| 2 | CH08E1 | I - BOP I - SRO TS - SRO | Plant Protection System Channel D Containment Pressure (CIAS), CB-IPI-6701SMD, fails high requiring Technical Specification entry and bypass of channel trip bistables. |
| 3 | CV01B | C - ATC C - SRO TS - SRO | Charging Pump B trips on overcurrent requiring implementation of OP-901-112, Charging or Letdown Malfunction. |
| 4 | FW20A2 | C - BOP C - SRO | Startup Feedwater Regulating Valve 1 fails closed requiring implementation of OP-901-201, Feedwater Control Malfunction |
| 5 | RC23A L L10 L M10 | M - All | Large RCS Cold Leg break requiring implementation of OP-902-000, Standard Post Trip Actions and OP-902-002, Loss of Coolant Accident Recovery Procedure |
| 6 | RP05A3 RP05B3 RP05C3 RP05D3 | I - ATC I - SRO | Containment Spray fails to AUTO Actuate requiring manual actuation. (Critical Task 1 and 2) |
| 7 | MS11B | M - All | Main Steam Line 2 Break Inside Containment requiring entry into OP-902-008, Functional Recovery Procedure |
| 8 | | SRO-C SRO-C | <i>CS Pump A fails to start (Critical Task to Isolate Containment)</i> |
| * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor | | | |

Op Test No.: 1 Scenario # 3 Event # 2 Page 5 of 23Event Description: Containment Pressure PPS Channel D (CIAS), CB-IPI-6701SMD, fails high

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|------|---------|---|
| 1050 | ATC/BOP | Recognizes and reports indications of failed channel. Alarms: |
| | | <ul style="list-style-type: none"> RPS CHANNEL TRIP CNTMT PRESSURE HI (Cabinet K, A-17) ✓ CNTMT PRESSURE HI PRETRIP B/D (Cabinet K, C-17) RPS CHANNEL D TROUBLE (Cabinet K, H-18) ESFAS CHANNEL TRIP CNTMT PRESSURE HI (Cabinet K, L-17) CNTMT PRESSURE HI ESFAS PRETRIP B/D (Cabinet K, N-17) |
| | | Indications: |
| | | <ul style="list-style-type: none"> PPS Channel D Containment Pressure (CIAS), CB-IPI-6701SMD failed high on CP-7 All other Containment Pressure instruments reading normal on CP-7 Pretrip and Trip Bistable Lights illuminated for Containment Pressure HI on Channel D CP-7 ROM. <i>for RPS and ESF</i> |

Examiner Note**All BOP manipulations for OP-009-007 are located at CP-10 except as noted.****OP-009-007, Plant Protection System, Section 6.2, Trip Channel Bypass Operation**

| | | |
|------|---------------------|--|
| 1057 | SRO <i>Brief</i> | 6.2.1 Refer to Attachment 11.11, PPS Bistable Bypass Chart to assist in determination of Trip Channels requiring placement in bypass. Determines the following bistables are affected and need to be bypassed: <ul style="list-style-type: none"> 13 - HI CNT PRESS (RPS) 16 - HI CNT PRESS (SIAS/CIAS/MSIS) |
| | SRO | Directs BOP to bypass the HI CNT PRESS (RPS) and HI CNT PRESS (SIAS/CIAS/MSIS) bistables in PPS Channel D within 1 hour in accordance with OP-009-007, Plant Protection System. |
| | BOP | 6.2.2 To place a bistable in or remove a bistable from bypass, go to Attachment 11.10, Trip Channel Bypass Operation. |
| | BOP | 11.10.1 To Bypass a Trip Channel, perform the following: 11.10.1.1 Circle the bistable numbers selected for bypass under Step 11.10.1.4. (Circles bistable numbers 13 and 16 in Step 11.10.1.4 table) |

Op Test No.: 1 Scenario # 3 Event # 4 Page 10 of 23

Event Description: Startup Feedwater Regulating Valve 1 fails closed

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|--|-------------|---|
| 1117 | BOP | Recognize and report indications of Startup Feedwater Reg Valve failure. Alarms: <ul style="list-style-type: none"> Steam Generator 1 Steam/FW Flow Signal Dev (Cabinet F, T-17) ✓ Steam Generator 2 Steam/FW Flow Signal Dev (Cabinet F, U-17) ? Indications: <ul style="list-style-type: none"> Steam Generator 1 Level Lowering (SG-ILR1-1105 and 1111) Deviation between steam flow AND feedwater flow on SG 2 |
| | SRO ✓ | Directs BOP to match Feedwater flow and Steam flow on Steam Generator 1 and restore level to 50-70% NR. |
| | <i>BOP</i> | <i>Takes Manual Control Adjusts MPRI to make</i> |
| 1121 | SRO ✓ | Enter and direct the implementation of OP-901-201, Steam Generator Level Malfunction |
| OP-901-201, Steam Generator Level Malfunction | | |
| | N/A ✓ | If Steam Generator level is < 41% NR and there is no Feedwater flow to the Steam Generator, <u>then</u> perform the following: Trip the Reactor. Go to OP-902-000, Standard Post Trip Actions |
| | SRO | Go to Attachment 1, General Actions. <i>Flowchart w/ highlighted path</i> |
| | SRO | Did a Reactor Trip occur? NO - Continues though flowchart |
| | SRO/BOP | Observe the affected Steam Generator FWCS controllers AND note ANY controllers that are behaving erratically. Steam Generator 1 FW IFIC 1111, S/G 1 FWCS Master Controller FW IHIC 1111, S/G 1 Main FRV Controller FW IHIC 1105, S/G 1 S / U FRV Controller FW IHIC 1107, SGFP A Speed Controller Steam Generator 2 FW IFIC 1121, S/G 2 FWCS Master Controller FW IHIC 1121, S/G 2 Main FRV Controller FW IHIC 1106, S/G 2 S / U FRV Controller FW IHIC 1108, SGFP B Speed Controller |
| | NOTE | Should determine that no controllers are malfunctioning. |

Op Test No.: 1 Scenario # 3 Event # 6 Page 21 of 23

Event Description: Main Steam Line 2 Break Inside Containment/OP-902-008

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|--|-------|---|
| 1142 | BOP ✓ | Recognizes and reports indication of Main Steam Line Break on SG 2 |
| | | Alarms |
| | | <ul style="list-style-type: none"> SG 2 Pressure Lo Pretrip and Trip Alarms on CP-2 SG 2 Level Lo Pretrip and Trip Alarms |
| | | Indications |
| | | <ul style="list-style-type: none"> SG 2 Pressure lowering on CP-8 and CP-1 indicators SG 2 Level lowering on CP-8 and CP-1 indicators |
| | SRO | Recognize two events in progress and either goes directly to OP-902-008, Functional Recovery, or returns to the diagnostics flowchart and diagnoses into OP-902-008. |
| OP-902-008, Functional Recovery | | |
| 1143 | CREW | Announce that the Functional Recovery Procedure is in progress using the plant page. |
| | SRO | Advise the Shift Manager to REFER TO EP-001-001, "Recognition & Classification of Emergency Condition" and implement the Emergency Plan. |
| | SRO | REFER TO the "Placekeeper" and record the time of the reactor trip. |
| | SRO | Steps 5 and 6 have been addressed previously. |
| | NOTE | The Shift Chemist should be notified if a SIAS or CIAS has occurred. The secondary sampling containment isolation valves should not be opened following an SIAS or CIAS until directed by the Shift Chemist. |
| | SRO | Direct Chemistry to sample BOTH steam generators for activity and boron. |
| | SRO | Steps 7 through 9 are not applicable. |
| 1148 | BOP ✓ | Place Hydrogen Analyzers in service as follows: |
| | | <ul style="list-style-type: none"> Train A <ul style="list-style-type: none"> Place Train A H2 ANALYZER CNTMT ISOL VALVE keyswitch to OPEN. Place H2 ANALYZER A POWER to ON. Check H2 ANALYZER A Pumps indicate ON. |

Procedure
Steps

Op Test No.: 1 Scenario # 4 Event # 3/4 Page 9 of 20
 Event Description: 2 Steam Generator develops a tube leak/ Rapid Plant Power Reduction

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| NOTE | | |
|---|-----|---|
| Until arrangements are made for disposal of radioactively contaminated resin, Condensate Polisher Vessels should <u>NOT</u> be placed in service with resin loaded in the vessel. | | |
| | N/A | 15. Remove from service ANY Condensate Polisher Vessels which are loaded with resin in accordance with OP-003-031, CONDENSATE POLISHER/BACKWASH TREATMENT. 15.1 Do <u>not</u> place in service any condensate polisher vessel loaded with resin without the coordination of Chemistry. |

OP-901-212, Rapid Plant Power Reduction

- Ref: 60 MW* **NOTE** *Boration: 15 gpm 1200 gal*
- (1) A rapid power reduction is defined as approximately 30 MW/minute load reduction on the main turbine. *Rate: 20 MW/min (manual control SG 2 level)*
 - (2) Power Reduction may be stopped at any point.
 - (3) Some Steps of this procedure may not be applicable due to plant conditions. In these cases SM/CRS may NA the step.
 - (4) Steps within this procedure may be performed concurrently or out of sequence with SM/CRS concurrence.
 - (5) During power reduction PMC PID C24650, COLSS DESCENDING PWR TRACK (DUMOUT19), will automatically select and display the correct power indication. OP-010-003, Plant Startup, provides greater detail on which power indications are displayed by PID C24650 based on power level and whether or not the UFM is in service.

| | | |
|--|---------|---|
| | ATC | 1. Begin RCS Boration by one of the following methods: |
| | SRO/ATC | 1.1 0 up to 170 EFPD: 1.1.1 Direct Boration <u>Or</u> 1.1.2 Emergency Boration using two Charging Pumps |
| | N/A | 1.2 171 up to 340 EFPD: 1.2.1 Direct Boration <u>Or</u> 1.2.2 Emergency Boration using one Charging Pump |

Steps for boration →

1457

Op Test No.: 1 Scenario # 4 Event # 5/6/7 Page 13 of 20

Event Description: Instrument Air Leak/Reactor Trip/Steam Generator Tube Rupture/Failure of SUT B/EDG B fails to Auto Start

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

1 min to trip

| | | |
|---|---------|---|
| 1501 | ATC/BOP | Recognize and report indications of the Instrument Air Leak. Alarms |
| | | <ul style="list-style-type: none"> INST AIR DRYERS BYPASSED (CABINET L, H-7) VALVE OPERATORS NITROGEN BACKUP ACTUATED/TROUBLE (CABINET L, G-5) INST AIR RECEIVER PRESSURE HI/LO (CABINET E, F-5) TOXIC GAS MONITOR TROUBLE CHANNEL 1 (CABINET L, D-9) TOXIC GAS MONITOR TROUBLE CHANNEL 2 (CABINET L, D-10) |
| | | Indications |
| | | <ul style="list-style-type: none"> Instrument Air Header Pressure lowering as indicated on IA-IPI-9700 on CP-1 Possible repositioning of air operated valves |
| ✓ OP-901-511, Instrument Air Malfunction | | |
| | SRO | 1. ✓ IF Instrument Air pressure drops to 65 psig, THEN trip the Reactor AND perform OP-902-000, STANDARD POST TRIP ACTIONS, concurrently with this procedure. |
| 1502 | ATC | If directed by CRS, trip Reactor using 2 Reactor Trip pushbuttons at CP-2. |
| | SRO | Direct ATC and BOP to carry out Standard Post trip Actions. |
| | SRO | 2. Dispatch an operator to the Air Compressors AND verify the following: <ul style="list-style-type: none"> ALL Instrument Air AND Station Air Compressors running loaded with normal separator levels SA Backup Supply for IA Press Cntl valve (SA 125) Open IF Instrument Air pressure is less than 95 PSIG, THEN Instrument Air Dryers Bypass Solenoid valve (IA 123) Opens |
| | CREW | 3. IF ALL of the actions of step 2 have occurred AND Instrument Air pressure is still dropping, THEN using the Plant Paging System, announce the following two times: "Attention Station Personnel, Attention Station Personnel. The plant is experiencing a loss of Instrument Air Pressure. Discontinue use of Instrument Air AND Station Air. Report all air usage OR ANY air leaks to the Control Room". |

Op Test No.: 1 Scenario # 4 Event # 5/6/7 Page 14 of 20

Event Description: Instrument Air Leak/Reactor Trip/Steam Generator Tube Rupture/Failure of SUT B/EDG B fails to Auto Start

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| Examiner Note | | |
|---|-----------|---|
| <p>Steps 4-7 will be performed as time permits. Provided a Plant Page was made or personnel are requested to identify the leak, the leak will be found and isolated.</p> | | |
| | CREW X | 4. IF the loss of Instrument Air is expected to last longer than 10 hours, THEN manual operation of valves listed in Attachment 1 and Attachment 2 should be reviewed to maintain the plant in the desired condition. |
| | N/A | 5. IF Instrument Air pressure can NOT be maintained above 80 psig, THEN consideration should be given to commence a Plant Shutdown in accordance with OP-010-005, PLANT SHUTDOWN |
| | CREW X | 6. Complete Attachment 4, Safety Related Valve Accumulator Checks. |
| | CREW X | 7.1 Attempt to determine cause of low pressure condition. 7.2 IF low pressure condition is due to line break OR leakage, THEN AFTER notifying the Control Room of location, isolate leak OR cause of problem. 7.3 Restore as much of the air system as possible to normal pressure. |

Examiner Note

After the reactor is tripped inform the Simulator Operator to modify the Steam Generator Tube Leak per the instructor notes (SG01B to 8% at a ramp rate of 2 minutes)

move to 902-007 after step 2

OP-902-000, Standard Post Trip Actions

| | | |
|------|-----|--|
| | ATC | Determine Reactivity Control acceptance criteria are met: <ul style="list-style-type: none"> • Check reactor power is dropping. • Check startup rate is negative. • Check less than TWO CEAs are NOT fully inserted. |
| 1587 | BOP | Determine Maintenance of Vital Auxiliaries acceptance criteria are met: Check the Main Turbine is tripped: <ul style="list-style-type: none"> • Governor valves closed • Throttle valves closed |

Auto on trip MS-3194 going open on leak

Op Test No.: 1 Scenario # 4 Event # 5/6/7 Page 20 of 20

Event Description: Instrument Air Leak/Reactor Trip/Steam Generator Tube Rupture/Failure of SUT B/EDG B fails to Auto Start

| Time | Position | Applicant's Actions or Behavior |
|------|----------|---------------------------------|
|------|----------|---------------------------------|

| | | |
|------|------|---|
| 1527 | BOP | Verify the MSIV is closed. <i>(critical)</i> |
| | BOP | Verify the MFIV is closed. <i>(critical)</i> |
| | BOP | IF EFAS-2 is NOT initiated, THEN close EFW Isolation Valves: <ul style="list-style-type: none"> ✓ EFW-228B SG 2 PRIMARY ✓ EFW-229B SG 2 BACKUP |
| | BOP | Place EFW Flow Control Valves in <i>(MAN)</i> and close: <ul style="list-style-type: none"> • EFW-224B SG 2 PRIMARY <i>Man</i> • EFW-223B SG 2 BACKUP <i>Man</i> <i>already closed (critical) to close</i> <i>" " (critical) to close</i> |
| | BOP | Close MS 401B, PUMP AB TURB STM SUPPLY SG 2 <i>(critical)</i> |
| | BOP | Close Main Steam Line 2 Drains: <ul style="list-style-type: none"> • MS 120B NORMAL • MS 119B BYPASS |
| | Note | These valves should already be closed. |
| | BOP | Close Steam Generator Blowdown isolation valves: <ul style="list-style-type: none"> • BD 103B STM GEN 2 (OUT) • BD 102B STM GEN 2 (IN) |
| | Note | These valves should already be closed. |
| | BOP | Check the Main Steam Safety valves are closed. ✓ |
| | Note | This will be accomplished by dispatching a non-licensed operator. ✓ |

Examiner Note
This event is complete after Steam Generator 2 is isolated
Or
As directed by the Lead Evaluator.