

Facility: WATERFORD 3		Date of Examination: 3/24/2008
Examination Level (circle one): (RO) SRO		Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A1 Conduct of Operations	R, M	Perform a Shutdown Margin Calculation 2.1.23 Ability to perform specific and integrated plant procedures during all modes of plant operation.(3.9)
A2 Conduct of Operations	R, M	Determine Time to SDC (Condenser Inventory) 2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs and tables which contain performance data.(2.8)
A3 Equipment Control	R, M	Prepare an Equipment Tagout 2.2.13 Knowledge of tagging and clearance procedures. (3.6)
A4 Radiation Control	R, N	Complete Pre-requisites for GDT Release 2.3.11 Ability to control radiation releases.(2.7)
Emergency Plan		Not selected
NOTE: All items (5 total are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		
*Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; \leq for SROs & RO retakes) (N)ew or (M)odified from bank (> 1) (P)revious 2 exams (≤ 1 ; randomly selected) (S)imulator		

Facility: WATERFORD 3		Date of Examination: 3/24/2008
Examination Level (circle one): RO / SRO		Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
A5 Conduct of Operations	R, M	Calculate Shutdown Margin with ONE Untrippable CEA 2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs and tables which contain performance data.(3.1)
A6 Conduct of Operations	R, N	Determine Event Notification Requirements 2.1.2 Knowledge of operator responsibilities during all modes of plant operation. (4.0)
A7 Equipment Control	R, M	Approve an Equipment Tagout 2.2.13 Knowledge of tagging and clearance procedures. (3.8)
A8 Radiation Control	P, R	Approve liquid Release Permit 2.3.6 Knowledge of the requirements for reviewing and approving release permits.(3.1)
A9 Emergency Plan	R, M	Determine Protective Action Recommendations 2.4.44 Knowledge of emergency plan protective action recommendations. (4.0)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		
*Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; \leq for SROs & RO retakes) (N)ew or (M)odified from bank (> 1) (P)revious 2 exams (≤ 1 ; randomly selected) (S)imulator		

PERFORM A SHUTDOWN MARGIN CALCULATION
JPM A1 Exam Submittal Rev 1



JPM A1

Site W3 **Job** RO **System/Duty Area** CED **Mode** SURV **Number** 4

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-903-090, Shutdown Margin, Rev. 13
Plant Data Book

NRC KA Number

G-2.1.23 RO: 3.9, SRO: 4.0

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

The Plant tripped 28 hours ago. Conditions prior to the trip were as follows:

- 100% power, Xenon equilibrium conditions
- 250 EFPD
- RCS Boron Concentration -1000 ppm

Current plant conditions are as follows:

- Mode 3
- Tave 541°F
- RCS Boron Concentration -1000 ppm
- All CEAs are inserted
- Reactivity Bias Factor - 0.001

INITIATING CUE

The CRS directs you to perform a Shutdown Margin Calculation in accordance with OP-903-090, Shutdown Margin. Shutdown Margin Verification for the next 24 hours is not required for this task.

TERMINATING CUE

RCS boron concentration meets Shutdown Margin requirement.

STANDARD

Examinee determines Shutdown Margin boron concentration is acceptable.

TOOLS

Plant Data Book Figures:

OP-903-090

Straight Edge and Calculator

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Loss of Shutdown Margin

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Provide items listed in Tools Section.

Waterford 3 Job Performance Measure

KEY

Perform OP-903-090, Shutdown Margin and record on Attachment 10.1.
Critical steps are denoted by **CRIT**.

START TIME _____

1. Document current plant data on Attachment 10.1, Shutdown Margin Verification Work Sheet-CEAs Inserted.

CUES: Plant data values obtained from JPM Initial Conditions

STANDARDS: Examinee records the following data on Attachment 10.1:

1. Current Date and Time
2. Mode 3
3. Burnup = 250 EFPD
4. RCS Boron = 1000 ppm
5. Tave = 541°F
6. Duration of shutdown = 28 hours
7. CEAs inserted

SAT _____ **UNSAT** _____

2. Determine current Xenon free Shutdown Margin Boron Concentration.

CUES: Cues contained in JPM Initial Conditions and procedure

STANDARDS: 1. Examinee determines **1050** (1040 to 1060) ppm from Figure 1.3.4.2, SDM Boron Concentration vs. Burnup and records on Att. 10.1.

SAT _____ **UNSAT** _____

3. Enter the Reactivity BIAS Factor found in the Reactor Engineering Book on Attachment 10.1.

CUES: BIAS Factor value obtained from JPM Initial Conditions

STANDARDS: 1. Examinee records Bias Factor of **0.001** on Att. 10.1.

SAT _____ **UNSAT** _____

4. Determine current HZP Inverse Boron Worth using current EFPD and PDB Figure 1.4.1, HZP Inverse Boron Worth vs. Burnup.

CUES: Cues contained in JPM Initial Conditions and procedure

STANDARDS: 1. Examinee determines HZP Inverse Boron Worth of **122** (121 to 123) and records on Att. 10.1.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5. Determine current Normalized Boron Worth from PDB Figure 1.4.2, Boron Worth Versus Moderator Temperature Normalized to 541°F.

CUES: None

STANDARDS: 1. Examinee determines Normalized Boron Worth of **1.00** from PDB Figure 1.4.2 and records on Att. 10.1.

SAT _____ **UNSAT** _____

6. Using the formula on Att. 10.1, Calculate the current Xenon Free Shutdown Margin Boron Concentration. **CRIT**

CUES: JPM Initial Conditions stated trip occurred from xenon equilibrium conditions.

STANDARDS: 1. Examinee determines current Xenon Free Boron Concentration of **1050** (1040 to 1060) ppm and records on Att. 10.1.

SAT _____ **UNSAT** _____

7. If a Reactor Trip occurs during non-equilibrium Xenon conditions, then the RHOBAL Program from either section 7.6, RHOBAL Poison Transient, or Reactor Engineering shall be used to determine initial Xenon Worth.

CUES: Cues contained in JPM Initial Conditions and procedure.

STANDARDS: 1. Examinee determines step does not apply to current conditions.

SAT _____ **UNSAT** _____

8. Determine current Xenon Reactivity Worth, for plant conditions recorded in step 7.1.2 using PDB Figure 1.6.3, Xenon Worth after Trip.

CUES: Cues contained in JPM Initial Conditions and procedure.

STANDARDS: 1. Examinee determines current Xenon Reactivity Worth for plant conditions of **-2.10** (-2.0 to -2.2) % delta-Rho from Figure 1.6.3.2 and records on Att. 10.1.

NOTE: Examinee should determine that JPM Initial Conditions stated Xenon equilibrium conditions and Xenon worth can be determined from Figure 1.6.3.

SAT _____ **UNSAT** _____

9. Determine current HZP Inverse Boron Worth, using current EFPD from PDB Figure 1.4.1, HZP Inverse Boron Worth vs. Burnup.

CUES: Cues contained in JPM Initial Conditions and procedure

STANDARDS: 1. Examinee determines HZP Inverse Worth of **122** (121 to 123) ppm from Figure 1.4.1 and records on Att. 10.1.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

10. Using RCS current RCS Tave, Determine current Normalized Boron Worth from PDB Figure 1.4.2, Boron Worth Versus Moderator Temperature Normalized to 541°F.

CUES: Cues contained in JPM Initial Conditions and procedure

STANDARDS: 1. Examinee determines current Normalized Boron Worth of 1.00 from Figure 1.4.2 and records on Att. 10.1.

SAT _____ UNSAT _____

11. Using formula on Attachment 10.1, Calculate Xenon Equivalent Boron Concentration. **CRIT**

CUES: None

STANDARDS: 1. Examinee determines Xenon Equivalent Boron Concentration of -256 (-244 to -268) ppm and records on Att. 10.1.

SAT _____ UNSAT _____

12. Using formula on Attachment 10.1, Calculate Required Shutdown Margin Boron Concentration. **CRIT**

CUES: None

STANDARDS: 1. Examinee determines Required Shutdown Margin Boron Concentration of 794 (782 to 806) ppm and records on Att. 10.1.

SAT _____ UNSAT _____

13. If the RCS is on natural circulation and boron equalization is not possible, then multiply the Required Shutdown Margin Boron Concentration by 1.08 **CRIT**

CUES: Cues contained in JPM Initial Conditions and procedure

STANDARDS: 2. Examinee determines step does not apply to current conditions.

SAT _____ UNSAT _____

14. Verify Shutdown Margin meets requirements of Technical Specifications by verifying current RCS Boron Concentration \geq Required Shutdown Margin Boron Concentration. **CRIT**

CUES: None

STANDARDS: 1. Examinee determines current RCS boron concentration of 1050 (1040 to 1060) is greater than Required Shutdown Margin boron concentration of 794 (782 to 806) and circles "YES" on Att. 10.1.

SAT _____ UNSAT _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

The Plant tripped 28 hours ago. Conditions prior to the trip were as follows:

- 100% power, Xenon equilibrium conditions
- 250 EFPD
- RCS Boron Concentration -1000 ppm

Current plant conditions are as follows:

- Mode 3
- Tave 541°F
- RCS Boron Concentration -1000 ppm
- All CEAs are inserted
- Reactivity Bias Factor - 0.001

INITIATING CUE

The CRS directs you to perform a Shutdown Margin Calculation in accordance with OP-903-090, Shutdown Margin. Shutdown Margin Verification for the next 24 hours is not required for this task.

Waterford 3 Job Performance Measure

KEY

10.1 SHUTDOWN MARGIN VERIFICATION WORK SHEET - CEAs INSERTED

(Typical)

7.1.2 PLANT DATA

<u>Step</u>	<u>Description</u>	<u>Value</u>	<u>Units</u>
7.1.2.1	DATE AND TIME	Current Date/time	
7.1.2.2	PLANT MODE	3	
7.1.2.3	CYCLE BURNUP (POINT ID C24110 OR EQUIVALENT)	250	EFPD
7.1.2.4	RCS BORON CONCENTRATION	1000	PPM
7.1.2.5	Tave	541	°F
7.1.2.6	DURATION OF SHUTDOWN	28	HR(s)
7.1.2.7	CEA POSITION	Inserted	

7.1.3 REQUIRED SHUTDOWN MARGIN BORON CONCENTRATION

7.1.3.1 XENON FREE SHUTDOWN MARGIN BORON CONCENTRATION

$$\text{step 7.1.3.1.1 (1050)} + \left[\frac{\text{step 7.1.3.1.2 (.001)} \times \text{step 7.1.3.1.3 (122)}}{\text{step 7.1.3.1.4 (1.00)}} \right] = \underline{1050} \text{ PPM (step 7.1.3.1.5)}$$

7.1.3.3 XENON EQUIVALENT BORON CONCENTRATION

$$\frac{\text{step 7.1.3.3.1 (-2.10)} \times \text{step 7.1.3.3.2 (122)}}{\text{step 7.1.3.3.3 (1.00)}} = \underline{-256} \text{ PPM (step 7.1.3.3.4)}$$

7.1.3.4 REQUIRED SHUTDOWN MARGIN BORON CONCENTRATION

$$\text{step 7.1.3.1.5 (1050)} + \text{step 7.1.3.3.4 (-256)} = \underline{794} \text{ PPM (NOTE 1)}$$

7.1.4 SHUTDOWN MARGIN VERIFICATION

ACTUAL CONCENTRATION (STEP 7.1.2.4) ≥ REQUIRED SHUTDOWN MARGIN BORON CONCENTRATION (STEP 7.1.3.4)

(circle one)

(YES) NO

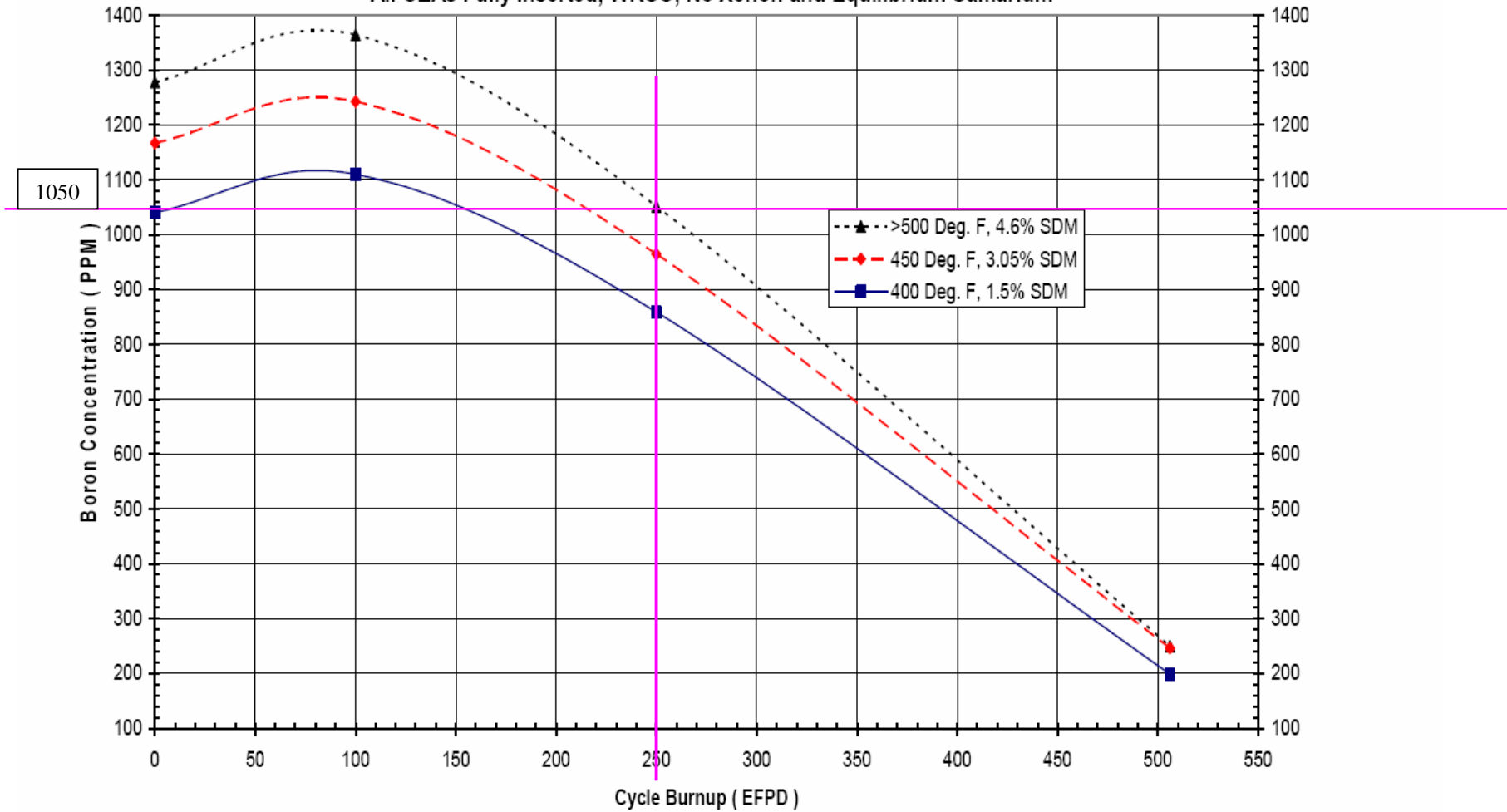
Waterford 3 Job Performance Measure

KEY

WSES-3 Cycle-15 PDB Figure 1.3.4.2

SDM Boron Concentration vs. Burnup

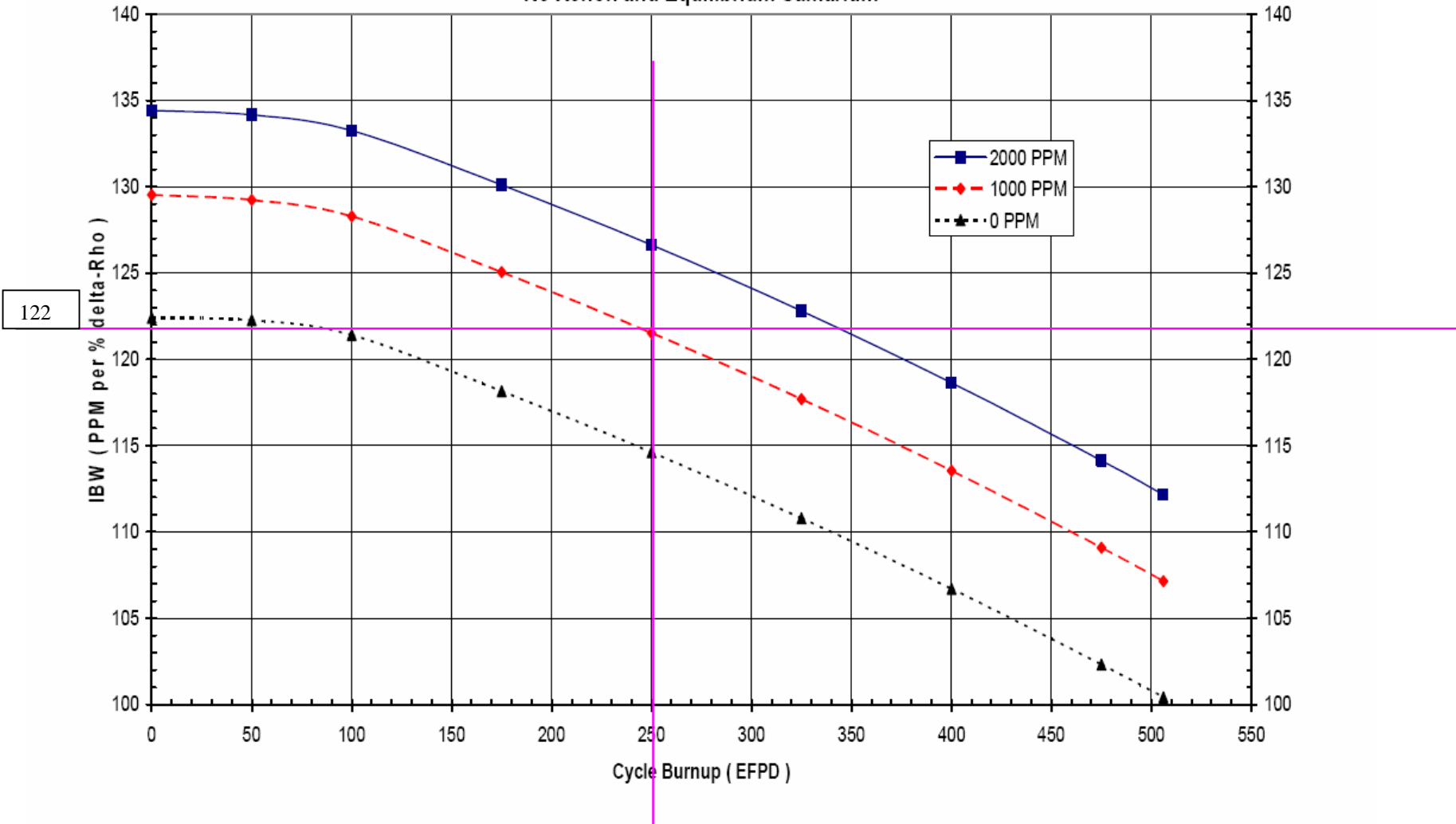
All CEAs Fully Inserted, WRSO, No Xenon and Equilibrium Samarium



Waterford 3 Job Performance Measure

KEY

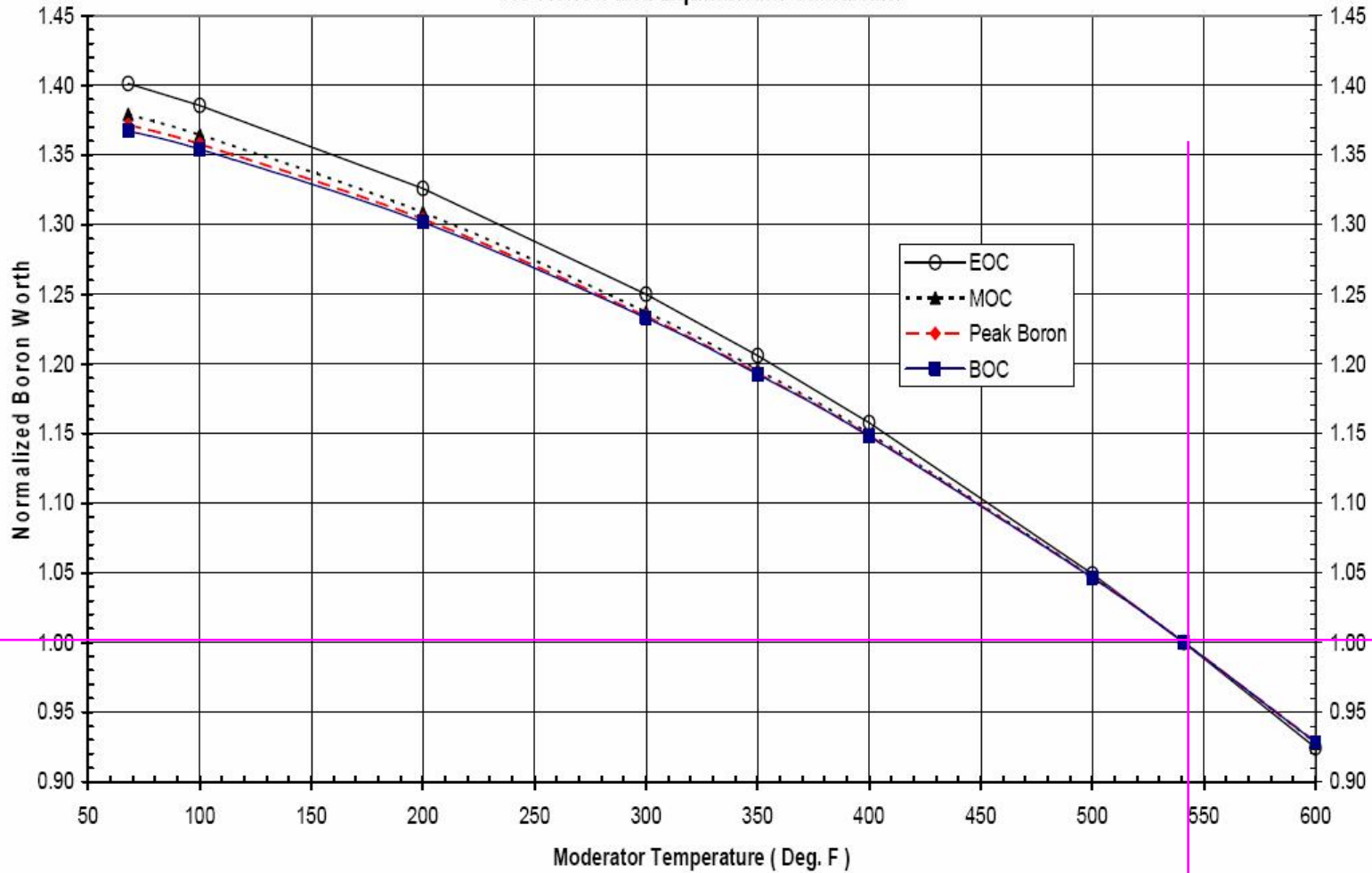
WSES-3 Cycle-15 PDB Figure 1.4.1
HZP Inverse Boron Worth vs. Burnup
No Xenon and Equilibrium Samarium



Waterford 3 Job Performance Measure

KEY

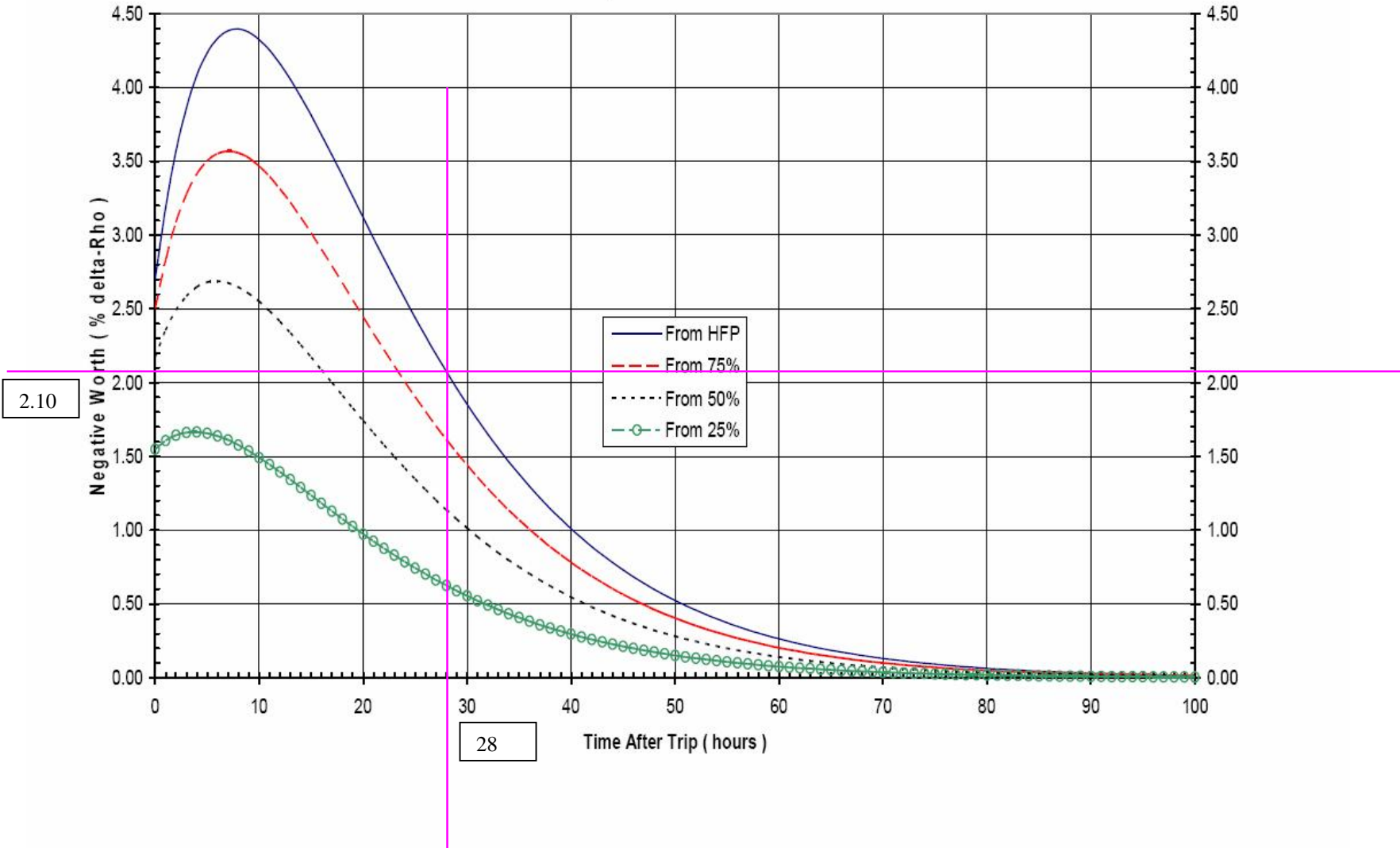
WSES-3 Cycle-15 PDB Figure 1.4.2
Boron Worth vs. Tmod, Normalized to 541 Deg. F at HZP CBC
No Xenon and Equilibrium Samarium



Waterford 3 Job Performance Measure

KEY

WSES-3 Cycle-15 PDB Figure 1.6.3.2
Xenon Worth After Trip From Indicated Power Level at MOC



Waterford 3 Job Performance Measure

KEY

Wurcellamae I Pexcedune
Shudabean Blangin

CP 8013 0310
Revisian 13

2.0 Pexcedune I Pexcedune

2.1 Pexcedune I Pexcedune I Pexcedune - CP 8013 0310
[[P 8013, I.3, 4.1.1.1.a), I.3, 4.1.1.1.d.e]

NOTES

1) The Shudabean Blangin wurcellamae is satisfied in accordance with CP 8013 0310, Technical Specification Wurcellamae I ege, if the resobar is critical with no Unirpedite CP Res and all CP Res and shobe Transient Inscrition I limits. (Referance: Technical Specification 4.1.1.1.1.b)

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.

3) Reson is considered at "equilibrium" when Resobar Power has remained in a $\pm 1\%$ RPP band for at least 30 hours.

2.1.1 If performing either a Resobar Trip and Reson was not at equilibrium prior to the shudabean, then either run a RPP Resobar transient in accordance with section 2.6, RPP Resobar Resobar Transient, or Resobar Engineering shed for a minimum bar time RPP Resobar Program data and provide Transient Reson Worth for the next 48 hours.

2.1.2 Document the following current plant data in Attachment 10.1, Shudabean Blangin Verification Work Sheet - CP 8013 0310:

2.1.2.1 Data and Time

2.1.2.2 Plant Mode

2.1.2.3 Cycle Burnup (Point 10.2.5.1.10 or equivalent)

2.1.2.4 RPP Reson Demand

2.1.2.5 Loss

2.1.2.6 Duration of Shudabean

2.1.2.7 CP 8013 0310

Waterford 3 Job Performance Measure

KEY

Surveillance Procedures
Shutdown Margin

OP-203-090
Revision 13

NOTE

Xenon Free Shutdown Margin Boron Concentrations were calculated by considering the following factors:

- RDS Boron Concentration
- CEA Position
- RDS Avg Temperature
- Fuel Burnup
- No Xenon
- Equilibrium Samarium Concentration

7.1.3 Determine Required Shutdown Margin Boron Concentration and record on Attachment 10.1 as follows:

7.1.3.1 Determine current Xenon free Shutdown Margin Boron Concentration as follows:

7.1.3.1.1 Determine current Xenon Free Shutdown Margin Boron Concentration for plant conditions recorded in step 7.1.2 using applicable Plant Data Book (PDB) Figure 1.3.4.x, SDM Boron Concentration vs. Burnup.

7.1.3.1.2 Enter the Reactivity BIAS Factor found in the Reactor Engineering Book on Attachment 10.1.

7.1.3.1.2.1 If Reactivity BIAS factor is negative, then enter 0.0.

7.1.3.1.3 Determine current HZP Inverse Boron Worth, using current EFPD and PDB Figure 1.4.1, HZP Inverse Boron Worth vs. Burnup.

7.1.3.1.4 Using temperature recorded in step 7.1.2.5, Determine current Normalized Boron Worth from PDB Figure 1.4.2, Boron Worth Versus Moderator Temperature Normalized to 541°F.

7.1.3.1.5 Using the formula on Attachment 10.1, Calculate the current Xenon Free Shutdown Margin Boron Concentration.

Waterford 3 Job Performance Measure

KEY

NOTE

Xenon is considered to be "equilibrium" when Reaction Power has remained in at $\pm 1\%$ RTRP level for at least 30 minutes.

- 7.1.3.2 If a Reactor Trip occurs during each equilibrium Xenon excursions, then the RHEB&L Program from either condition 7.3, RHEB&L Reactor Transient, or Reactor Engineering shall be used to determine initial Xenon Worth.
- 7.1.3.3 Determine current Xenon Equivalent Reactor Coefficient as follows:
- 7.1.3.3.1 Determine current Xenon Reactivity Worth, for plant conditions recorded in step 7.1.2 using PDB Figure 1.3.3, Xenon Worth after Trip, or RHEB&L Program.
 - 7.1.3.3.2 Determine current HZP Inverse Reactor Worth, using current EFFD the PDB Figure 1.4.1, HZP Inverse Reactor Worth vs. Burnup.
 - 7.1.3.3.3 Using temperature from step 7.1.2.5, Determine current Moderator Reactor Worth from PDB Figure 1.4.2, Reactor Worth Versus Moderator Temperature Normalized to 341°F.
 - 7.1.3.3.4 Use 341°F for moderator temperature if plant is in Mode 1 or 2.
 - 7.1.3.3.4 Using formula on Attachment 10.1, Calculate Xenon Equivalent Reactor Coefficient.

NOTE

Application of the 1.05 multiplier to Shutdown Margin is only required when the RCS is in normal circulation and boron equalization is not possible. (ECON-0001)

- 7.1.3.4 Using formula on Attachment 10.1, Calculate Required Shutdown Margin Reactor Coefficient.
- 7.1.3.4.1 If the RCS is in normal circulation and boron equalization is not possible, then multiply the Required Shutdown Margin Reactor Coefficient by 1.05.
- 7.1.4 Verify Shutdown Margin meets requirements of Technical Specifications by verifying current RefB Reactor Coefficient (step 7.1.3.4) is \geq Required Shutdown Margin Reactor Coefficient (step 7.1.3.4).
- 7.1.5 If Shutdown Margin does not meet requirements of Technical Specifications, then Commence Emergency Reactor and see [OP-001-103, Emergency Reactor](#).

Waterford 3 Job Performance Measure

KEY

Surveillance Procedures
Shudhskem Mangin

CHP 6003 0300
Revision 13

RECIPE

Step 7.1.8 verifies required Shudhskem Mangin for the next 24 hours will be met while Noman is sleeping after Shudhskem. Step 7.1.8 is not applicable 02 hours after Heseater Shudhskem.

- 7.1.8 If the Heseater has been shudhskem less than 02 hours, then determine Noman Concentration required to meet Shudhskem Mangin for the next 24 hours and record on Attachment 10.1 as follows: (p.20489)

RECIPE

Noman is considered at "equilibrium" when Heseater Heseater has remained in a 0.1% H1114 band for at least 03 hours.

FORMULA

THE PATIENTS THAT REQUIRE SURVEILLANCE FROM 0200 HOURS TO 0600 HOURS, IN HIGH AND PRODUCTION ZONES SHOULD BE PLACED IN THE H1114 BAND TO ACHIEVE THE TARGETED HESER CONCENTRATION FOR THE NEXT 24 HOURS.

- 7.1.8.1 Determine Noman Equivalent Heseater Concentration for 24 hours from present as follows:
- 7.1.8.1.1 Determine Noman Heseater 24 hours from present time using PH18 Figure 1.8.3, Noman 24 hours after Trip or H1114 Program.
 - 7.1.8.1.2 Obtain H1114 Heseater Heseater from Step 7.1.3.3.2.
 - 7.1.8.1.3 Obtain Remedial Heseater Heseater from Step 7.1.3.3.3.
 - 7.1.8.1.4 Using Formula on Attachment 10.1, Calculate Noman Equivalent Heseater Concentration required to meet Shudhskem Mangin for the next 24-hour period.

Waterford 3 Job Performance Measure

KEY

Supervisor's Measure of Procedures
Shouldower Measure

OP 0003 0100
Revision 103

NOTE:

Application of the 1.000 multiplier to Shouldower Measure is only required when the LCSS is an
measured circulation and beam equalization is not possible. (p.18 of 00091)

- 7.1.6.2 Using formulae in Attachment 10.1, calculate Required Shouldower Measure
Beam Concentration.
- 7.1.6.2.1 If the LCSS is an measured circulation and beam equalization is not
possible, then multiply the Required Shouldower Measure
Beam Concentration by 1.000.
- 7.1.6.3 Verify Shouldower Measure will be met for the next 24 hours by verifying current
LCSS Beam Concentration (step 7.1.2.4) is \geq Required Shouldower Measure
Beam Concentration for the next 24 hours as calculated in step 7.1.6.2.
- 7.1.6.4 If LCSS Beam Concentration is less than the Required Shouldower Measure
Beam Concentration needed for the next 24 hours, then reduce the LCSS
equal to or greater than the Required Shouldower Measure Beam Concentration
in accordance with OP 0002 0005, Chemical and Volume Control.
- 7.1.6.4.1 If current the date and time the LCSS was recalculated is less than
the Required Shouldower Measure Beam Concentration requirements for
the next 24 hours in Attachment 10.1. [N/A this step if the answer to step
7.1.6.3 was yes]

Waterford 3 Job Performance Measure
Examinee Handout
INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

The Plant tripped 28 hours ago. Conditions prior to the trip were as follows:

- 100% power, Xenon equilibrium conditions
- 250 EFPD
- RCS Boron Concentration -1000 ppm

Current plant conditions are as follows:

- Mode 3
- Tave 541°F
- RCS Boron Concentration -1000 ppm
- All CEAs are inserted
- Reactivity Bias Factor - 0.001

INITIATING CUE

The CRS directs you to perform a Shutdown Margin Calculation in accordance with OP-903-090, Shutdown Margin. Shutdown Margin Verification for the next 24 hours is not required for this task.

DETERMINE TIME TO SDC (Condensate Inventory)
JPM A2 Exam Submittal Rev 1



JPM A2

Site W3 **Job** RO **System/Duty Area** **PPE** **Mode** EMERG **Number** 5

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-902-004, Excess Steam Demand Recovery
OP-902-009, Emergency Operating Procedure Standard Appendices, Rev. 301
Appendix 2-G, Feedwater For Sensible Heat Removal
Appendix 2-J, Condensate Inventory Curve NO RCPs Operating

NRC KA Number

G-2.1.25 RO: 2.9, SRO: 3.1
E05-EK1.2 RO: 3.2, SRO: 3.8
E05-EA2.2 RO: 3.4, SRO: 4.2

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

The plant tripped due to a Main Steam Line Break inside containment. All actions of OP-902-004 are complete up to starting a cooldown to SDC entry conditions. All RCP's are secured.

The following plant conditions exist:

- The plant tripped one hour ago.
- DWST Volume - 37%
- CSP Volume - 55%
- T_{HOT} - 520°F

INITIATING CUE

The CRS directs you to calculate time to place SDC in service based upon Condensate Inventory in accordance with OP-902-009, Attachment 2-G, Feedwater for Sensible Heat Removal.

TERMINATING CUE

OP-902-009, Appendix 2-G completed calculating approximately 11 hours of time remaining to initiate SDC.

STANDARD

Time to SDC calculated.

TOOLS

1. Calculator
2. Straight edge
3. Copy of OP-902-009

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Inability to achieve Cold Shutdown

HUMAN INTERFACES

None

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

JPM A2 Exam Submittal rev1

Waterford 3 Job Performance Measure

KEY

5. Determine Maximum Time Remaining to Place Shutdown Cooling System in Service. **CRIT**

CUES: Cues contained in JPM Initial Conditions and procedure

STANDARDS: 1. Examinee determines Maximum Time Remaining of **11** hours from Attachment 2-J, Condensate Inventory Curve NO RCPs Operating based on Available Feedwater and 1 hour after trip.
Acceptable band of 10.5 to 11.5 hours based on curve interpolation.

SAT _____ UNSAT _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

The plant tripped due to a Main Steam Line Break inside containment. All actions of OP-902-004 are complete up to starting a cooldown to SDC entry conditions. All RCP's are secured.

The following plant conditions exist:

- The plant tripped one hour ago.
- DWST Volume - 37%
- CSP Volume - 55%
- T_{HOT} - 520°F

INITIATING CUE

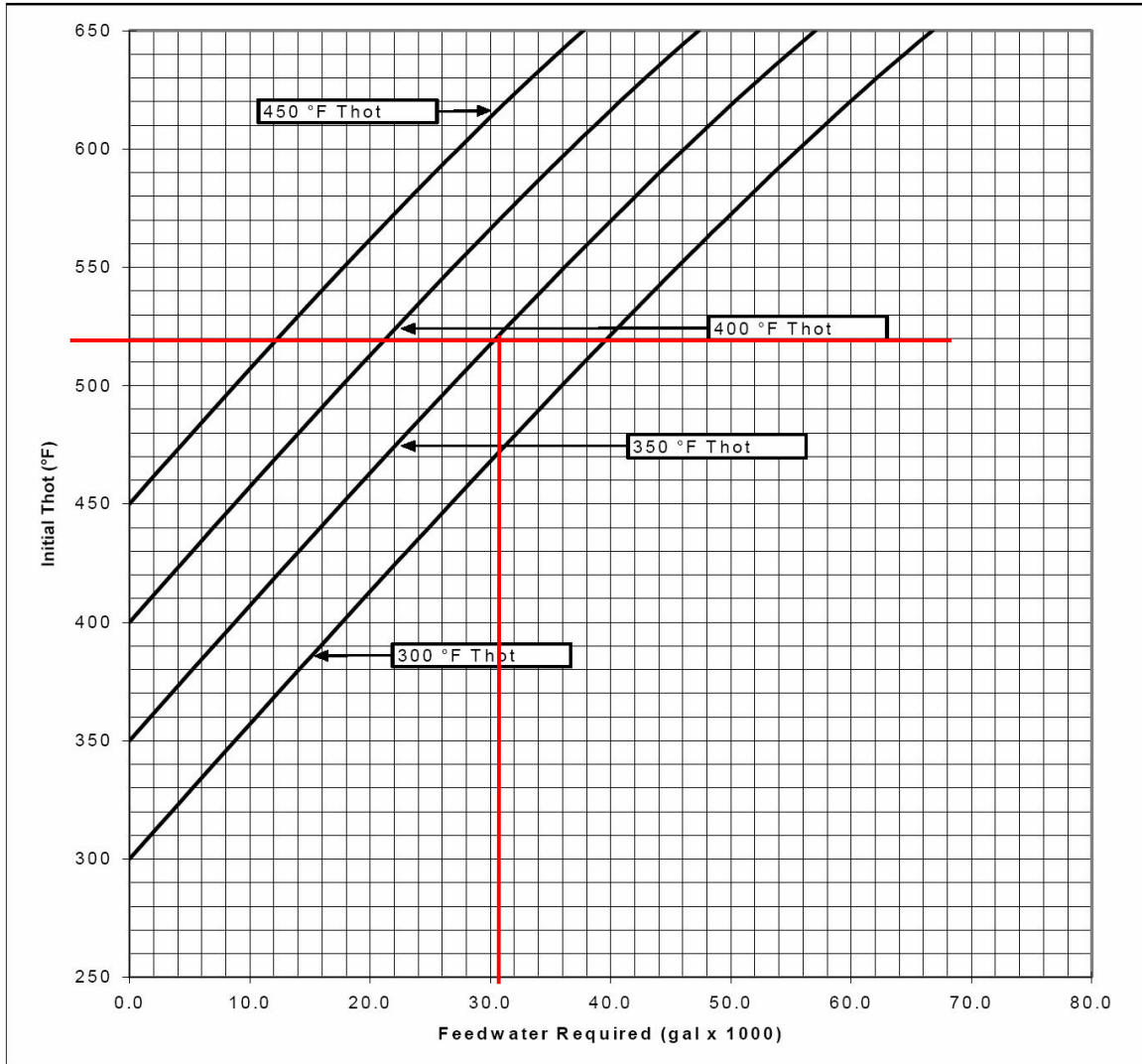
The CRS directs you to calculate time to place SDC in service based upon Condensate Inventory in accordance with OP-902-009, Attachment 2-G, Feedwater for Sensible Heat Removal.

Waterford 3 Job Performance Measure

KEY

WATERFORD 3 SES STANDARD APPENDICES	OP-902-009	Revision 301
	Page 12 of 195	
	Appendix 2	Page 7 of 10

**Figures
Attachment 2-G: Feedwater for Sensible Heat Removal**



$$\begin{aligned}
 \text{DWST Volume} &= 5000 \text{ gal} / \% \times \underline{37} \% - 58,000 \text{ gal} = \underline{127,000} \text{ gal} \\
 \text{CSP Volume} &= 2106 \text{ gal} / \% \times \underline{53} \% - 53,000 \text{ gal} = \underline{62,830} \text{ gal} \\
 \text{Total Feedwater} &= \text{DWST Volume} + \text{CSP Volume} = \underline{189,830} \text{ gal} \\
 \text{Available Feedwater} &= \text{Total Feedwater} - \text{Feedwater Required from Att. 2-G} \\
 &= \underline{189,830} \text{ Total} - \underline{30,500} \text{ Required} = \underline{159,330} \text{ gal}
 \end{aligned}$$

End of Attachment 2-G

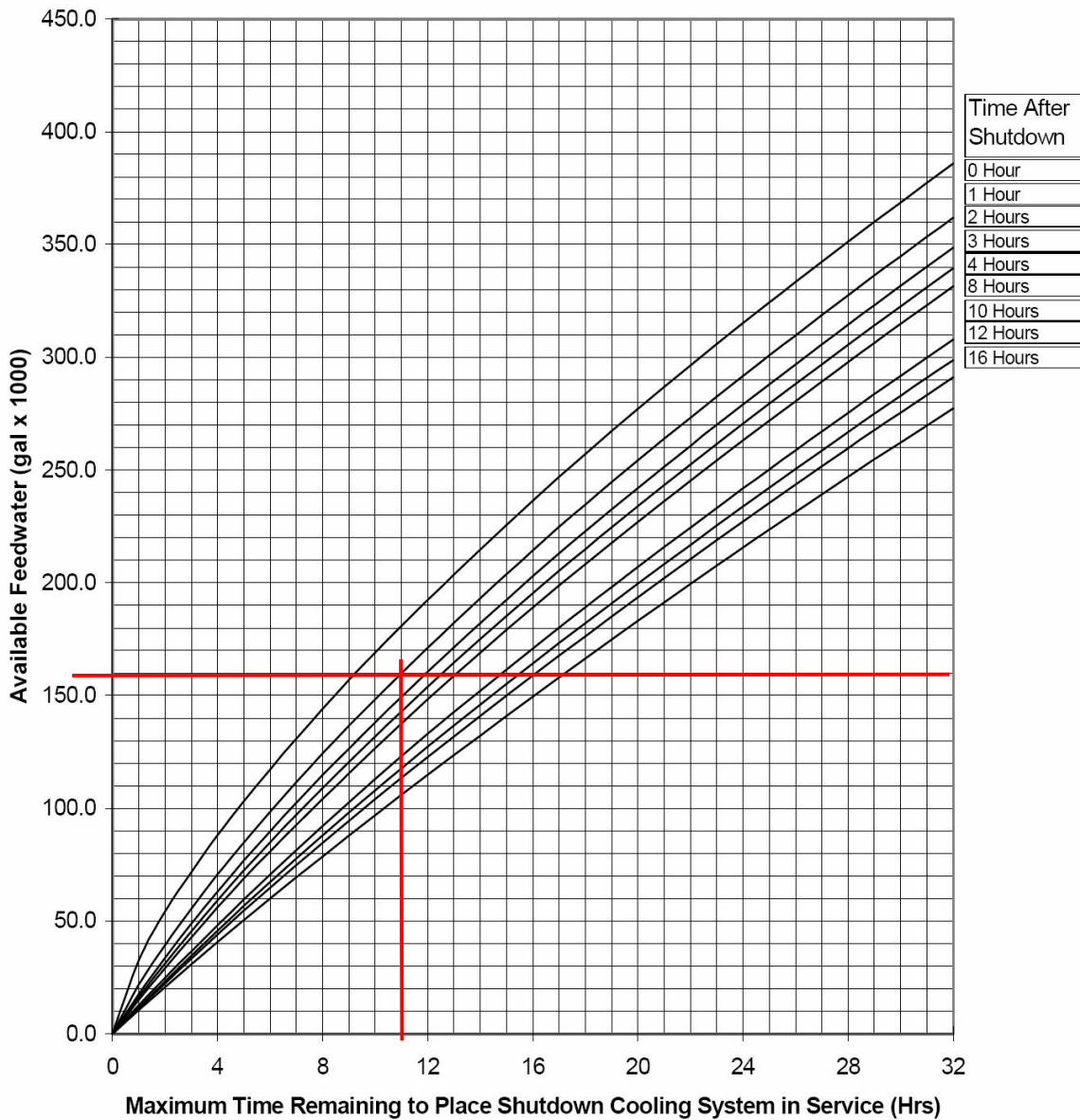
Waterford 3 Job Performance Measure

KEY

WATERFORD 3 SES STANDARD APPENDICES	OP-902-009	Revision 301
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	Appendix 2	Page 10 of 10

Figures

Attachment 2-J: Condensate Inventory Curve NO RCPs Operating



End of Attachment 2-J

Waterford 3 Job Performance Measure
Examinee Handout

Directions to Examinee:

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

INITIAL CONDITIONS

The plant tripped due to a Main Steam Line Break inside containment. All actions of OP-902-004 are complete up to starting a cooldown to SDC entry conditions. All RCP's are secured.

The following plant conditions exist:

- The plant tripped one hour ago.
- DWST Volume - 37%
- CSP Volume - 55%
- T_{HOT} - 520°F

INITIATING CUE

The CRS directs you to calculate time to place SDC in service based upon Condensate Inventory in accordance with OP-902-009, Attachment 2-G, Feedwater for Sensible Heat Removal.

PREPARE AN EQUIPMENT TAGOUT
JPM A3 Exam Submittal Rev 1



JPM A3

Site W3 **Job** RO **System/Duty Area** **PPA** **Mode** ADMIN **Number**

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

EN-OP-102, Protective and Caution Tagging, Rev. 9
EN-OP-102-01, Protective and Caution Tagging Forms Checklist, Rev. 3
OP-100-014, Technical Specification Technical Requirements compliance Rev. 303
OP-002-003, Component cooling Water System Rev. 303

NRC KA Number

G-2.2.13 RO: 3.6, SRO: 3.8

Evaluation Methods

PERFORM

Trainee

Evaluator

Observer

Date

Satisfactory

Unsatisfactory

Waterford 3 Job Performance Measure

Key

Directions to Examinee:

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

INITIAL CONDITIONS

A tagout has been prepared for Component Cooling Water Pump B for seal replacement and is ready for review.

INITIATING CUE

The Work Management Center Supervisor requests you to perform a review of section 9.3 of the tagout to determine if the boundaries are adequate and it meets the General Tagout Standards of EN-OP-102.

TERMINATING CUE

Tagout review completed.

STANDARD

Tagout review completed and Examinee identifies three(3) of the following four(4) major errors on the tagout:

- The control power knife switch in step 3 is for the "A" CCW pump instead of "B".
- The tagging sequence closes the suction valve CC-116B in step 4 before the discharge valve, CC-125B, is closed (step 5).
- The Tagout does not list drain path from the suction side.
- The casing vent valve, CC-1201B, tagged position is closed in step 8 and should be open for the vent path.

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Damage to equipment or injury to plant personnel

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

JPM A3 Exam Submittal rev1

Waterford 3 Job Performance Measure
Key

Perform the task in accordance with EN-OP-102.
Critical steps are denoted by **CRIT**.

START TIME_____

-
1. Review tagout for adequacy and proper sequence.

CRIT

CUES: None

STANDARDS: Examinee identifies three(3) of the following four(4) major errors on the tagout:

- The control power knife switch in step 3 is for the "A" CCW pump instead of "B".
- The tagging sequence closes the suction valve CC-116B in step 4 before the discharge valve, CC-125B, is closed (step 5).
- The Tagout does not list drain path from the suction side.
- The casing vent valve, CC-1201B, tagged position is closed in step 8 and should be open for the vent path.

SAT_____ **UNSAT**_____

End of Task

STOP TIME_____

Waterford 3 Job Performance Measure
Key

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS


A tagout has been prepared for Component Cooling Water Pump B for seal replacement and is ready for review.

INITIATING CUE

The Work Management Center Supervisor requests you to perform a review of section 9.3 of the tagout to determine if the boundaries are adequate and it meets the General Tagout Standards of EN-OP-102.

Waterford 3 Job Performance Measure

KEY

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 6 OF 22	
Protective and Caution Tagging Forms & Checklist				

ATTACHMENT 9.2

TAGOUT COVER SHEET

Clearance: MANUAL

Tagout: XXXXXXXX

Component to be worked:

1-CC -PUMP -CC MPMP001B
COMPONENT COOLING WATER PUMP B

Description:

Replace CCW Pump B seal

B424*709, G160*2

Placement Inst:

- CCW Pump B will be Inoperable during maintenance. Align CCW Pump AB in place of CCW Pump B per OP-002-003. Enter TRM 3.7.3
- CC-116B and CC-125B are locked valves.
- Monitor CCW surge tank level while draining.
- 90 degree elbow required to drain from CC-118B
- When water level is below CC-121B and CC-124B remove the drain hose so they can be used as a vent path.

Hazards:

Motor heater is not de-energized on this tagout.

Restoration Inst:

Monitor surge tank level while refilling.

To refill slowly open CC-116B and vent from CC-1201B, CC-121B and CC-124B until filled.


Have I&C perform OP-002-003 Att 11.3 for CC-IPS-7031B and 7021B

PMT: OPS: Enter TS 3.7.3 and cascading to align and perform OP-903-050

Attribute Description	Attribute Value
TS Impact?	Yes, EOS #####
Comp measures req'd?	No
Locked components?	Yes
Fire Impairment?	No
Drain/vent rig req'd?	Yes
Scaffold req'd?	No
TS impact on Restoration?	Yes- see restoration instructions.
Tagout hang time.	1
Tagout drain time.	1
Tagout Recovery time.	1
CVAS, Annulus, HVC, HVF or RCB Boundary	Boundary not crossed
50.59 Evaluation	No


Waterford 3 Job Performance Measure

KEY

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 6 OF 22	
Protective and Caution Tagging Forms & Checklist				

Work Order Number	Description
XXXXXXXX-01	Replace pump mechanical seal per ER-W3-2005-0028-000

Status	Description	User	Verification Date
Prepared	Prepared	J. Fasola	Today
Technical Reviewed	Reviewed		
Approved	Approved		
Tags Verified Hung	Tags Verified Hung		
Removal Approved	Removal Approved		
Tags Verified Removed	Tags Verified Removed		

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 7 OF 22	
Protective and Caution Tagging Forms & Checklist KEY				

ATTACHMENT 9.3
TAGOUT TAGS SHEET

CLEARANCE: MANUAL TAGOUT: XXXXXXXXXX

Tag Serial No.	Tag Type	Equipment Description Equipment Location	Place. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
	Special Instruction	1-CC -PUMP -CC MPMP0001 B * COMPONENT COOLING WATER PUMP B ----- * RAB -+21 -233 -7A -K - -	1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			
	Special Instruction	1-CC -PUMP -CC MPMP0001 B * COMPONENT COOLING WATER PUMP B ----- * RAB -+21 -233 -7A -K - -	1	* I have reviewed the EOS and the EOS is open.			8	* Reminder: EOS must be updated			
001	Danger	1-CC -C/S -CC ECS0001B1-C/S ----- *COMPONENT COOLING WATER PUMP B C/S * RAB -+46 - - - -	2	OFF			7	OFF			
002	Danger	1-CC -KNIFSW-CC EDISC3A 8-KNIFSW (EDISC3B) ----- Should be CCW pp B DC	3	OPEN			6	CLOSED			

JPM A3 Exam Submittal rev1



Protective and Caution Tagging Forms & Checklist
KEY

Tag Serial No	Tag Type	Equipment Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
		*CCW PUMP A DC CONTROL POWER KNIFE SW *RAB -+21 - -									
003	Danger	1-CC -CKTBRK-CC EBKR3B 8 ----- * COMPONENT COOLING WATER PUMP B * RAB -+21 -212 -10A -K - -	4	RACKED DOWN/ REMOVED			5	RACKED UP			
004	Danger	1-CC -VALVE -CC MVAAA116B ----- *CCW PUMP B SUCTION VALVE *RAB -+21 -233 -7A -K - -	5	CLOSED ----- Reverse operated handwheel		This step should be reversed with next step	3	LOCKED OPEN ----- Reverse operated handwheel See restoration Instructions			
005	Danger	1-CC -VALVE -CC MVAAA125B ----- *CCW PUMP B DISCHARGE ISOLATION *RAB -+21 -233 -7A -K - -	6	CLOSED ----- Reverse operated handwheel		This step should be done before previous step	4	LOCKED OPEN ----- Reverse operated handwheel			
006	Danger	1-CC -VALVE -CC MVAAA124B ----- *CCW PUMP B DISCHARGE DRAIN	7	OPEN			2	CLOSED			

		*RAB -+21 -233 -7A -K- -								
007	Danger	1-CC -VALVE -CC MVAAA121B ----- *CCW PUMP B DISCHARGE PX ROOT *RAB -+21 -233 -7A - -	7	OPEN		2	CLOSED			
008	Danger	1-CC -VALVE-CC MVAAA1201B ----- *CCW PUMP B CASING VENT *RAB -+21 - - -	7	CLOSED Should be open		2	CLOSED			

No Drain path is established on the suction side

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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


INITIAL CONDITIONS

A tagout has been prepared for Component Cooling Water Pump B for seal replacement and is ready for review.

INITIATING CUE

The Work Management Center Supervisor requests you to perform a review of section 9.3 of the tagout to determine if the boundaries are adequate and it meets the General Tagout Standards of EN-OP-102.

**Waterford 3 Job Performance Measure
EXAMINEE HANDOUT**

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 6 OF 22	
Protective and Caution Tagging Forms & Checklist				

ATTACHMENT 9.2

TAGOUT COVER SHEET

Clearance: MANUAL

Tagout: XXXXXXXX

Component to be worked:

1-CC -PUMP -CC MPMP001B
COMPONENT COOLING WATER PUMP B

Description:

Replace CCW Pump B seal

B424*709, G160*2

Placement Inst:

- CCW Pump B will be Inoperable during maintenance. Align CCW Pump AB in place of CCW Pump B per OP-002-003. Enter TRM 3.7.3
- CC-116B and CC-125B are locked valves.
- Monitor CCW surge tank level while draining.
- 90 degree elbow required to drain from CC-118B
- When water level is below CC-121B and CC-124B remove the drain hose so they can be used as a vent path.

Hazards:

Motor heater is not de-energized on this tagout.

Restoration Inst:

Monitor surge tank level while refilling.

To refill slowly open CC-116B and vent from CC-1201B, CC-121B and CC-124B until filled.

Have I&C perform OP-002-003 Att 11.3 for CC-IPS-7031B and 7021B


PMT: OPS: Enter TS 3.7.3 and cascading to align and perform OP-903-050

Attribute Description	Attribute Value
TS Impact?	Yes, EOS #####
Comp measures req'd?	No
Locked components?	Yes
Fire Impairment?	No
Drain/vent rig req'd?	Yes
Scaffold req'd?	No
TS impact on Restoration?	Yes- see restoration instructions.
Tagout hang time.	1
Tagout drain time.	1
Tagout Recovery time.	1
CVAS, Annulus, HVC, HVF or RCB Boundary	Boundary not crossed
50.59 Evaluation	No

JPM A3 Exam Submittal rev1


Waterford 3 Job Performance Measure

EXAMINEE HANDOUT

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 6 OF 22	
Protective and Caution Tagging Forms & Checklist				

Work Order Number	Description
XXXXXXXX-01	Replace pump mechanical seal per ER-W3-2005-0028-000

Status	Description	User	Verification Date
Prepared	Prepared	J. Fasola	Today
Technical Reviewed	Reviewed		
Approved	Approved		
Tags Verified Hung	Tags Verified Hung		
Removal Approved	Removal Approved		
Tags Verified Removed	Tags Verified Removed		

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 7 OF 22	
Protective and Caution Tagging Forms & Checklist Examinee Handout				

ATTACHMENT 9.3
TAGOUT TAGS SHEET

 CLEARANCE: MANUAL

 TAGOUT: XXXXXXXXXX

Tag Serial No.	Tag Type	Equipment Description Equipment Location	Place. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
	Special Instruction	1-CC -PUMP –CC MPMP0001 B * COMPONENT COOLING WATER PUMP B ----- * RAB –+21 -233 -7A -K - -	1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			
	Special Instruction	1-CC -PUMP –CC MPMP0001 B * COMPONENT COOLING WATER PUMP B ----- * RAB –+21 -233 -7A -K - -	1	* I have reviewed the EOS and the EOS is open.			8	* Reminder: EOS must be updated			
001	Danger	1-CC -C/S –CC ECS0001B1-C/S ----- *COMPONENT COOLING WATER PUMP B C/S * RAB –+46 - - - -	2	OFF			7	OFF			
002	Danger	1-CC -KNIFSW-CC EDISC3A 8-KNIFSW ----- *CCW PUMP A DC CONTROL	3	OPEN			6	CLOSED			

Tag Serial No	Tag Type	Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
		POWER KNIFE SW *RAB -+21 - -									
003	Danger	1-CC -CKTBRK-CC EBKR3B 8 ----- * COMPONENT COOLING WATER PUMP B * RAB -+21 -212 -10A -K - -	4	RACKED DOWN/ REMOVED			5	RACKED UP			
004	Danger	1-CC -VALVE -CC MVAAA116B ----- *CCW PUMP B SUCTION VALVE *RAB -+21 -233 -7A -K - -	5	CLOSED ----- Reverse operated handwheel			3	LOCKED OPEN ----- Reverse operated handwheel See restoration Instructions			
005	Danger	1-CC -VALVE -CC MVAAA125B ----- *CCW PUMP B DISCHARGE ISOLATION *RAB -+21 -233 -7A -K - -	6	CLOSED ----- Reverse operated handwheel			4	LOCKED OPEN ----- Reverse operated handwheel			
006	Danger	1-CC -VALVE -CC MVAAA124B ----- *CCW PUMP B DISCHARGE DRAIN *RAB -+21 -233 -7A -K - -	7	OPEN			2	CLOSED			

007	Danger	1-CC -VALVE -CC MVAAA121B ----- *CCW PUMP B DISCHARGE PX ROOT *RAB +21 -233 -7A - -	7	OPEN			2	CLOSED			
008	Danger	1-CC -VALVE-CC MVAAA1201B ----- *CCW PUMP B CASING VENT *RAB +21 - - -	7	CLOSED			2	CLOSED			

COMPLETE PREREQUISITES FOR GDT RELEASE
JPM A4 Exam Submittal rev1



JPM A4

Site W3 **Job** RO **System/Duty Area** **GWM** **Mode** NORM **Number**

Revision 1

Approval _____

Estimated Time 10 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-007-003, Gaseous Waste Management, Rev. 14

NRC KA Number

G-2.3.11 RO: 2.7, SRO: 3.2

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure Key

Directions To Examinee:

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

INITIAL CONDITIONS

1. A Gaseous Release Permit has been issued to release all Gas Decay Tanks.
2. ONE RAB Exhaust Fan is running.
3. Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 source check has been performed and documented on the Gaseous Release Permit.

The following meteorological conditions exist:

- 1. 10 Meter Wind Speed 2.2 m/s
- 2. 10 Meter Wind Direction 320°
- 3. $\Delta T/50m$ Reading 1.15

INITIATING CUE

The CRS directs you to verify that proper meteorological conditions for a gaseous waste release exist in accordance with OP-007-003, Gaseous Waste Management. Document your results on the appropriate attachment in OP-007-003, Gaseous Waste Management.

TERMINATING CUE

Meteorological conditions verified per OP-007-003, Gaseous Waste Management, Attachment 11.5.

STANDARD

Examinee determines gaseous waste release should be avoided.

TOOLS

OP-007-003, Gaseous Waste Management, Attachment 11.5.

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure
Key

Perform OP-007-003, Gaseous Waste Management, Attachment 11.5.
Critical steps are denoted by **CRIT**.

START TIME_____

1. Evaluate release for 10 Meter Wind Speed in accordance with Attachment 11.5.

CRIT

CUES: Cues provided in JPM Initial Conditions

STANDARDS: 1. Examinee determines 10 Meter Wind Speed within allowable limits of
 $0.67 \text{ m/s} \leq (\text{Wind Speed}) \leq 3.35 \text{ m/s}$ (exit bottom of decision box)

SAT_____ **UNSAT**_____

2. Evaluate release for 10 Meter Wind Direction in accordance with Attachment 11.5.

CRIT

CUES: Cues provided in JPM Initial Conditions

STANDARDS: 1. Examinee determines 10 Meter Wind Direction within limits of $68^\circ \leq \text{Wind}$
 $\text{Direction} \leq 339^\circ$ (exit to right of decision box).

SAT_____ **UNSAT**_____

3. Evaluate release for Stability class in accordance with Attachment 11.5.

CRIT

CUES: Cues provided in JPM Initial Conditions.

STANDARDS: 1. Examinee refers to Pasquill Stability Classes chart and determines $\Delta T/50\text{m}$
Reading is within Stability **Class F** ($0.75 < \Delta T/50\text{m} \leq 2.00$).

SAT_____ **UNSAT**_____

4. Determine gaseous waste release restrictions based on meteorological conditions.

CRIT

CUES: Cues provided by JPM Initial Conditions.

STANDARDS: 1. Examinee determines release should be avoided based on meteorological
conditions in accordance with Attachment 11.5.

SAT_____ **UNSAT**_____

End of Task

STOP TIME_____

Waterford 3 Job Performance Measure
Key

INFORMATION FOR TRAINEE

Directions To Examinee:

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

INITIAL CONDITIONS

1. A Gaseous Release Permit has been issued to release all Gas Decay Tanks.
2. ONE RAB Exhaust Fan is running.
3. Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 source check has been performed and documented on the Gaseous Release Permit.

The following meteorological conditions exist:

- 1. 10 Meter Wind Speed 2.2 m/s
- 2. 10 Meter Wind Direction 320°
- 3. $\Delta T/50m$ Reading 1.15

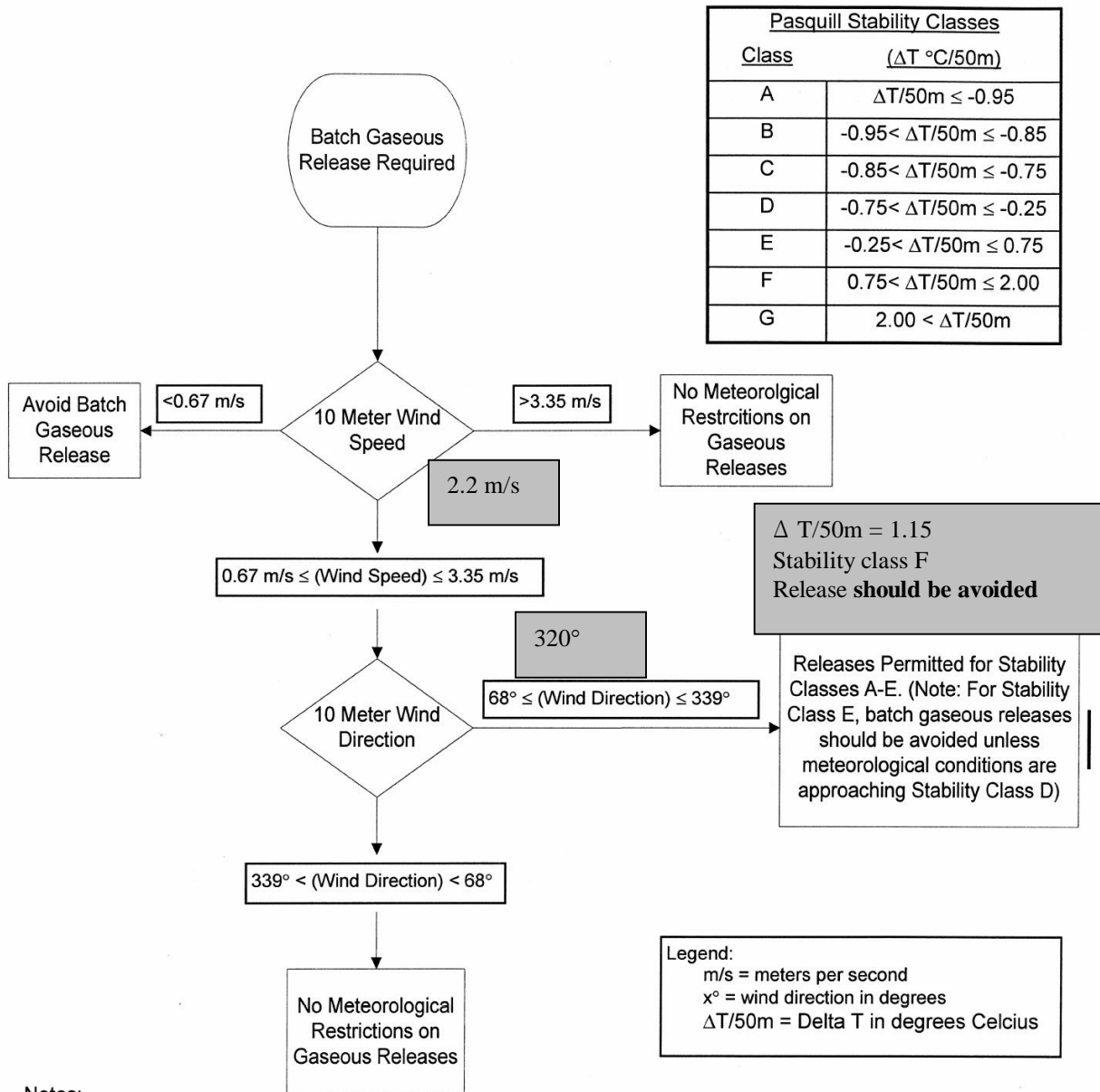
INITIATING CUE

The CRS directs you to verify that proper meteorological conditions for a gaseous waste release exist in accordance with OP-007-003, Gaseous Waste Management. Document your results on the appropriate attachment in OP-007-003, Gaseous Waste Management.

Waterford 3 Job Performance Measure

KEY

11.5 METEOROLOGICAL CONDITIONS REQUIREMENTS [Commitment P11585]



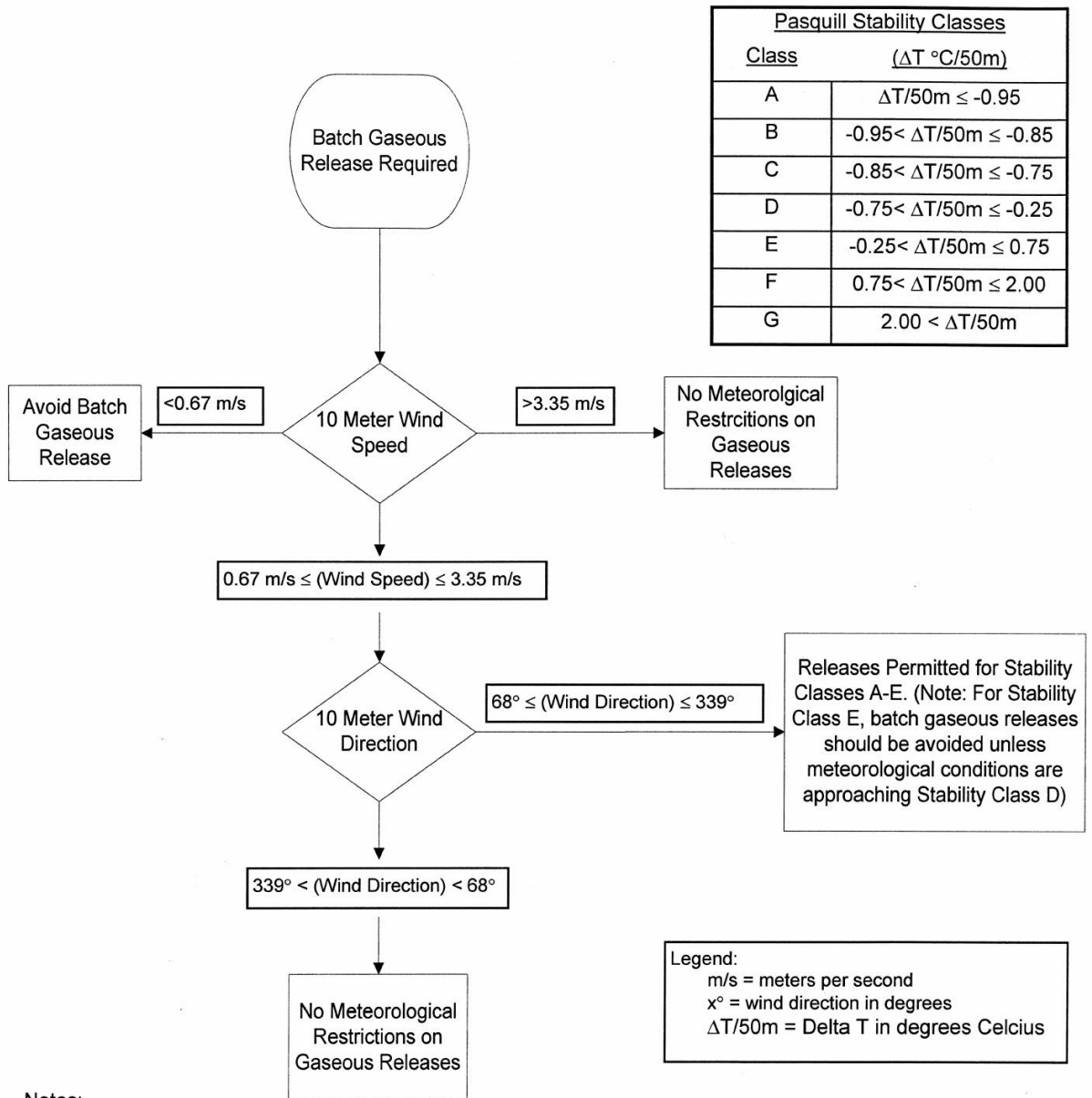
Notes:

1. All parameters should be obtained from the 15 minute average values displayed on the PMC.
2. 10 meter wind speed and wind direction may be obtained from the primary or back-up tower 33' reading.
3. ΔT/50m may be obtained from the primary or back-up tower 199-33' Delta T reading.

Waterford 3 Job Performance Measure

KEY

11.5 METEOROLOGICAL CONDITIONS REQUIREMENTS [Commitment P11585]



Notes:

1. All parameters should be obtained from the 15 minute average values displayed on the PMC.
2. 10 meter wind speed and wind direction may be obtained from the primary or back-up tower 33' reading.
3. $\Delta T/50m$ may be obtained from the primary or back-up tower 199-33' Delta T reading.

OP-007-003 Revision 14

Attachment 11.5 (1 of 1)

Directions To Examinee:

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

INITIAL CONDITIONS

1. A Gaseous Release Permit has been issued to release all Gas Decay Tanks.
2. ONE RAB Exhaust Fan is running.
3. Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 source check has been performed and documented on the Gaseous Release Permit.

The following meteorological conditions exist:

- 1. 10 Meter Wind Speed 2.2 m/s
- 2. 10 Meter Wind Direction 320°
- 3. $\Delta T/50m$ Reading 1.15

INITIATING CUE

The CRS directs you to verify that proper meteorological conditions for a gaseous waste release exist in accordance with OP-007-003, Gaseous Waste Management. Document your results on the appropriate attachment in OP-007-003, Gaseous Waste Management.

CALCULATE SHUTDOWN MARGIN WITH ONE UNTRIPPABLE CEA
JPM A5 Exam Submittal Rev 1



JPM A5

Site W3 **Job** SRO **System/Duty Area** **CED** **Mode** SURV **Number** 4

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-903-090, Shutdown Margin, Rev. 13
Plant Data Book

NRC KA Number

G-2.1.25 RO: 2.9, SRO: 3.1

Evaluation Methods

PERFORM

Trainee

Evaluator

Observer

Date

Satisfactory

Unsatisfactory

Waterford 3 Job Performance Measure

Key

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is currently at 90% power with 250 EFPD.
2. CEA 23 has been determined to be untrippable.
3. No other CEA is inserted.

INITIATING CUE

The SM directs you to perform a Shutdown Margin Calculation in accordance with OP-903-090, Shutdown Margin with one untrippable CEA.

TERMINATING CUE

Emergency boron required.

STANDARD

Shutdown Margin calculation completed.

TOOLS

Plant Data Book
COLR
Straight Edge and Calculator

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

1. Loss of Shutdown Margin
2. Technical Specification violation

HUMAN INTERFACES

SM

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Provide items listed in Tools Section

Waterford 3 Job Performance Measure
Key

Perform OP-903-090, Shutdown Margin and document on Attachment 10.3.
Critical steps are denoted by **CRIT**.

START TIME _____

1. Using current Cycle Burnup and 541°F temperature, determine Net Worth Worst Pair Stuck out (WPSO) from Figure 1.5.7. **CRIT**

CUES: Cues contained in JPM Initial Conditions and procedure.

STANDARDS: 1. Examinee determines Net Worst Pair Stuck out value as **5.8%** (5.7 - 5.9) $\Delta K/K$ and records on Att. 10.3.

SAT _____ **UNSAT** _____

2. Determine Shutdown Margin required by COLR. **CRIT**

CUES: Cues contained in JPM Initial Conditions and procedure.

STANDARDS: 1. Examinee determines required Shutdown Margin required from COLR as **5.15%** $\Delta K/K$ and records on Att. 10.3.

SAT _____ **UNSAT** _____

3. Subtract Step 7.3.1.2 from Step 7.3.1.1 to determine Shutdown Margin Allowed Power Defect %DK/K. **CRIT**

CUES: Cues required for this step are contained in JPM Initial Conditions.

STANDARDS: 1. Examinee determines Shutdown Margin allowed Power Defect as **0.65%** (0.55 - 0.75) $\Delta K/K$ and records on Att. 10.3.

SAT _____ **UNSAT** _____

4. Record current Reactor Power on Attachment 10.3.

CUES: Cues contained in JPM Initial Conditions and procedure.

STANDARDS: 1. Examinee records **90%** power on Att. 10.3.

SAT _____ **UNSAT** _____

5. Using results from step 7.3.1.3 and Power Defect vs. Power Level, Figure 1.2.1, Determine Shutdown Margin Allowed Power Level. **CRIT**

CUES: Cues contained in JPM Initial Conditions and procedure.

STANDARDS: 1. Examinee determines Shutdown Margin allowed Power Level as **49%** (44 – 54) power and records on Att. 10.3.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

Key

-
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. **CRIT**

CUES: None

STANDARDS: 1. Examine determines current power level is greater than Shutdown Margin allowed power level and circles **NO** on Att. 10.3.

SAT _____ **UNSAT** _____

-
7. If Shutdown Margin does not meet the requirements of Technical Specifications, then Commence Emergency Boration and go to OP-901-103, Emergency Boration. **CRIT**

CUES: When step is completed, inform Examinee that another operator will initiate emergency boration.

STANDARDS: 1. Examinee recommends initiating emergency boration and entering OP-901-103.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure
Key

INFORMATION FOR TRAINEE

Directions To Examinee:

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

INITIAL CONDITIONS

1. The plant is currently at 90% power with 250 EFPD.
2. CEA 23 has been determined to be untrippable.
3. No other CEA is inserted.

INITIATING CUE

The SM directs you to perform a Shutdown Margin Calculation in accordance with OP-903-090, Shutdown Margin with one untrippable CEA.

Waterford 3 Job Performance Measure JPM A5 Key

10.3 SHUTDOWN MARGIN VERIFICATION WORK SHEET FOR UNTRIPPABLE CEA

7.3.1.1	Net Worth WPSO	5.8	%ΔK/K
7.3.1.2	Shutdown Margin required by COLR	5.15	%ΔK/K
7.3.1.3	Shutdown Margin Allowed Power Defect %ΔK/K step 7.3.1.1 (5.8) - step 7.3.1.2 (5.15)	0.65	%ΔK/K
7.3.1.4	Current Reactor Power	90	%Power
7.3.1.5	Shutdown Margin Allowed Power Level	49	% Power
7.3.1.6	Current Power Level < Shutdown Margin Allowed Power Level (Circle one)	YES	<input checked="" type="radio"/> NO

REMARKS: Recommend Emergency Boration

Performed by: _____ (Signature) _____ (Date)

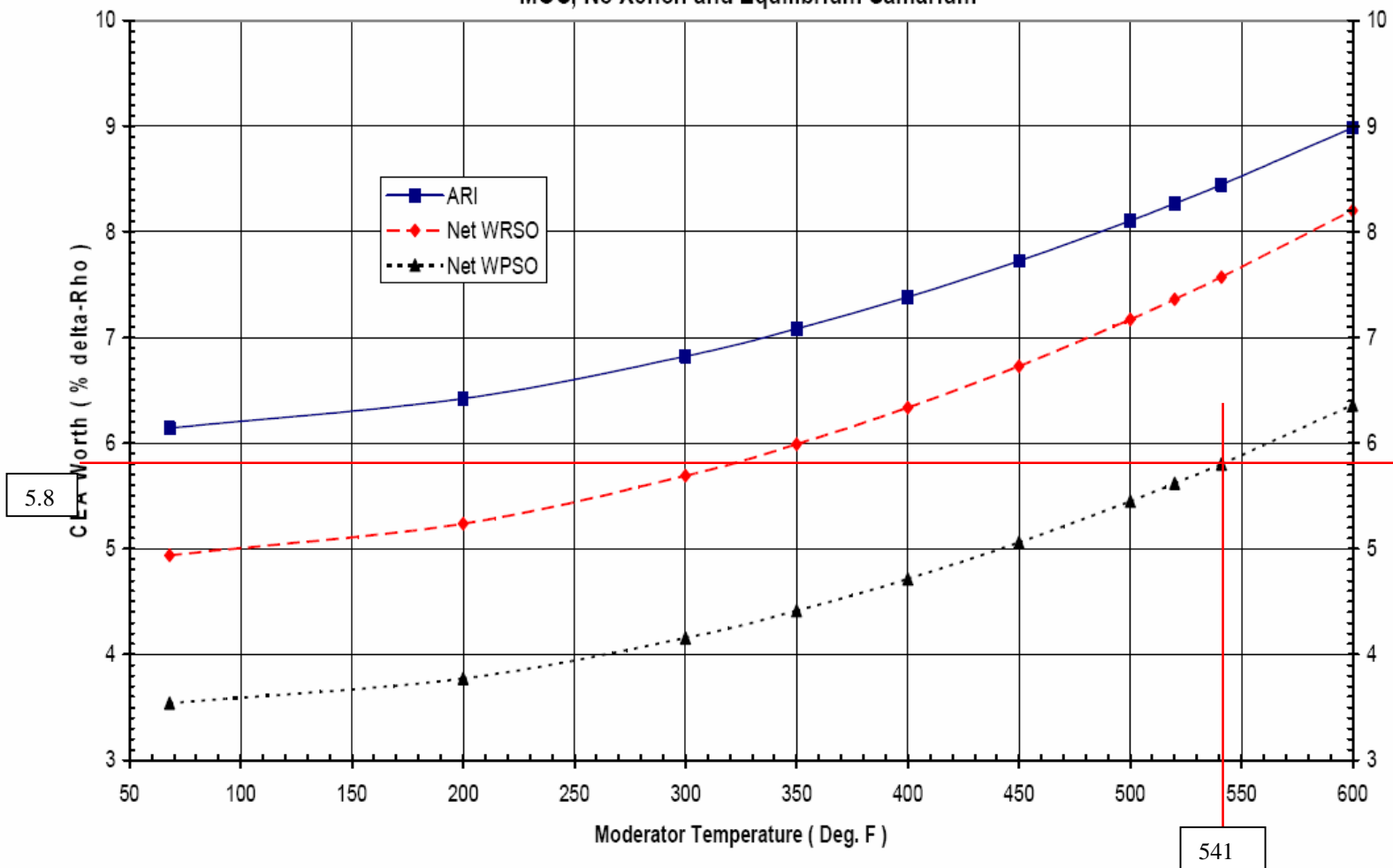
Verified by: _____ (Signature) _____ (Date)

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

Waterford 3 Job Performance Measure JPM A5

Key

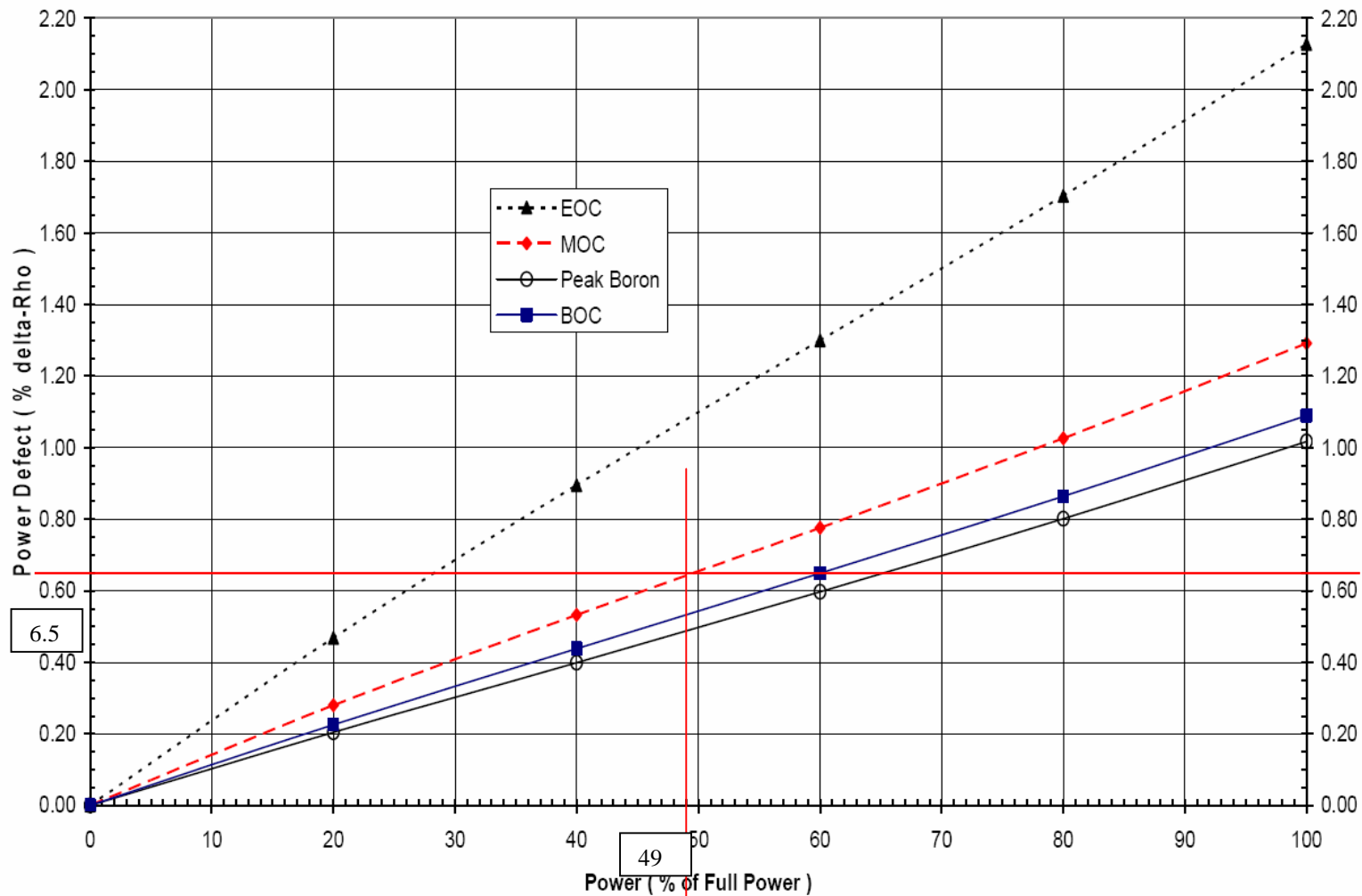
WSES-3 Cycle-15 PDB Figure 1.5.7.3
Total Pattern, Net WRSO, and Net WPSO Worths
MOC, No Xenon and Equilibrium Samarium



Waterford 3 Job Performance Measure JPM A5

Key

WSES-3 Cycle-15 PDB Figure 1.2.1.1
Power Defect vs. Power Level



Waterford 3 Job Performance Measure JPM A5

Key

CORE OPERATING LIMITS REPORT

SHUTDOWN MARGIN - ANY CEA WITHDRAWN

3.1.1.1 The SHUTDOWN MARGIN shall be greater than or equal to 5.15% $\Delta k/k$ when T_{avg} is greater than 200 °F or 2.0% $\Delta k/k$ when T_{avg} is less than or equal to 200 °F.

Waterford 3 Job Performance Measure JPM A5

Key

Skursallianes Þrascurins
Skuldæwan Marglin

ÖP 905 080
Hævikinn 103

7.3 Skuldæwan Marglin Málfræðingur – Undirpakkla ÖP A

7.3.1 Í ein Undirpakkla ÖP A Öskunin er ekki skilgreind og þá er skilgreind, þá er skilgreind Skuldæwan Marglin skilgreind í Áttáttátt 10.3 og þá er skilgreind.

Í ÖP A

- (1) Use of 11% when using P131 Figure 1.2.1.
- (2) When using graphs and tables in the Plant Data Book (P131), to obtain the necessary data, it may be necessary and is acceptable to interpolate (approximate between data points on curves). However, extrapolation (approximation outside of the known set of data on curves) should not be used.

- 7.3.1.1 Using current Cycle Turnup and 11% temperatures, determine Net Worth World Pair Steer out (W1300) from Figure 1.2.1.
- 7.3.1.2 Determine Skuldæwan Marglin required by ÖP 1.3.
- 7.3.1.3 Subtract Step 7.3.1.2 from Step 7.3.1.1 to determine Skuldæwan Marglin Allowed Power Level %AKGK.
- 7.3.1.4 Report current Reactor Power on Áttáttátt 10.3.
- 7.3.1.5 Using result from step 7.3.1.3 and Power Level vs. Power Level, Figure 1.2.1, determine Skuldæwan Marglin Allowed Power Level.
- 7.3.1.6 Verify Skuldæwan Marglin greater than or equal to that required by the ÖP 1.3 by verifying that current power level is less than or equal to the Skuldæwan Marglin Allowed Power Level.

7.3.2 If Skuldæwan Marglin does not meet the requirements in Technical Report Section, then determine Emergency Reaction and go to ÖP 901-05, Emergency Reaction.

Í ÖP A

Subsection 7.4, Skuldæwan Marglin Year Reaction – Undirpakkla ÖP A, Öskun ÖP A skilgreind, is applicable when all other ÖP A are inserted.

7.3.3 If the Reactor has been shutdown less than 24 hours, then determine required Skuldæwan Marglin from Commissioning required to meet Skuldæwan Marglin in the next 24 hours by performing Subsection 7.4, Skuldæwan Marglin Year Reaction – Undirpakkla ÖP A, Öskun ÖP A inserted.

Waterford 3 Job Performance Measure JPM A5
Examinee Handout

Directions To Examinee:

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

INITIAL CONDITIONS

1. The plant is currently at 90% power with 250 EFPD.
2. CEA 23 has been determined to be untrippable.
3. No other CEA is inserted.

INITIATING CUE

The SM directs you to perform a Shutdown Margin Calculation in accordance with OP-903-090, Shutdown Margin with one untrippable CEA.

DETERMINE EVENT NOTIFICATION REQUIREMENTS

JPM A6 Exam Submittal Rev 1



JPM A6

Site W3 **Job** SRO **System/Duty Area** **PPA** **Mode** ADMIN **Number**

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

UNT-006-010, Event Notification and Reporting, Rev. 301
Technical Specification 3.4.5.2, Operational Leakage

NRC KA Number

G-2.1.2 RO: 3.0, SRO: 4.0

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Perform Technical Specification determination of Chemistry surveillance results. Perform Event Reportability and document on NRC Form 361 in accordance with UNT-006-010.

Critical steps are denoted by **CRIT**.

START TIME _____

1. Evaluate Chemistry Technical Specification surveillance results for compliance with T.S. 3.4.5.2, Operational Leakage and 3.7.1.4, Activity. **CRIT**

CUES: Cues provided in JPM Initial Conditions

STANDARDS: 1. Examinee evaluates Technical Specification surveillance results and determines that **Primary to Secondary Leak Rate exceeds T.S.3.4.5.2 limit of 75 gallons per day for SG 2 (0.06 gpm x 1440 = 86.4 gpd).**

SAT _____ UNSAT _____

2. Complete NRC Form 361, Event Notification Worksheet for event reportability. (critical items are bolded) **CRIT**

CUES: Cues provided by JPM Initial Conditions and procedure
Provide Examinee a copy of Sample Event Notification Worksheet (NRC Form 361).

STANDARDS: 1. Examinee determines event reportability and documents on NRC Form 361, Event Notification Worksheet with the following entries:

- NOTIFICATION TIME - current time
- FACILITY OR ORGANIZATION - Entergy
- UNIT - Waterford 3
- NAME OF CALLER - Examinee's Name
- CALL BACK # - This can be blank
- EVENT TIME & ZONE - Today's date & CST
- EVENT DATE - Today's date
- POWER/MODE BEFORE - 60%/Mode 1
- POWER/MODE AFTER - 60%/Mode 1
- EVENT CLASSIFICATIONS - checked for 50.72, Non-Emergency
- **4-Hr. Non-Emergency 10 CFR 50.72(b)(2) -checked for TS Required S/D (CRIT)**
- **DESCRIPTION - wording to the effect of exceeding T.S. 3.4.5.2 limit on Operational Leakage (> 75 gallons per day) (CRIT)**

SAT _____ UNSAT _____

End of Task

STOP TIME _____

JPM A6 Exam Submittal rev1

Waterford 3 Job Performance Measure Key

NRC FORM 361 (12-2000)		REACTOR PLANT EVENT NOTIFICATION WORKSHEET				U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER	
EN #							
NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3469*, BACKUPS -- [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 and [3rd] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.							
NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER		CALL BACK #		
7:00 am	Waterford	3	Applicant Name		(504) 739-6059		
EVENT TIME & ZONE	EVENT DATE	POWERMODE BEFORE		POWERMODE AFTER			
7:00 am CST	03/24/2008	60%/Mode 1		60%/Mode 1			
EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		(v)(A) Safe S/D Capability	AINA		
GENERAL EMERGENCY	GEN/AAEC	TS Deviation	ADEV	(v)(B) RHR Capability	AINB		
SITE AREA EMERGENCY	SIT/AAEC	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		(v)(C) Control of Rad Release	AINC		
ALERT	ALE/AAEC	(i) TS Required S/D	ASHU	(v)(D) Accident Mitigation	AIND		
UNUSUAL EVENT	UNU/AAEC	(iv)(A) ECCS Discharge to RCS	ACCS	(xii) Offsite Medical	AMED		
<input checked="" type="checkbox"/> 50.72 NON-EMERGENCY (see next columns)		(iv)(B) RPS Actuation (scram)	ARPS	(xiii) Loss Comm/Asmt/Resp	ACOM		
PHYSICAL SECURITY (73.71)	DDDD	(xi) Offsite Notification	APRE	60-Day Optional 10 CFR 50.73(a)(1)			
MATERIAL/EXPOSURE	B???	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)		Invalid Specified System Actuation			
FITNESS FOR DUTY	HFIT	(ii)(A) Degraded Condition	ADEG	Other Unspecified Requirement (Identify)			
OTHER UNSPECIFIED REQMT. (see last column)		(ii)(B) Unanalyzed Condition	AUNA	NONR			
INFORMATION ONLY	NNF	(iv)(A) Specified System Actuation	AESF	NONR			
DESCRIPTION							
Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)							
Tech Spec 3.4.5.2 Operational Leakage exceeded, Primary to secondary leakage SG 2 > 75 gpd							
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD? <input type="checkbox"/> YES (Explain above) <input type="checkbox"/> NO			
NRC RESIDENT							
STATE(s)				DID ALL SYSTEMS FUNCTION AS REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO (Explain above)			
LOCAL							
OTHER GOV AGENCIES				MODE OF OPERATION UNTIL CORRECTED:	ESTIMATED RESTART DATE:	ADDITIONAL INFO ON BACK	
MEDIA/PRESS RELEASE						<input type="checkbox"/> YES <input type="checkbox"/> NO	

Waterford 3 Job Performance Measure

Key

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

- 3.4.5.2 Reactor Coolant System **operational** leakage shall be limited to:
- a. No PRESSURE BOUNDARY LEAKAGE,
 - b. 1 gpm UNIDENTIFIED LEAKAGE,
 - c. 75 gallons per day primary to secondary leakage **through any one steam generator (SG),**
 - d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System, and
 - e. 1 gpm leakage at a Reactor Coolant System pressure of 2250 ± 20 psia from any Reactor Coolant System pressure isolation valve specified in Table 3.4-1.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With any PRESSURE BOUNDARY LEAKAGE, **or primary to secondary leakage not within limit,** be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With any Reactor Coolant System **operational** leakage greater than any one of the limits, excluding PRESSURE BOUNDARY LEAKAGE, **primary to secondary leakage,** and leakage from Reactor Coolant System pressure isolation valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- c. With any Reactor Coolant System pressure isolation valve leakage greater than the above limit, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least one closed manual or deactivated automatic valve, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

NOTE: Not required to be performed until 12 hours after establishment of steady state operation.

4.4.5.2.1 Reactor Coolant System leakages, **except for primary to secondary leakage,** shall be demonstrated to be within each of the above limits by performance of a Reactor Coolant System water inventory balance at least once per 72 hours.

4.4.5.2.2 Primary to secondary leakage shall be verified to be ≤ 75 gallons per day through any one SG at least once per 72 hours.

Waterford 3 Job Performance Measure
Key

PLANT SYSTEMS

ACTIVITY

LIMITING CONDITION FOR OPERATION

3.7.1.4 The specific activity of the secondary coolant system shall be less than or equal to 0.10 microcurie/gram DOSE EQUIVALENT I-131.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the specific activity of the secondary coolant system greater than 0.10 microcuries/gram DOSE EQUIVALENT I-131, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.4 The specific activity of the secondary coolant system shall be determined to be within the limit by performance of the sampling and analysis program of Table 4.7-1.

Waterford 3 Job Performance Measure Examinee Handout

NRC FORM 361 (12-2000)		REACTOR PLANT EVENT NOTIFICATION WORKSHEET			U.S. NUCLEAR REGULATORY COMMISSION OPERATIONS CENTER EN #	
NRC OPERATION TELEPHONE NUMBER: PRIMARY -- 301-816-5100 or 800-532-3469*, BACKUPS -- [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 and [3rd] 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.						
NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER		CALL BACK #	
EVENT TIME & ZONE	EVENT DATE	POWER/MODE BEFORE		POWER/MODE AFTER		
EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		(v)(A) Safe S/D Capability AINA		
GENERAL EMERGENCY	GEN/AEC	TS Deviation		(v)(B) RHR Capability AINB		
SITE AREA EMERGENCY	SIT/AEC	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		(v)(C) Control of Rad Release AINC		
ALERT	ALE/AEC	(i) TS Required S/D		(v)(D) Accident Mitigation AIND		
UNUSUAL EVENT	UNU/AEC	(iv)(A) ECCS Discharge to RCS		(xii) Offsite Medical AMED		
50.72 NON-EMERGENCY	(see next columns)	(iv)(B) RPS Actuation (scram)		(xiii) Loss Comm/Asmt/Resp ACOM		
PHYSICAL SECURITY (73.71)	DDDD	(xi) Offsite Notification		60-Day Optional 10 CFR 50.73(a)(1)		
MATERIAL/EXPOSURE	B???	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)		Invalid Specified System Actuation AINV		
FITNESS FOR DUTY	HFT	(ii)(A) Degraded Condition		Other Unspecified Requirement (Identify)		
OTHER UNSPECIFIED REQMT.	(see last column)	(ii)(B) Unanalyzed Condition		NONR		
INFORMATION ONLY	NIN	(iv)(A) Specified System Actuation		NONR		
DESCRIPTION						
Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)						
NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD? <input type="checkbox"/> YES (Explain above) <input type="checkbox"/> NO		
NRC RESIDENT						
STATE(s)				DID ALL SYSTEMS FUNCTION AS REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO (Explain above)		
LOCAL						
OTHER GOV AGENCIES				MODE OF OPERATION UNTIL CORRECTED:		
MEDIA/PRESS RELEASE				ESTIMATED RESTART DATE:	ADDITIONAL INFO ON BACK <input type="checkbox"/> YES <input type="checkbox"/> NO	

APPROVE AN EQUIPMENT TAGOUT
JPM A7 Exam Submittal rev1



JPM A7

Site W3 **Job** SRO **System/Duty Area** **PPA** **Mode** ADMIN **Number**

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

EN-OP-102, Protective and Caution Tagging, Rev. 9
EN-OP-102-01, Protective and Caution Tagging Forms Checklist, Rev. 3

NRC KA Number

G-2.2.13 RO: 4.1, SRO: 4.3

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions To Examinee:

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

INITIAL CONDITIONS

An equipment tagout has been prepared for HPSI Pump AB for a component outage which includes suction gasket replacement and seal cooler cleaning.

INITIATING CUE

You are to conduct a review of the HPSI Pump AB tagout section 9.3 to determine if the boundaries are adequate and it meets the General Tagout Standards of EN-OP-102.

TERMINATING CUE

Tagout review completed and at least 4 major errors identified.

STANDARD

Tagout review completed and errors identified.

TOOLS

EN-OP-102, Protective and Caution Tagging

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Damage to equipment or injury to plant personnel

HUMAN INTERFACES

None

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

KEY

Perform the task in accordance with EN-OP-102.
Critical steps are denoted by **CRIT**.

START TIME _____

1. Verify the clearance has been prepared to adequately provide personnel and plant safety for the work activities listed. **CRIT**

CUES: Provide Examinee with copy of clearance tagout.


- STANDARDS:**
1. Examinee must find four(4) of four(4) major errors in the clearance tagout and should recognize the minor error.
 - **MAJOR**- incorrect sequence to rack down the breaker- knife switch for control power should be the step before.
 - **MAJOR** - incorrect sequence of valves operated – suction valve, SI 202A, closed before discharge paths, SI 212A and SI 212B.
 - **MAJOR** – Valve for suction path from the B train is not included, SI 202B CLOSED.
 - **MAJOR** – One drain path is tagged closed vs open, SI 2032AB.
 - **MINOR** – The AB Discharge to the B Train is specified as “CLOSED” vs “LOCKED CLOSED”, SI 212B (**NOT Critical**)

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 1 OF 22	
Protective and Caution Tagging Forms & Checklist KEY				

ATTACHMENT 9.2

TAGOUT COVER SHEET

Clearance: MANUAL

Tagout: XXXXX

Component to be worked: HIGH PRESSURE SAFETY INJECTION PUMP AB

Description:

Replace HPSI Pump AB suction flange gasket
B424-507, B424-508, G167-1

Placement Inst:

HPSI Pump AB will be INOPERABLE during maintenance. Refer to TS 3.5.2
Expected annunciator: M0810: HPSI Pump AB Trip/Trouble

Hazards:

Ladder is required to access SI-2031AB and SI-2033AB


Restoration Inst:

Enter TS 3.5.2 just prior to aligning HPSI AB to replace HPSI A.
Ensure no leaks exist at the flange during operation.

Attribute Description	Attribute Value
Tech Spec Impact?	EOS 08-XXX
Compensatory Actions req'd?	None
Locked Components?	Yes
Fire Protection Impairment?	No
Vent/Drain Rig req'd?	Yes
Scaffold Required?	No
Tech Spec Impact on System Restoration?	Yes- see tagout detail
Tagout Hang Time	2
Tagout Drain Time	1
Tagout Recovery Time	2
CVAS, Annulus, HVC, HVF or RCB Boundary	Boundary is not crossed.
50.59 Screening Attached- Audit use only	

Work Order Number	Description
XXXXXXXX-XX	Boric acid build-up on suction flange.


Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 1 OF 22	
<p align="center">Protective and Caution Tagging Forms & Checklist</p> <p align="center">KEY</p>				

--	--

Status	Description	User	Verification Date
Prepared	Prepared	J. Doerame	Today
Technical Reviewed	Reviewed	J. Fasola	Today
Approved	Approved		
Tags Verified Hung	Tags Verified Hung		
Removal Approved	Removal Approved		
Tags Verified Removed	Tags Verified Removed		

Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 2 OF 22	
Protective and Caution Tagging Forms & Checklist KEY				

ATTACHMENT 9.3

TAGOUT TAGS SHEET


CLEARANCE: MANUAL

TAGOUT: _____

Tag Serial No.	Tag Type	Equipment Description Equipment Location	Place. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
	Special Instruction	1-SI-Pump-SI MPMP0002 AB	1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			
	Special Instruction	1-SI-Pump-SI MPMP0002 AB	1	* I have reviewed the EOS and the EOS is open.			8	* Reminder: EOS must be updated			
001	Danger	1-SI -CS -SI ECS0002AB-C/S ----- * HIGH PRESSURE SAFETY INJECTION PUMP AB C/S * RAB +46 -304 - - -	2	STOP/NEUTRAL			7	STOP/NEUTRAL			
002	Danger	1-SI-CKTBRK-SI EBKR3AB3 ----- * HIGH PRESSURE SAFETY INJECTION PUMP AB (HPSI) * RAB+21 -212B-11A -J	3	RACKED DOWN/TEST/REMOVE			5	RACKED DOWN/TEST/REMOVE			

JPM A7 Exam Submittal rev1


Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 2 OF 22	
Protective and Caution Tagging Forms & Checklist KEY				

Knife sw in the next step should precede this


Tag Serial No	Tag Type	Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
003	Danger	1-SI-KNIFSW-SI EDISCAB#- KNIFSW ----- * HPSI PUMP AB DC CONTROL POWER KNIFE SWITCH * RAB-+21 - - -	4	OPEN This step should precede racking the breaker down in step 3			6	OPEN			
004	Danger	1-SI-VALVE-SI MVAAA202A ----- *HPSI PUMP AB SUCTION FROM HPSI A ISOLATION * RAB-35 - -9A -J -OPERATED FROM -15 SAFEGUARD VALVE GALLERY	5	LOCKED CLOSED Suction isolated before discharge-steps 5 and 6 should have preceded this step.			4	LOCKED CLOSED ----- Open slowly ti fill IAW OP-903-026			
Tag Serial No	Tag Type	Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes

Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 2 OF 22	
Protective and Caution Tagging Forms & Checklist KEY				

006	Danger	1-SI -VALVE - SIMVAAA212B ----- * HPSI PUMP AB DISCHARGE TO HPSI B ISOLATION * RAB -35 - -9A -K - -	7	CLOSED Should be locked closed		3	CLOSED			
007	Danger	1-SI -VALVE -SI MVAAA205AB ----- * HPSI PUMP AB MIN FLOW TO RECIRC LINE A STOP CHECK * RAB -35 - -6A -K - -	8	LOCKED CLOSED		3	LOCKED OPEN			
008	Danger	1-SI -VALVE -SI MVAAA245 ----- * HPSI PUMP AB MIN FLOW TO RECIRC LINE B STOP CHECK * RAB -35 - -6A -K - -	9	LOCKED CLOSED		2	LOCKED CLOSED			
009	Danger	1-SI -VALVE -SI MVAAA2032 AB ----- * HPSI PUMP AB SUCTION VENT * RAB -35 -B15 -6A -J- -	10	CLOSED ----- * Drain path Should be open		2	CLOSED			

Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 2 OF 22	
Protective and Caution Tagging Forms & Checklist KEY				

Tag Serial No	Tag Type	Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
010	Danger	1-SI -VALVE- SI MVAAA2031 AB ----- *HPSI PUMP AB SUCTION VENT *RAB -35 -B15 -6A -J	10	OPEN ----- * Vent path			2	CLOSED			
011	Danger	1-SI -VALVE -SI MVAAA2033 AB ----- *HPSI PUMP AB DISCHARGE PX ROOT *RAB -35 -B15 -6A -J - -	10	OPEN ----- *Drain path			2	CLOSED			
012	Danger	1-SI -VALVE -SI MVAAA2035 AB ----- *HPSI PUMP AB INBOARD SEAL VENT *RAB -35 -B15 -6A -J - -	10	OPEN ----- * Drain path			2	CLOSED			

SI-202B
missing

Waterford 3 Job Performance Measure
Examinee Handout

INFORMATION FOR TRAINEE

Directions To Examinee:

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

INITIAL CONDITIONS


An equipment tagout has been prepared for HPSI Pump AB for a component outage which includes suction gasket replacement and seal cooler cleaning.

INITIATING CUE

You are to conduct a review of the HPSI Pump AB tagout section 9.3 to determine if the boundaries are adequate and it meets the General Tagout Standards of EN-OP-102.

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Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 6 OF 22	
Protective and Caution Tagging Forms & Checklist Examinee Handout				

ATTACHMENT 9.2

TAGOUT COVER SHEET

Clearance: MANUAL

Tagout: XXXXX

Component to be worked: HIGH PRESSURE SAFETY INJECTION PUMP AB

Description:

Replace HPSI Pump AB suction flange gasket
B424-507, B424-508, G167-1

Placement Inst:

HPSI Pump AB will be INOPERABLE during maintenance. Refer to TS 3.5.2
Expected annunciator: M0810: HPSI Pump AB Trip/Trouble

Hazards:

Ladder is required to access SI-2031AB and SI-2033AB


Restoration Inst:

Enter TS 3.5.2 just prior to aligning HPSI AB to replace HPSI A.
Ensure no leaks exist at the flange during operation.

Attribute Description	Attribute Value
Tech Spec Impact?	EOS 08-XXX
Compensatory Actions req'd?	None
Locked Components?	Yes
Fire Protection Impairment?	No
Vent/Drain Rig req'd?	Yes
Scaffold Required?	No
Tech Spec Impact on System Restoration?	Yes- see tagout detail
Tagout Hang Time	2
Tagout Drain Time	1
Tagout Recovery Time	2
CVAS, Annulus, HVC, HVF or RCB Boundary	Boundary is not crossed.
50.59 Screening Attached- Audit use only	


Work Order Number	Description
XXXXXXXX-XX	Boric acid build-up on suction flange.

Waterford 3 Job Performance Measure

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 6 OF 22	
Protective and Caution Tagging Forms & Checklist Examinee Handout				

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Status	Description	User	Verification Date
Prepared	Prepared	J. Doerame	Today
Technical Reviewed	Reviewed	J. Fasola	Today
Approved	Approved		
Tags Verified Hung	Tags Verified Hung		
Removal Approved	Removal Approved		
Tags Verified Removed	Tags Verified Removed		

	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED	EN-OP-102-01	REV. 2
		INFORMATIONAL USE	PAGE 7 OF 22	
Protective and Caution Tagging Forms & Checklist Examinee Handout				

ATTACHMENT 9.3
TAGOUT TAGS SHEET

 CLEARANCE: MANUAL

TAGOUT: _____

Tag Serial No.	Tag Type	Equipment Description Equipment Location	Place. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
	Special Instruction	1-SI-Pump-SI MPMP0002 AB	1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			1	*I have reviewed and understand all special instructions on the tagout cover sheet and OPS impact Statements			
	Special Instruction	1-SI-Pump-SI MPMP0002 AB	1	* I have reviewed the EOS and the EOS is open.			8	* Reminder: EOS must be updated			
001	Danger	1-SI-CS -SI ECS0002AB-C/S ----- * HIGH PRESSURE SAFETY INJECTION PUMP AB C/S * RAB_+46 -304 - - -	2	STOP/NEUTRAL			7	STOP/NEUTRAL			
002	Danger	1-SI-CKTBRK-SI EBKR3AB3 ----- * HIGH PRESSURE SAFETY INJECTION PUMP AB (HPSI) * RAB-+21 -212B-11A -J	3	RACKED DOWN/TEST/REMOVE			5	RACKED DOWN/TEST/REMOVE			



**Protective and Caution Tagging Forms & Checklist
Examinee Handout**

Tag Serial No	Tag Type	Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq.	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
003	Danger	1-SI-KNIFSW-SI EDISCAB#-KNIFSW ----- * HPSI PUMP AB DC CONTROL POWER KNIFE SWITCH * RAB-+21 - - -	4	OPEN			6	OPEN			
004	Danger	1-SI-VALVE -SI MVAAA202A ----- *HPSI PUMP AB SUCTION FROM HPSI A ISOLATION * RAB-35 - -9A -J - -OPERATED FROM -15 SAFEGUARD VALVE GALLERY	5	LOCKED CLOSED			4	LOCKED CLOSED ----- Open slowly ti fill IAW OP-903-026			
005	Danger	1-SI-VALVE -SI MVAAA212A ----- * HPSI PUMP AB DISCHARGE TO HPSI A ISOLATION * RAB -35 -B15 -9A -K - -	6	LOCKED CLOSED			3	LOCKED CLOSED			



Protective and Caution Tagging Forms & Checklist

Examinee Handout

Tag Serial No	Tag Type	Equipment Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
006	Danger	1-SI -VALVE - SIMVAAA212B ----- * HPSI PUMP AB DISCHARGE TO HPSI B ISOLATION * RAB -35 - -9A -K - -	7	CLOSED			3	CLOSED			
007	Danger	1-SI -VALVE -SI MVAAA205AB ----- * HPSI PUMP AB MIN FLOW TO RECIRC LINE A STOP CHECK * RAB -35 - -6A -K - -	8	LOCKED CLOSED			3	LOCKED OPEN			
008	Danger	1-SI -VALVE -SI MVAAA245 ----- * HPSI PUMP AB MIN FLOW TO RECIRC LINE B STOP CHECK * RAB -35 - -6A -K - -	9	LOCKED CLOSED			2	LOCKED CLOSED			
009	Danger	1-SI -VALVE -SI MVAAA2032 AB ----- *HPSI PUMP AB SUCTION VENT	10	CLOSED ----- * Drain path			2	CLOSED			



**Protective and Caution Tagging Forms & Checklist
Examinee Handout**

Tag Serial No	Tag Type	Equipment Equipment Description Equipment Location	Place. Seq	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest. Seq	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/Removal Tag Notes
010	Danger	* RAB -35 -B15 -6A -J - - 1-SI -VALVE- SI MVAAA2031 AB ----- *HPSI PUMP AB SUCTION VENT * RAB -35 -B15 -6A -J	10	OPEN ----- * Vent path			2	CLOSED			
011	Danger	1-SI -VALVE -SI MVAAA2033 AB ----- *HPSI PUMP AB DISCHARGE PX ROOT *RAB -35 -B15 -6A -J - -	10	OPEN ----- *Drain path			2	CLOSED			
012	Danger	1-SI -VALVE -SI MVAAA2035 AB ----- *HPSI PUMP AB INBOARD SEAL VENT *RAB -35 -B15 -6A -J - -	10	OPEN ----- * Drain path			2	CLOSED			

REVIEW AND APPROVE A LIQUID RELEASE PERMIT
JPM A8 Exam Submittal Rev 1



JPM A8

Site W3 **Job** SRO **System/Duty Area** **PPA** **Mode** ADMIN **Number**

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-007-001, BORON MANAGEMENT SYSTEM, rev 19
TRM 3.3.3 MONITORING INSTRUMENTATION,

NRC KA Number

G-2.3.6 RO: 2.1, SRO: 3.1

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

The Plant is in mode 3 with the following plant conditions:

1. CW Pumps A and B are running, C and D are secured.
2. The following CW Waterboxes are in service: A1, A2, and B1
3. BACT A is at 94% and is ready for release
4. The BMS Radiation Monitor, PRM-IRE-0627, is Out of Service

INITIATING CUE

A liquid release of the A BACT to the Circulating Water System is planned for your shift. The Offgoing CRS has reviewed the release permit and asks you to perform a peer check to determine if all requirements for the release have been met. Review the A BACT release permit, OP-007-001 and any other requirements to determine what, if any, conditions are not met for this release. Document your answers in the answer box on this cue sheet.

TERMINATING CUE

All plant requirements needed to discharge BACT A to CW have been determined.

STANDARD

Determine that the following items are required to discharge BACT A:

- Place Waterbox B2, C1, or C2 in service
- The permit calls for 3 CW pumps- a third pump needs to be started or the permit re-performed.
- Obtain a second independent sample and release calculation from chemistry due to the BMS Radiation Monitor, PRM-IRE-0627, being Out of Service

TOOLS

OP-007-001, BORON MANAGEMENT SYSTEM, rev 19
TRM 3.3.3 MONITORING INSTRUMENTATION
LIQUID RELEASE PERMIT FOR THE A BACT

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Discharge radioactive material or chemicals to the Mississippi River that are outside state or federal allowances.

HUMAN INTERFACES

SM, Chemistry

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure
KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. Determine if conditions are met for discharging BACT A to the river.

CRIT

CUES: Provided by Initial Conditions and procedure.

STANDARDS: **Examinee reviews OP-007-001, Boron Management and the Liquid Waste Permit and determines the following:**

- Waterbox B2, C1, or C2 must be in service
- The permit specifies 3 Circ Water Pumps and only two are running
- BMS Radiation Monitor, PRM-IRE-0627, is Out of Service and actions required by TRM 3.3.3.10, Radioactive Liquid Effluent Monitoring apply.

SAT _____ **UNSAT** _____

2. Determine TRM 3.3.3.10 requirements for discharging BACT A to the river.

CRIT

CUES: Provided by Initial Conditions and procedure.

STANDARDS: **Review TRM 3.3.3.10, Radioactive Liquid Effluent Monitoring. The examinee must determine the following listed requirements are necessary and are not met:**

- Ensure 2 independent samples are analyzed by Chemistry
- Ensure 2 independent release calculations are performed by Chemistry

Note: Examinee should also discuss that 2 NAOs must independently perform discharge valve lineup but it is not required yet.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure
KEY

→ (DRM 02-216)

TABLE 3.3-12 (See note below)

← (DRM 02-216)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	RELEASE INFORMATION	ACTION
1. BOREN WASTE MANAGEMENT SYSTEM (BWMS):			
a. Radioactivity Monitor Providing Alarm and Automatic Termination of Release (PRM-IRE-0627)	1	Batch Release from Boric Acid	1
b. Waste (Process) Flow Rate Measurement Device (BWF-IFT-0627)	1	Condensate Tanks	2
2. LIQUID WASTE MANAGEMENT SYSTEM DISCHARGE (LWMS):			
a. Radioactivity Monitor Providing Alarm and Automatic Termination of Release (PRM-IRE-0647)	1	Batch Release from Liquid Waste Management	1
b. Waste (Process) Flow Rate Measurement Device (LWM-IFT-0647)	1	Tanks	2

→ (DRM 02-216)

NOTE: TRM Table 3.3-12 is part of the Offsite Dose Calculation Manual (ODCM), reference UNT-005-014. Revision of this TRM Table requires the approval of the General Manager Plant Operations (GMPO) in accordance with Technical Specification 5.14.

← (DRM 02-216)

Waterford 3 Job Performance Measure

KEY

→ (DFM 02-216)

TABLE 3.3-12 (Continued, See note below)

← (DFM 02-216)

TABLE NOTATIONS

NOTE #1	Waste (process) Flow Measurement Devices are not installed on the release paths for the DCTS, TBISS or CSD monitors. For these release paths, pump performance curves generated in place or some form of volumetric estimate or measurement device may be used for effluent flow rate estimates.
NOTE #2	DCTS and TBISS monitor operation should be maximized during releases to the environment, even when detectable activity is not present in the CCR#ACCR# or secondary systems, to provide capability for release termination in the event that Primary to Secondary or Primary to CCR# leakage occurs.
NOTE #3	The Steam Generator Blowdown Composite Sampler is capable of sampling blowdown discharge to either the CCR# System or Waste Ponds. Blowdown to the Waste Ponds is not allowed unless radiation monitoring capable of release termination is added to the release path.

ACTION STATEMENTS

ACTION 1	With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided best efforts are made to repair the instrument and that prior to initiating a release: <ul style="list-style-type: none">a. At least two independent samples are analyzed in accordance with Requirement 4.11.1.1.1 andb. At least two technically qualified members of the Facility Staff independently verify the release rate calculation and discharge valve lineup.
ACTION 2	With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided best efforts are made to repair the instrument and that the flow rate is estimated at least once per FOUR hours during actual releases. Pump performance curves generated in place may be used to estimate flow.

→ (DFM 02-216)

NOTE: TRM Table 3.3-12 is part of the Site's Dose Calculation Manual (DCM), reference UNIT-005-014. Revision of this TRM Table requires the approval of the General Manager Plant Operations (GMPO) in accordance with Technical Specification 3.13.

← (DFM 02-216)

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Exion Management

OP-007-001
Revision 18

6.17 DISCHARGING BASIC ACID CONDENSATE TANK TO CIRCULATING WATER

NOTE

- (1) Due to past occurrences of leaking valves, BACT(s) will not be recirculated while discharging a BACT to C/Water. (F-4608)
- (2) Typically BACTs should not be discharged to C/Water until 1 1/2 HJTs have become full to maximize the benefit of decay time. Chemists will monitor tank levels and ingress rates as so to provide recommendations of when BACTs should be discharged.

6.17.1 Verify BACT to be discharged has been recirculated and sampled in accordance with section 6.16, Placing a Basic Acid Condensate Tank on Recirculation for Sampling. (F-4608)

6.17.2 Verify one of the following is selected:

- C/Water Box B0
- C/Water Box C1
- C/Water Box C2

6.17.3 Verify Liquid Release Permit has been issued to discharge BACT to Circulating Water.

NOTE

SMCRS permission signifies that the plant is in a condition that will allow for the discharge of the appropriate tank. (F-4608)

6.17.4 Document SMCRS permission to perform discharge on the following:

- Attachment 11.17, Basic Acid Condensate Tank Discharge Checklist, and
- Liquid Release Permit

6.17.5 Perform source check for Btl Rad Elem, PRM-RE-0027, as follows:

6.17.5.1 Perform source check in accordance with OP-004-001 section 6.6, OP-6 Computer Console Operation.

6.17.5.2 Verify monitor passes source check. If it does not pass source check, then contact Chemistry Department.

Waterford 3 Job Performance Measure

KEY

Revised 04/2006 (by JPM) and 05/2007
(by JPM) (Waterford 3)

CS 4-0000-0001
November 1998

NOTE:

Successful achievements of items 01.12.01.2 through 01.12.11.2 will result in a 10% increase in the number of hours paid for the release. (JPM note)

- 01.12.01.1 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.02 – For items 01.12.1 through 01.12.10 see Attachment 01.12.1.
- 01.12.03 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.04 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.05 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.06 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.07 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.08 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.09 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.10 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.11 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.11.1 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.
- 01.12.11.2 – 250cc of water will be used in the tank for each 1000 lbs of water in the tank on Liquid Release Permit.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Boron Management

OP-007-001
Revision 19

NOTE

Successful performance of step 6.17.14 satisfies the requirement for the Channel Check of the Liquid Release Permit in accordance with TRM Table 4.3-2.

6.17.14 Verify indication of BM discharge flow using any of the following indications:

- BM-IFIC-0627 BMS Liq Waste Disch
- BM-IFRR-0627 BMS Liquid Waste Disch Flow & Rad Recorder
- PMC PID-A40500 BAC Pumps Disch Wtr Flow DP
- BM-IFI-0780 Boric Acid Cond's Tks Outlet To CW Disch (LCP-42)

6.17.14.1 On the Liquid Release Permit, initial for satisfactory performance of the Channel Check of BM-IFI-0627.

6.17.15 If it is desired to place BMS Liq Waste Disch, BM-IFIC-0627, in Auto, then match Setpoint to process flow and place in Auto.

6.17.16.1 Verify Boric Acid Condensate Discharge Flow Δ value specified on Liquid Release Permit.

6.17.16 On CP-4, periodically monitor discharge flow and activity to verify they are within limits listed on Liquid Release Permit.

6.17.17 After discharging for 10 minutes, then record BM Rad Elem, PRM-IRE-0627, activity reading on Liquid Release Permit.

6.17.18 When BACT level decreases to approximately 7%, then perform the following:

6.17.18.1 Verify the appropriate Boric Acid Condensate Pump, BM-MPMP-0002A(B), Stops.

6.17.18.2 Close the following valves:

- BM-547 BM Discharge To CW Auto Isolation
- BM-548 BM Discharge Header To CW Flow Control

6.17.19 Verify BMS Liq Waste Disch, BM-IFIC-0627, in manual with an output of 0 %.

6.17.20 Complete Attachment 11.17.

6.17.21 Complete Liquid Release Permit.

6.17.22 Forward completed Liquid Release Permit to Chemistry.

Waterford 3 Job Performance Measure

EXAMINEE HANDOUT

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

The Plant is in mode 3 with the following plant conditions:

1. CW Pumps A and B are running, C and D are secured.
2. The following CW Waterboxes are in service: A1, A2, and B1
3. BACT A is at 94% and is ready for release
4. The BMS Radiation Monitor, PRM-IRE-0627, is Out of Service

INITIATING CUE

A liquid release of the A BACT to the Circulating Water System is planned for your shift. The Offgoing CRS has reviewed the release permit and asks you to perform a peer check to determine if all requirements for the release have been met. Review the A BACT release permit, OP-007-001 and any other requirements to determine what, if any, conditions are not met for this release. Document your answers in the answer box on this cue sheet.

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT
BATCH RADIOACTIVE LIQUID EFFLUENT RELEASE REQUEST FORM
OPERATIONS

RELEASE POINT

Waste Condensate Tank	A <input type="checkbox"/>	B <input type="checkbox"/>		
Boric Acid Condensate Tank	A <input checked="" type="checkbox"/>	B <input type="checkbox"/>	C <input type="checkbox"/>	D <input type="checkbox"/>
Laundry Tank	A <input type="checkbox"/>	B <input type="checkbox"/>		
Waste Tank	A <input type="checkbox"/>	B <input type="checkbox"/>		
ACCW Basin	A <input type="checkbox"/>	B <input type="checkbox"/>		
SGBD to Circ Water	#1 <input type="checkbox"/>	#2 <input type="checkbox"/>		

Date /Time Isolated Yesterday Tank Volume 94 %
 Date / Time Placed on Recirc Yesterday
 # Circulating Pumps Running 3 # Circulating Pumps Available 3

Waterbox B2 or C1 must be in Operation SAT Unsat

Rad waste Treatment System used YES No

Action Statements Affecting Release NONE

3/21/08 Time / Date B. Tidoe Operations

CHEMISTRY

Tank Volume

- Verified recirculation requirements have been satisfied prior to sampling for environmental analysis
- Recirculation time following tank neutralization has been satisfied prior to sampling for pH (if applicable)
- Verified all required environmental analysis parameters are within specifications (analysis results attached)
- Calculated EPA Maximum Discharge Rate:

$$\text{EPA Maximum Discharge Rate} = \frac{(0.2 \text{ mg/L}) \times (750,000 \text{ Circ Water Flow})}{(261 \text{ mg/L Boron Conc})} = 575 \text{ gpm}$$

1 Pump = 250,000 gpm 3 Pumps = 750,000 gpm
 2 Pumps = 500,000 gpm 4 Pumps = 1,000,000 gpm

Maximum Discharge Rate 50 gpm
 (Lower EPS Max Discharge rate or LRP Max Waste Flow)

Chem Tech 1
 Chemistry

LB2008-010
 Release Permit Number

Approved by : Oper A. Shuns
 Operations

DETERMINE PROTECTIVE ACTION RECOMMENDATIONS
JPM A9 Exam Submittal Rev 1



JPM A9

Site W3 **Job** SRO **System/Duty Area** EPP **Mode** EMERG **Number**

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

EP-002-052, Protective Action Guidelines, Rev. 20
EP-002-010, Notifications and Communications

NRC KA Number

G-2.4.44 RO: 2.1, SRO: 4.0

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. A LOCA has occurred with fuel failure.
2. A General Emergency was declared and the following initial GE PARs with a wind direction of 65 degrees were sent to the appropriate agencies:
 - 0 - 2 Mile Response - Evacuate Areas A1, B1, C1, D1
 - 2 - 5 Mile Response Area - Evacuate Areas downwind, C2
 - 5 - 10 Mile Response Area – Shelter all remaining areas inside 10 mile radius
3. An offsite release is currently in progress.

The following current plant data is related to the release:

	<u>Projected Dose Values</u>	<u>Meteorological Data</u>
0 - 2 Mile Response Area:	TEDE: 3.3 Rem CDE Thyroid: 8.45 Rem	10 Meter Wind 5.6 m/s Speed:
2 - 5 Mile Response Area:	TEDE: 1.26 Rem CDE Thyroid: 4.88 Rem	Wind Direction: From 45 degrees
5 - 10 Mile Response Area:	TEDE: 0.725 Rem CDE Thyroid: 2.7 Rem	Delta T: (+) 1.9

INITIATING CUE

As the Emergency Coordinator you are directed to assess current plant conditions and update the PARs in accordance with EP-002-052, Protective Action Guidelines. Document the updated PARs on the State Notification form step #5.

TERMINATING CUE

PARs determined based on data provided.

STANDARD

PARs determined based on plant conditions and data provided.

TOOLS

EP-002-010, Notifications and Communications, State Notification form

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Inappropriate PARs

HUMAN INTERFACES

None

SKILLS / KNOWLEDGES

Ability to determine affected areas and appropriate PARs

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

KEY

Perform EP-002-052 and document on Att. 7.2. Critical steps are denoted by **CRIT**.

START TIME _____

1. When a release is occurring or the potential for a release exists, then continuously evaluate the need for Protective Action Recommendations (PARs) using Attachment 7.2

CUES: None

STANDARDS: 1. Examinee selects Attachment 7.2 to evaluate PARs for release in progress.

SAT _____ **UNSAT** _____

2. Obtain the Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent (CDE) thyroid dose commitments calculated in accordance with EP-002-050 or EP-002-051 and complete the appropriate blanks at the top of each section of Attachment 7.2. **CRIT**

CUES: Cues contained in JPM Initial Conditions

STANDARDS: 1. Examinee enters TEDE and CDE values for 0- 2 Mile, 2 - 5 Mile, and 5 - 10 Mile Response Areas on Att. 7.2.

NOTE: Examinee must convert values from Rem to mRem.

SAT _____ **UNSAT** _____

3. Answer the questions in the decision boxes for each section of the worksheet to determine the PARs required for the 0 - 2 mile, 2 - 5 mile and 5 - 10 mile areas and check the appropriate box at the bottom of the worksheet. **CRIT**

CUES: None

STANDARDS: 1. Examinee determines PARs based on dose as follows:

- 0 - 2 Mile Response - Evacuate Areas A1, B1, C1, D1
- 2 - 5 Mile Response Area - Evacuate Areas downwind
- 5 - 10 Mile Response Area - No Protective Action Recommendations

SAT _____ **UNSAT** _____

4. Obtain the direction from which the wind is blowing and determine the affected protective response areas using Attachment 7.3. Enter the affected protective response areas in the blanks provided. **CRIT**

CUES: Cues contained in JPM Initial Conditions

STANDARDS: 1. Examinee determines the following affected protective response areas:

- 0 - 2 Mile Response - A1, B1, C1, D1
- 2 - 5 Mile Response Area - C2,D2
- 5 - 10 Mile Response Area - None

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5. Compares PARs based on dose to PARs required for General Emergency to determine need for modifications

CRIT

CUES: Cues contained in procedure

STANDARDS: Determines that initial PARs based on General Emergency still apply and an additional downwind area now needs to be included due to the wind shift . PARs are :

- 0 - 2 Mile Response - Evacuate Areas A1, B1, C1, D1
- 2 - 5 Mile Response Area - Evacuate Areas downwind, C2, D2
- 5 - 10 Mile Response Area – Shelter all remaining areas inside 10 mile radius

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. A LOCA has occurred with fuel failure.
2. A General Emergency was declared and the following initial GE PARs with a wind direction of 65 degrees were sent to the appropriate agencies:
 - 0 - 2 Mile Response - Evacuate Areas A1, B1, C1, D1
 - 2 - 5 Mile Response Area - Evacuate Areas downwind, C2
 - 5 - 10 Mile Response Area – Shelter all remaining areas inside 10 mile radius
3. An offsite release is currently in progress.

The following current plant data is related to the release:

	<u>Projected Dose Values</u>	<u>Meteorological Data</u>
0 - 2 Mile Response Area:	TEDE: 3.3 Rem CDE Thyroid: 8.45 Rem	10 Meter Wind 5.6 m/s Speed:
2 - 5 Mile Response Area:	TEDE: 1.26 Rem CDE Thyroid: 4.88 Rem	Wind Direction: From 45 degrees
5 - 10 Mile Response Area:	TEDE: 0.725 Rem CDE Thyroid: 2.7 Rem	Delta T: (+) 1.9

INITIATING CUE

As the Emergency Coordinator you are directed to assess current plant conditions and update the PARs in accordance with EP-002-052, Protective Action Guidelines. Document the updated PARs on the State Notification form step #5.

Waterford 3 Job Performance Measure

KEY

Emergency Plan Implementing Procedure

EP-002-052

Protective Action Guidelines

Revision 020

5.3 Evaluation of Dose Projection Information

NOTE

Although protective action recommendations are generally made based on the dose avoided (future dose projection or anticipated dose), integrated dose should also be considered for protective action decisions in the TSC and EGF. The methodology outlined in this procedure only yields projected dose results. To consider integrated dose, the TSC Dose Assessment Coordinator or EGF Field Team Controller determines the appropriate response (simple addition of dose results at various times, etc.).

Example: A release of unknown duration has been occurring for 3 hours with each dose assessment performed for a 2 hour projection of approximately 360 mrem/hr. TEDE dose rate (720 mrem projected 2 hour dose each time). Protective action recommendations should be considered because the integrated dose (3 hours x 360 mrem/hr = 1080 mrem) is greater than the EPA PAG of 1000 mrem.

NOTE

Steps 5.3.1 through 5.3.3 may be used as guidance and are not required to be performed as written.

- 5.3.1 Obtain the Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent (CDE) thyroid dose commitments calculated in accordance with EP-002-050 or EP-002-051 and complete the appropriate blanks at the top of each section of Attachment 7.2.
- 5.3.2 Answer the questions in the decision boxes for each section of the worksheet to determine the PARs required for the 0-2 mile, 2-5 mile and 5-10 mile areas and check the appropriate box at the bottom of the worksheet.

NOTE

Protective Action Recommendations are made for "Protective Response Areas". "Affected Compass Sectors" are also needed to complete Line 8B of the Notification Message Form. Both of these parameters are obtained from Attachment 7.3.

- 5.3.3 Obtain the direction from which the wind is blowing and determine the affected protective response areas using Attachment 7.3. Enter the affected protective response areas in the blanks provided.
- 5.3.4 Continue to assess the need to adjust the PARs as conditions change.

Waterford 3 Job Performance Measure

KEY

Emergency Plan Implementing Procedure

EP-000-000

Protective Action Guidelines

Revision 000

6.4 P&Rs Beyond the Plume Emergency Planning Zone (EPZ)

6.4.1 If the 10 mile TBDE dose projection is greater than or equal to 1,000 mrem or the 10 mile CDE thyroid dose projection is greater than or equal to 5,000 mrem, then P&Rs beyond the Plume EPZ are required.

6.4.2 Use Affected Complex Sectors (A, B, C, etc.) and downwind distance for P&Rs beyond the Plume EPZ. Example: "Exclude complex sectors B, C, and D from 10 to 15 miles."

6.4.3 Coordinate these P&Rs with LDECO personnel.

6.4.3.1 LDECO takes action for P&Rs beyond the Plume EPZ.

6.4.4 Report P&Rs beyond the Plume EPZ in section 6 of the Notification Message Form.

Waterford 3 Job Performance Measure Key

USE ATT. 7.1 FOR INITIAL GENERAL EMERGENCY CLASSIFICATION RECOMMENDATIONS

EVALUATION PERFORMED BY: _____ DATE: _____ TIME: _____

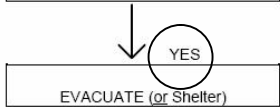
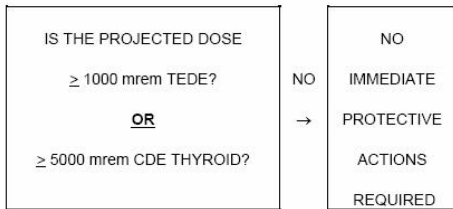
(COMPLETE SECTIONS A, B & C EACH TIME AN EVALUATION IS PERFORMED.)

A. 0-2 MILE RESPONSE AREA

PROJECTED DOSE AT THE EAB

TEDE = 3300 mrem

CDE THYROID = 8450 mrem



0-2 MILE RECOMMENDATION:

NO PROTECTIVE ACTIONS REQUIRED

EVACUATE AREAS A1, B1, C1, D1

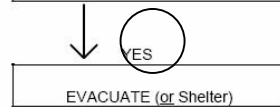
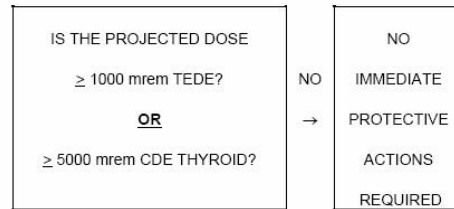
SHELTER AREAS _____

B. 2-5 MILE RESPONSE AREA

PROJECTED DOSE AT 2 MILES

TEDE = 1260 mrem

CDE THYROID = 4880 mrem



2-5 MILE RECOMMENDATION: (See NOTE 1)

NO PROTECTIVE ACTIONS REQUIRED

EVACUATE AREAS _____

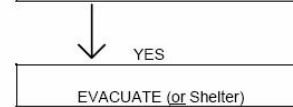
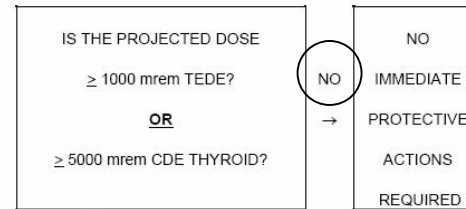
SHELTER AREAS C2, D2

C. 5-10 MILE RESPONSE AREA

PROJECTED DOSE AT 5 MILES

TEDE = 720 mrem

CDE THYROID = 2700 mrem



5-10 MILE RECOMMENDATION: (See NOTE 1)

NO PROTECTIVE ACTIONS REQUIRED

EVACUATE AREAS _____

SHELTER AREAS All remaining areas in EPZ

NOTE 1: DETERMINE THE APPROPRIATE PROTECTIVE RESPONSE AREAS BY USING ATTACHMENT 7.3.

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. A LOCA has occurred with fuel failure.
2. A General Emergency was declared and the following initial GE PARs with a wind direction of 65 degrees were sent to the appropriate agencies:
 - 0 - 2 Mile Response - Evacuate Areas A1, B1, C1, D1
 - 2 - 5 Mile Response Area - Evacuate Areas downwind, C2
 - 5 - 10 Mile Response Area – Shelter all remaining areas inside 10 mile radius
3. An offsite release is currently in progress.

The following current plant data is related to the release:

	<u>Projected Dose Values</u>	<u>Meteorological</u>
		<u>Data</u>
0 - 2 Mile Response Area:	TEDE: 3.3 Rem CDE Thyroid: 8.45 Rem	10 Meter Wind Speed: 5.6 m/s
2 - 5 Mile Response Area:	TEDE: 1.26 Rem CDE Thyroid: 4.88 Rem	Wind Direction: From 45 degrees
5 - 10 Mile Response Area:	TEDE: 0.725 Rem CDE Thyroid: 2.7 Rem	Delta T: (+) 1.9

INITIATING CUE

As the Emergency Coordinator you are directed to assess current plant conditions and update the PARs in accordance with EP-002-052, Protective Action Guidelines. Document the updated PARs on the State Notification form step #5.

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

NOTIFICATION MESSAGE FORM (TYPICAL)

*1. THIS IS GRAND GULF WATERFORD 3 RIVER BEND WITH MESSAGE NUMBER F- _____
(OHL CODE NO.) _____

*2. A. _____ / _____ B. COMM: _____ C. TEL NO. _____
(TIME/DATE) (NAME)

*3. **EMERGENCY CLASSIFICATION:**
A. NOTIFICATION OF UNUSUAL EVENT C. SITE AREA EMERGENCY E. TERMINATED
B. ALERT D. GENERAL EMERGENCY

*4. CURRENT EMERGENCY CLASSIFICATION DECLARATION/TERMINATION Time/Date: _____ / _____

*5. **RECOMMENDED PROTECTIVE ACTIONS:**
A. No Protective Actions Recommended At This Time (Go to Item 6).
B. EVACUATE _____
 SHELTER _____

*6. INCIDENT DESCRIPTION/UPDATE/COMMENTS: _____

*7. REACTOR SHUT DOWN? NO YES Time/Date: _____ / _____

*8. **METEOROLOGICAL DATA:**
A. Wind Direction FROM _____ Degrees at _____ MPH
B. Sectors Affected (A-R): _____
C. Stability Class (A-G): _____
D. Precipitation: None Rain Sleet Snow Hail Other _____

*9. **RELEASE INFORMATION:**
A. No Release (Go to Item 13) C. A RELEASE OCCURRED BUT STOPPED; Duration _____ hrs.
Release Stopped at _____ hrs.
B. A RELEASE IS OCCURRING: Expected Duration _____ hrs.
Release Started at _____ hrs.

*10. **TYPE OF RELEASE:**
A. Radioactive Gases B. Radioactive Airborne Particulates C. Radioactive Liquids

*11. **RELEASE RATE:**
A. NOBLE GASES _____ Ci/s B. IODINES _____ Ci/s

*12. **ESTIMATE OF PROJECTED OFFSITE DOSE:**
A. Projections for _____ hours based on: Field Data Plant Data Default Data
B. (TEDE) WB DOSE COMMITMENT (mRem) C. (CDE) THYROID DOSE COMMITMENT (mRem)
Site Boundary _____ 5 miles _____ Site Boundary _____ 5 miles _____
2 miles _____ 10 miles _____ 2 miles _____ 10 miles _____

*13. MESSAGE APPROVED BY: _____ TITLE: _____

Facility:	WATERFORD 3	Date of Examination:	3/24/2008
Exam Level (circle one):	RO	Operating Test No.:	1
Control Room Systems [@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
	System / JPM Title	Type Code*	Safety Function
S1	003-Start A Reactor Coolant Pump (Alternate Path)	P,A,D,L,S	4-P
S2	015-Perform NI Startup Channel Functional Test (RO ONLY)	S,D,L	7
S3	064-Start and Load B EDG From CR	S,M,A	6
S4	APE068-Perform BOP Immediate Actions On CR Evacuation	S,M,A	8
S5	004-Blended Makeup To VCT Using Manual Mode	S,D	1
S6	026-Align LPSI Pump To Replace Containment Spray Pump	S,D,L	5
S7	013-Verify SIAS Automatic Actions -Train A	S, N, L, A	2
S8	071-Respond To Waste Gas Discharge High Activity	N,S,A	9
In-Plant Systems [@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P1	008-Restore Power to Dry Cooling Tower Sump Pumps During Control Room Evacuation and Loss of Offsite power	R,L,D,E	8
P2	061-Reset EFW Pump AB Mechanical Overspeed During CR Evacuation With Fire	L,D,E	4-S
P3	062-Transfer AB SUPS From Alternate To Normal Power Supply	N	6
<p>@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>			
	* Type Codes	Criteria for RO / SRO-I / SRO-U	
	(A)lternate path	4-6 / 4-6 / 2-3	
	(C)ontrol room		
	(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
	(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
	(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1	
	(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
	(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
	(R)CA	≥ 1 / ≥ 1 / ≥ 1	
	(S)imulator		

Facility:	WATERFORD 3	Date of Examination:	3/24/2008
Exam Level (circle one):	SRO(I)	Operating Test No.:	1
Control Room Systems [@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title		Type Code*	Safety Function
S1	003-Start A Reactor Coolant Pump (Alternate Path)	P,A,D,L,S	4-P
S3	064-Start and Load B EDG From CR	S,M,A	6
S4	APE068-Perform BOP Immediate Actions On CR Evacuation	S,M,A	8
S5	004-Blended Makeup To VCT Using Manual Mode	S,D	1
S6	026-Align LPSI Pump To Replace Containment Spray Pump	S,D,L	5
S7	013-Verify SIAS Automatic Actions -Train A	S, N, L, A	2
S8	071-Respond To Waste Gas Discharge High Activity	N,S,A	9
In-Plant Systems [@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P1	008-Restore Power to Dry Cooling Tower Sump Pumps During Control Room Evacuation and Loss of Offsite power	R,L,D,E	8
P2	061-Reset EFW Pump AB Mechanical Overspeed During CR Evacuation With Fire	L,D,E	4-S
P3	062-Transfer AB SUPS From Alternate To Normal Power Supply	N	6
<p>@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>			
* Type Codes		Criteria for RO / SRO-I / SRO-U	
(A)lternate path		4-6 / 4-6 / 2-3	
(C)ontrol room			
(D)irect from bank		≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant		≥ 1 / ≥ 1 / ≥ 1	
(L)ow-Power / Shutdown		≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)		≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams		≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA		≥ 1 / ≥ 1 / ≥ 1	
(S)imulator			

Facility:	WATERFORD 3	Date of Examination:	3/24/2008
Exam Level (circle one):	SRO (U)	Operating Test No.:	1
Control Room Systems [@] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title		Type Code*	Safety Function
S1	003-Start A Reactor Coolant Pump (Alternate Path)	P,A,D,L,S	4-P
S7.	013-Verify SIAS Automatic Actions -Train A	S, N, L, A	2
S8	071-Respond To Waste Gas Discharge High Activity	N,S,A	9
In-Plant Systems [@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P1	008-Restore Power to Dry Cooling Tower Sump Pumps During Control Room Evacuation and Loss of Offsite power	R,L,D,E	8
P2	061-Reset EFW Pump AB Mechanical Overspeed During CR Evacuation With Fire	L,D,E	4-S
<p>@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.</p>			
* Type Codes		Criteria for RO / SRO-I / SRO-U	
(A)lternate path		4-6 / 4-6 / 2-3	
(C)ontrol room			
(D)irect from bank		≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant		≥ 1 / ≥ 1 / ≥ 1	
(L)ow-Power / Shutdown		≥ 1 / ≥ 1 / ≥ 1	
(N)ew or (M)odified from bank including 1(A)		≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams		≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA		≥ 1 / ≥ 1 / ≥ 1	
(S)imulator			

START A REACTOR COOLANT PUMP
JPM S1 Exam Submittal Rev 1



JPM S1

Site W3 **Job** RO **System/Duty Area** RCP **Mode** NORM **Number** 1

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** YES

References

OP-001-002, Reactor Coolant Pump Operation Rev 015

NRC KA Number

4.2-015/17-AA1.23 RO: 3.1, SRO 3.1

Evaluation Methods

PERFORM

Trainee

Evaluator

Observer

Date

Satisfactory

Unsatisfactory

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3, RCS pressure is 2250 psia, Tave is 545°F.
2. RCP's 1A, 1B, and 2B are running.
3. All OP-001-002 Initial Conditions are met.

INITIATING CUE

The CRS directs you to start RCP 2A in accordance with OP-001-002, Reactor Coolant Pump Operation.

TERMINATING CUE

1. Desired RCP running
2. **(ALT)** RCP tripped.

STANDARD

1. Desired RCP running
2. **(ALT)** RCP tripped.

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Damage to Reactor Coolant Pump

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC 99 with 3 RCPs running

Clear PMC alarm screen

Setup: Ensure RCP 2A vibration H-A8 annunciators cleared, HC-8 is expected

Keys:

- HI-SG 165-168.
- CPC Trip B/P 153, 156, 159, 162

Laminate/Sheath OP-001-002 att 11.1

Insert Malfunction RC07C after starting RCP 2A

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. If at normal RCS Pressure, then verify CBO of 1.2 GPM to 1.8 GPM by monitoring applicable RCP mimic or applicable Plant Monitoring Computer (PMC) point in accordance with Attachment 11.2. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies CBO of 1.2 - 1.8 gpm on RCP mimic or PMC point per Attachment 11.2.

SAT _____ **UNSAT** _____

2. Verify proper upper oil reservoir level of 65% to 90% on applicable RCP mimic or applicable PMC point per Attachment 11.2, or by using local level indication. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies RCP oil reservoir level on RCP mimic or PMC point per Attachment 11.2.

SAT _____ **UNSAT** _____

3. Verify proper lower oil reservoir level of 65% to 90% on applicable RCP mimic or applicable PMC point in accordance with Attachment 11.2, or by using local level indication. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies RCP oil reservoir level on RCP mimic or PMC point per Attachment 11.2.

SAT _____ **UNSAT** _____

4. Verify CCW flow at CP-2 to Seal Water Cooler for RCP 2A by checking associated inlet and outlet valves indicate Open. (one common switch)

- CC-666A, RCP 2A SEAL COOLER CCW INLET ISOLATION
- CC-680A, RCP 2A SEAL COOLER CCW OUTLET ISOLATION

CUES: Simulator provides cues

NOTE: If Examinee requests check of CCW flow on local indicators, inform Examinee that SM does not require local verification.

STANDARDS: 1. Examinee verifies CC-666A and CC-680A control switch on CP-2 indicates Red light lit and Green light out.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5. Test all annunciators on panels CP-2 and CP-18 and verify all Reactor Coolant Pump alarms illuminate.

CUES: Simulator provides cues

STANDARDS: 1. Examinee tests and verifies alarms on panels CP-2 and CP-18 illuminate.

SAT _____ **UNSAT** _____

6. Verify RCP 2A High Vibration alarm is clear:

- REACTOR CLG PUMP 2A HI VIBRATION (A-8, Panel H)

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies RCP 2A vibration annunciator A-8 Cabinet H is clear.

SAT _____ **UNSAT** _____

7. Start RCP 2A Oil Lift Pump A or B for RCP to be started by placing associated control switch at CP-2 to ON. **CRIT**

Start time: _____

CUES: Simulator provides cues

STANDARDS:

1. Examinee locates and places RCP 2A Oil Lift Pump A or B control switch to ON.
2. Examinee verifies RCP 2A Oil Lift Pump breaker indication Red light lit and Green light out.

SAT _____ **UNSAT** _____

8. Verify proper High Pressure Oil Lift System pressure for RCP 2A by observing that applicable annunciator is clear:

- RCP 2A BRNG LIFT OIL PRESS LO (D-7, Panel H)

CUES: Simulator provides cues

NOTE: Annunciator B7 may come in and clear

STANDARDS: 1. Examinee verifies annunciator D-7 Cabinet H is clear.

Note: B-7, RCP 2A BRNG LIFT OIL PUMP A TROUBLE, may come in and clear.

SAT _____ **UNSAT** _____

9. Verify RCS pressure and temperature are within limits of attachment 11.1.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies RCS pressure and temperature limits are within limits of Attachment 11.1.

NOTE: Examinee may refer to operator aid posted on MCB.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

10. Verify a < 100°F differential temperature (ΔT) between RCS Cold Leg (T_c) Temperature and Steam Generator Water Temperature prior to starting the first RCP on each RCS loop (1A or 1B on RCS Loop 1, 2A or 2B on RCS Loop 2) to provide low temperature overprotection and reactivity protection.

CUES: Simulator provides cues

STANDARDS: 1. Examinee determines step does not apply.

SAT _____ **UNSAT** _____

11. Refer to Attachment 11.3 while performing Steps 6.1.16 through 6.1.26.

CUES: Procedure provides cues

STANDARDS: 1. Examinee locates and refers to Attachment 11.3 during performance of subsequent steps.

SAT _____ **UNSAT** _____

12. Verify the associated RCP Oil Lift pump operating at normal pressure for minimum of two minutes prior to starting RCP 2A.

CUES: Simulator provides cues

STANDARDS: 1. Examinee determines RCP Oil Lift pump at normal pressure by verifying annunciator D-7 Cabinet H is clear.

Note: Applicant should check the PMC alarm screen for oil lift pump start time.

SAT _____ **UNSAT** _____

13. Notify the SM/CRS prior to starting RCP 2A.

CUES: When notified acknowledge starting RCP 2A.

STANDARDS: 1. Examinee requests and receives permission to start RCP 2A.

SAT _____ **UNSAT** _____

14. Place and hold RCP 2A control switch to START until pump starts.

CRIT

CUES: Simulator provides cues

STANDARDS:

1. Examinee places and holds RCP 2A control switch in Start position.
2. Examinee verifies RCP 2A breaker indication Red light lit and Green light out.
3. Examinee verifies RCP 2A motor current indication pegs high and returns to ~ 600 amps.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

15. If excessively high vibration, unusual noises, or sharp rates of bearing temperature rise occur for RCP 2A, then secure RCP 2A.

CRIT

CUES: Simulator provides cues

NOTE: Insert malfunction RC07C after RCP 2A parameters stabilize.

NOTE: Examinee may respond to annunciator A-8 Cabinet H, RCP 2A Vibration Hi and attempt to reset high vibration.

NOTE: If Examinee recommends securing RCP based on high vibration indication, then Cue that CRS directs taking appropriate action.

STANDARDS:

1. Examinee places RCP 2A control switch to Stop.
2. Examinee verifies RCP 2A breaker indication Green light lit and Red light out.
3. Examinee verifies RCP 2A motor amps drop to zero.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3, RCS pressure is 2250 psia, Tave is 545°F.
2. RCP's 1A, 1B, and 2B are running.
3. All OP-001-002 Initial Conditions are met.

INITIATING CUE

The CRS directs you to start RCP 2A in accordance with OP-001-002, Reactor Coolant Pump Operation.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Reactor Coolant Pump Operation

GP-001-002
Revision 15

6.0 NORMAL OPERATIONS

6.1 STARTING A REACTOR COOLANT PUMP

NOTE

The following parameters are indicative of RCP seal failure:

- Any seal pressure equal to RCS pressure
- Two or more seal pressures approximately equal to each other
- Controlled Bleedoff flow greater than 2.0 GPM
- Inability to maintain Seal CW Cooler Return Temperature <145°F

- 6.1.1 If one or more seals fail, then refer to GP-901-130, Reactor Coolant Pump Malfunction.
- 6.1.2 If a diluted packet of RCS water is suspected in the RCS, then verify GP-901-104, Inadvertent Positive Reactivity Addition, has been performed.
- 6.1.3 If at normal RCS Pressure, then verify CBO of 1.2 GPM to 1.8 GPM flow by monitoring applicable RCP mimic or applicable Plant Monitoring Computer (PMC) point in accordance with Attachment 11.2.
- 6.1.4 If not at normal RCS Pressure, then verify approximate CBO flow in accordance with Attachment 11.4.
- 6.1.5 Verify proper upper oil reservoir level of 65% to 80% on applicable RCP mimic or applicable PMC point per Attachment 11.2, or by using local level indication.
- 6.1.6 Verify proper lower oil reservoir level of 65% to 80% on applicable RCP mimic or applicable PMC point in accordance with Attachment 11.2, or by using local level indication.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Reactor Coolant Pump Operation

OP-001-002
Revision 15

- 6.1.7 Verify CCW flow at CP-2 to Seal Water Cooler for applicable RCP (1A, 1B, 2A, or 2B) by checking associated inlet and outlet valves indicate Open:
- CC-6651A RCP 1A SEAL COOLER CCW INLET ISOLATION
 - CC-679A RCP 1A SEAL COOLER CCW OUTLET ISOLATION
 - CC-6651B RCP 1B SEAL COOLER CCW INLET ISOLATION
 - CC-679B RCP 1B SEAL COOLER CCW OUTLET ISOLATION
 - CC-666A RCP 2A SEAL COOLER CCW INLET ISOLATION
 - CC-680A RCP 2A SEAL COOLER CCW OUTLET ISOLATION
 - CC-666B RCP 2B SEAL COOLER CCW INLET ISOLATION
 - CC-680B RCP 2B SEAL COOLER CCW OUTLET ISOLATION
- 6.1.7.1 At SM/CRS discretion, verify CCW flow on local indicators.
- 6.1.8 Test all annunciators on panels CP-2 and CP-18 and verify all Reactor Coolant Pump alarms illuminate.
- 6.1.9 Verify applicable RCP (1A, 1B, 2A, or 2B) High Vibration alarm is clear:
- REACTOR CLG PUMP 1A HI VIBRATION (A-4, Panel H)
 - REACTOR CLG PUMP 1B HI VIBRATION (A-6, Panel H)
 - REACTOR CLG PUMP 2A HI VIBRATION (A-8, Panel H)
 - REACTOR CLG PUMP 2B HI VIBRATION (A-10, Panel H)
- 6.1.10 Start RCP Oil Lift Pump A or B for RCP to be started (1A, 1B, 2A, or 2B) by placing associated control switch at CP-2 to ON. [P-15101]
- 6.1.11 If a second RCP lift oil pump is required to clear RCP Brg Lift Oil Press Lo annunciators on CP-2, then notify the Operations Manager and Duty Plant Manager prior to starting RCP 1A (1B, 2A, 2B).
- 6.1.12 Verify proper High Pressure Oil Lift System pressure for RCP 1A (1B, 2A, 2B) by observing that applicable annunciator is clear:
- RCP 1A BRG LIFT OIL PRESS LO (D-3, Panel H)
 - RCP 1B BRG LIFT OIL PRESS LO (D-5, Panel H)
 - RCP 2A BRG LIFT OIL PRESS LO (D-7, Panel H)
 - RCP 2B BRG LIFT OIL PRESS LO (D-9, Panel H)
- 6.1.13 Verify RCS pressure and temperature are within limits of Attachment 11.1.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Reactor Coolant Pump Operation

GP-001-002
Revision 15

CAUTION

LOW TEMPERATURE OVERPRESSURE PROTECTION AND REACTIVITY PROTECTION SHALL BE PROVIDED BY ESTABLISHING A $<100^{\circ}\text{F}$ ΔT BETWEEN RCS COLD LEG (T_c) TEMPERATURE AND SSG WATER TEMPERATURE PRIOR TO STARTING THE FIRST RCP ON EACH LOOP. REACTIVITY EXCURSION CONCERNS EXIST ON RCP START IN AN IDLE LOOP IF SSG WATER TEMPERATURE IS $>100^{\circ}\text{F}$ COLDER THAN LOOP T_c (WORST CASE NEGATIVE ΔT). ALSO, LOW TEMPERATURE OVERPRESSURE PROTECTION CONCERNS EXIST IF SSG WATER TEMPERATURE IS $>100^{\circ}\text{F}$ HOTTER THAN LOOP T_c WHEN LOOP T_c IS $\leq 272^{\circ}\text{F}$. FOR CONSERVATION AND SIMPLICITY, AN RCP START LIMIT OF 100°F ΔT BETWEEN SSG WATER TEMPERATURE AND LOOP T_c IS ESTABLISHED.

6.1.14 Verify a $<100^{\circ}\text{F}$ differential temperature (ΔT) between RCS Cold Leg (T_c) Temperature and Steam Generator Water Temperature prior to starting the first RCP on each RCS Loop (1A or 1B on RCS Loop 1, 2A or 2B on RCS Loop2) to provide low temperature overpressure and reactivity protection.

6.1.15 Refer to Attachment 11.3 while performing Steps 6.1.16 through 6.1.26.

CAUTION

- (1) RCPS SHALL NOT BE STARTED SIMULTANEOUSLY. PLANT PARAMETERS SHOULD BE ALLOWED TO STABILIZE PRIOR TO STARTING SUBSEQUENT PUMPS.
- (2) STARTING THE FIRST RCP IN A REACTOR COOLANT LOOP WITH THE EXISTENCE OF A DILUTED POCKET OF RCS WATER COULD CAUSE A BORON DILUTION EVENT RESULTING IN A REACTIVITY EXCURSION.

6.1.16 Verify the associated RCP Oil Lilt Pump operating at normal pressure for a minimum of two minutes prior to starting RCP 1A (1B, 2A, 2B).

6.1.17 Notify the SMOCS prior to starting RCP 1A (1B, 2A, 2B).

NOTE

When starting a third RCP during plant startup, upper thrust bearing temperatures may exceed alarm limits on the single operating pump in a loop until the fourth RCP is started. [RCS SPS 2005 02/15]

6.1.18 Place and Hold selected RCP (1A, 1B, 2A, or 2B) control switch to START until pump starts.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure

OP-001-002

Reactor Coolant Pump Operation

Revision 15

- 6.1.19 If excessively high vibration, unusual noises, or sharp rates of bearing temperature rise occur for RCP 1A (1B, 2A, 2B), then secure RCP 1A (1B, 2A, 2B).
- 6.1.20 Verify CCW flow, on CP-2, to Lube Oil Cooler, Air Cooler and Lower Bearing Cooler for applicable RCP (1A, 1B, 2A, or 2B), by verifying associated valve Open: [P-15100]
- CC-661A RCP 1A MOTOR COOLERS CCW INLET ISOLATION
 - CC-661B RCP 1B MOTOR COOLERS CCW INLET ISOLATION
 - CC-660A RCP 2A MOTOR COOLERS CCW INLET ISOLATION
 - CC-660B RCP 2B MOTOR COOLERS CCW INLET ISOLATION
- 6.1.21 Verify associated RCP (1A, 1B, 2A, or 2B) alarms clear insuring CCW to RCP Motor Coolers flow:
- RCP 1A CCW FLOW LOST (A-1, Panel SA)
 - RCP 1A CCW FLOW LOST (A-6, Panel SB)
 - RCP 1B CCW FLOW LOST (A-2, Panel SA)
 - RCP 1B CCW FLOW LOST (A-7, Panel SB)
 - RCP 2A CCW FLOW LOST (A-3, Panel SA)
 - RCP 2A CCW FLOW LOST (A-8, Panel SB)
 - RCP 2B CCW FLOW LOST (A-4, Panel SA)
 - RCP 2B CCW FLOW LOST (A-9, Panel SB)
- 6.1.22 Verify proper Low Pressure Lube Oil System pressure by observing that annunciator is clear for associated RCP (1A, 1B, 2A, or 2B):
- RCP 1A LUBE OIL PRESSURE LO (E-3, Panel H)
 - RCP 1B LUBE OIL PRESSURE LO (E-5, Panel H)
 - RCP 2A LUBE OIL PRESSURE LO (E-7, Panel H)
 - RCP 2B LUBE OIL PRESSURE LO (E-9, Panel H)
- 6.1.23 If RCP 1A (1B, 2A, 2B) fails to Start or trips during an attempted start, then refer to section 3.2, Limitations, for subsequent starts.
- 6.1.24 After RCP 1A (1B, 2A, 2B) has been operating for approximately 30 seconds, then place control switches for both associated RCP Oil Lift Pumps to AUTO. [P-15101]
- 6.1.25 If RCP 1A (1B, 2A, 2B) associated Oil Lift Pumps do not Stop, then leave RCP Oil Lift Pumps control switches in AUTO and investigate cause of problem.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Reactor Coolant Pump Operation

OP-001-002
Revision 15

6.1.26 Verify there are no computer alarms associated with the running RCP (1A, 1B, 2A, or 2B) Anti-Reverse Rotation Devices (ARRD's) activated on the associated RCP (1A, 1B, 2A, or 2B) mimic or applicable PMC point in accordance with Attachment 11.2.

6.1.26.1 If any ARRD alarms are activated, then refer to OP-901-130, Reactor Coolant Pump Malfunction, and notify SM:CRS.

6.1.27 The following parameters are indicative of RCP seal degradation at normal operating pressure and temperature. If any of the following parameters are reached, then notify SM:CRS immediately.

- Middle Seal Pressure <1237 PSIG or >1813 PSIG
- Upper Seal Pressure <335 PSIG or >915 PSIG
- Vapor Seal Pressure <28 PSIG or >45 PSIG
- Controlled Bleed Off Temp <135°F or >190°F
- Controlled Bleed Off Flow <1.2 GPM or >1.8 GPM

6.1.27.1 Refer to OP-901-130, Reactor Coolant Pump Malfunction, and inform the System Engineer to evaluate and monitor seal degradation.

6.1.27.2 If RCS is not at normal operating pressure and temperature, then refer to Attachment 11.4 for approximate parameters.

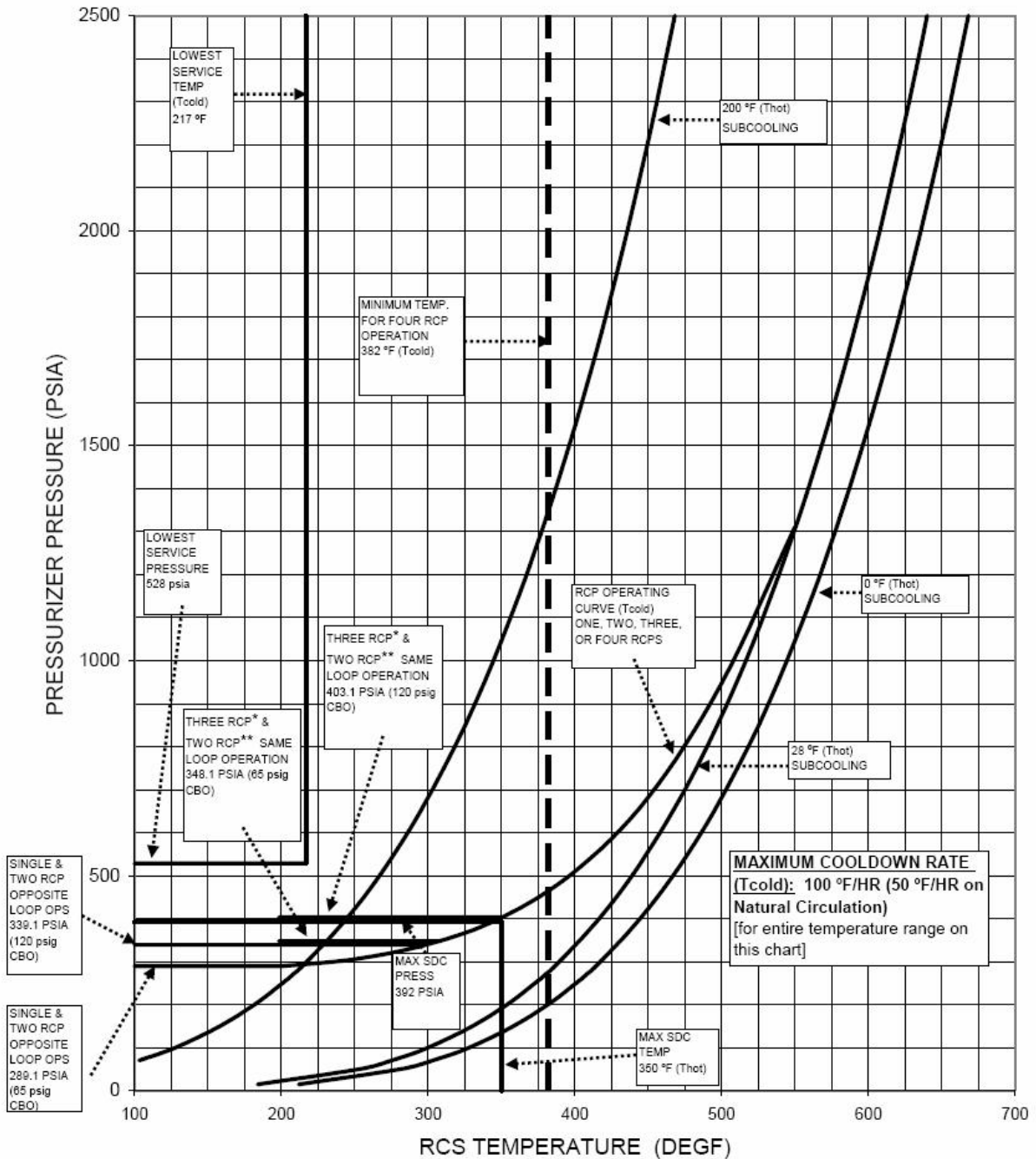
6.1.28 After RCP 1A (1B, 2A, 2B) has been operating for approximately 5 minutes, verify all secured RCPs (1A, 1B, 2A, 2B) are not rotating in the reverse direction by observing zero speed indicated on the computer points listed in Attachment 11.2.

6.1.28.1 If PMC points indicate any RCP is rotating in the reverse direction, then refer to OP-901-130, Reactor Coolant Pump Malfunction, and notify SM:CRS.

**Waterford 3 Job Performance Measure
EXAMINEE HANDOUT**

RCS PRESSURE AND TEMPERATURE LIMITS GRAPH (CONT'D)

(RCS Pressure 0 – 2500 PSIA)



* Not allowed below 199°F and RCP 2A operation not allowed below 347°F.

** Not allowed below 172°F and RCP 2A operation not allowed below 347°F

OP-001-002 Revision 15

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3, RCS pressure is 2250 psia, Tave is 545°F.
2. RCP's 1A, 1B, and 2B are running.
3. All OP-001-002 Initial Conditions are met.

INITIATING CUE

The CRS directs you to start RCP 2A in accordance with OP-001-002, Reactor Coolant Pump Operation.

PERFORM NI STARTUP CHANNEL FUNCTIONAL TEST
JPM S2 Exam Submittal Rev 1



JPM S2

Site W3 **Job** RO **System/Duty Area** NI **Mode** NORM **Number** 1

Revision 1

Approval _____

Estimated Time 25 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-903-101, Startup Channel Functional Test Channel 1 and 2 Rev. 007

NRC KA Number

G-2.1.20 RO: 4.3, SRO: 4.2
3.7-015-A4.02 RO: 3.9, SRO: 3.9

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3
2. The ATC has been informed of alarms, printouts, and indications expected during the Startup Channel Functional test.

INITIATING CUE

The CRS directs you to perform a functional test of Startup Channel 1 in accordance with OP-903-101, Startup Channel Functional Test Channel 1, Section 7.2.

TERMINATING CUE

STANDARD

Range checks satisfactorily completed for Startup Channel 1.

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

HUMAN INTERFACES

CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC 99

Attachment 10.1, STARTUP CHANNEL FUNCTIONAL TEST DATA SHEET completed up to Step 7.2.1.
Laminate Attachment 10.1 for handout

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

Note: This procedure is normally performed with two operators. One operator performs all the switch manipulations and local verifications and the second operator verifies the remote alarms and indications. For this JPM the Examiner will provide cues as the second operator. The alarms that are cued will be verified clear by the Examinee on the restoration and at that time the examiner should have the Examinee locate the remote indicators that were cued.

START TIME _____

1. Momentarily depress local Trouble bistable lamp, verify Trouble bistable lamp is extinguished and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Simulator provides cues

- STANDARDS:** 1. Examinee depresses and verifies Trouble bistable lamp is out.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

2. Place AUDIO COUNT CHANNEL SELECT switch (CP-2) to the channel not being tested. **CRIT**

CUES: Simulator provides cues

- STANDARDS:** 1. Examinee verifies Audio Count Selector Switch to Channel 2.

SAT _____ **UNSAT** _____

3. Place OPERATE/TEST LOW/TEST HIGH switch in TEST LOW and document on Attachment 10.1, Startup Channel Functional Test Data Sheet. **CRIT**

CUES: Simulator provides cues

- STANDARDS:** 1. Examinee places Operate/Test Low/Test High switch in TEST LOW position.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

4. Verify local Trouble bistable lamp is illuminated and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Simulator provides cues

- STANDARDS:** 1. Examinee verifies/acknowledges local Trouble bistable lamp is lit.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5. Verify Control/Startup Channel 1 Trouble annunciator Alarms (M-3, Cabinet H) and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Cue the Examinee that Panel H, M-3 was received.

STANDARDS: 1. Examinee verifies Control/Startup Channel 1 Trouble annunciator alarms.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

6. Record the following Startup Channel 1 indications and document on Attachment 10.1, Startup Channel Functional Test Data Sheet:

- Drawer local counts
- Remote recorder ENI-IJR-0005 (0006)
- Remote meter ENI-IJI-0005 (0006)

CUES: Cue the Examinee that the remote indications are the same as local.

STANDARDS: 1. Examinee records data for local counts and initials step.
2. Examinee records counts from remote recorder & meter, and initials step and Attachment 10.1.

Note: Examinee may initial Att 10.1 after recording all indications.

SAT _____ **UNSAT** _____

7. Place OPERATE/TEST LOW/TEST HIGH switch to TEST-HIGH and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee places OPERATE/TEST LOW/TEST HIGH switch to TEST-HIGH position.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

8. Verify STARTUP CHANNEL 1 NEUTRON FLUX HIGH annunciator Alarms (K-3, Cabinet H) and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Cue the Examinee that Panel H, K-3 was received

STANDARDS: 1. Examinee verifies STARTUP CHANNEL 1 NEUTRON FLUX HIGH annunciator alarms.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

9. Verify RCS Boron Channel 1 Dilution Hi annunciator Alarms (L-3, Cabinet G) and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Cue the Examinee that Panel G, L-3 was received

STANDARDS: 1. Examinee verifies annunciator L-3, Cabinet G alarms.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

10. Record following Startup Channel 1 indications and document on Attachment 10.1, Startup Channel Functional Test Data Sheet:

- Drawer local counts
- Remote recorder ENI-IJR-0005 (0006)
- Remote meter ENI-IJI-0005 (0006)

CUES: Cue the Examinee that the remote indications are the same as local.

STANDARDS: 1. Examinee records data for local counts and initials step.
2. Examinee records counts from remote recorder & meter, and initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

11. Place OPERATE/TEST LOW/TEST HIGH switch in OPERATE and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee places OPERATE/TEST LOW/TEST HIGH switch to OPERATE position.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

12. Momentarily depress local TROUBLE bistable lamp, verify TROUBLE bistable lamp is extinguished and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Simulator provides cues

STANDARDS: 1. Examinee depresses and verifies TROUBLE bistable lamp is out.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

13. Verify CONTROL/STARTUP CHANNEL 1 TROUBLE annunciator (M-3, Cabinet H) is clear and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies annunciator M-3, Cabinet H clears.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

14. Verify STARTUP CHANNEL 1 NEUTRON FLUX HIGH annunciator (K-3, Cabinet H) is clear and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies annunciator K-3, Cabinet H clears.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

15. Verify RCS BORON CHANNEL 1 DILUTION HI annunciator (L-3, Cabinet G) is clear and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies annunciator L-3, Cabinet G clears.
2. Examinee initials step on Attachment 10.1.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3
2. The ATC has been informed of alarms, printouts, and indications expected during the Startup Channel Functional test.

INITIATING CUE

The CRS directs you to perform a functional test of Startup Channel 1 in accordance with OP-903-101, Startup Channel Functional Test Channel 1, Section 7.2.

Waterford 3 Job Performance Measure

KEY

Surveillance Procedure

OP-903-101

Startup Channel Functional Test Startup Channel ___1 and ___2

Revision 7

7.2 RANGE CHECKS

- 7.2.1 Momentarily depress local Trouble bistable lamp, verify Trouble bistable lamp is extinguished and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.2 Place AUDIO COUNT CHANNEL SELECT switch (CP-2) to the channel not being tested.
- 7.2.3 Place OPERATE/TEST LOW/TEST HIGH switch in Test Low and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.4 Verify local Trouble bistable lamp is illuminated and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.5 Verify Control/Startup Channel 1(2) Trouble annunciator Alarms (M-3 (M-4), Cabinet H) and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.6 Record the following Startup Channel 1(2) indications and document on Attachment 10.1, Startup Channel Functional Test Data Sheet:
- Drawer local counts
 - Remote recorder ENI-IJR-0005 (0006)
 - Remote meter ENI-IJI-0005 (0006)
- 7.2.7 Place OPERATE/TEST LOW/TEST HIGH switch to Test-High and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.8 Verify Channel 1(2) Neutron Flux High annunciator Alarms (K-3 (K-4), Cabinet H) and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.9 Verify RCS Boron Channel 1(2) Dilution Hi annunciator Alarms (L-3 (L-4), Cabinet G) and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

Waterford 3 Job Performance Measure

KEY

Surveillance Procedure

Startup Channel Functional Test Startup Channel ___1 and ___2

OP-903-101

Revision 7

- 7.2.10 Record following Startup Channel 1(2) indications and document on Attachment 10.1, Startup Channel Functional Test Data Sheet:
- Drawer local counts
 - Remote recorder ENI-IJR-0005 (0006)
 - Remote meter ENI-IJI-0005 (0006)
- 7.2.11 Place OPERATE/TEST LOW/TEST HIGH switch in Operate and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.12 Momentarily depress local Trouble bistable lamp, verify Trouble bistable lamp is extinguished and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.13 Verify Control/Startup Channel 1 (2) Trouble annunciator (M-3 (M-4), Cabinet H) is clear and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.14 Verify Channel 1 (2) Neutron Flux High annunciator (K-3 (K-4), Cabinet H) is clear and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.
- 7.2.15 Verify RCS Boron Channel 1 (2) Dilution Hi annunciator (L-3 (L-4), Cabinet G) is clear and document on Attachment 10.1, Startup Channel Functional Test Data Sheet.

Waterford 3 Job Performance Measure
Examinee Handout

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3
2. The ATC has been informed of alarms, printouts, and indications expected during the Startup Channel Functional test.

INITIATING CUE

The CRS directs you to perform a functional test of Startup Channel 1 in accordance with OP-903-101, Startup Channel Functional Test Channel 1, Section 7.2.

Waterford 3 Job Performance Measure
Examinee Handout

10.1 STARTUP CHANNEL FUNCTIONAL TEST DATA SHEET

Startup Channel X 1 and 2 (Check Applicable Space)

Permission: Shift Manager / Today / 30 min ago
SMACRS Date/Time

<u>STEP</u>	<u>DESCRIPTION</u>	<u>INITIALS</u>
7.1.1	STARTUP CHANNEL HIGH VOLTAGE TEST Startup HV Low lamp is extinguished.	<u> ABC </u>
7.1.2	Startup HV On lamp is illuminated.	<u> ABC </u>
7.1.3	Startup HV Off lamp is extinguished.	<u> ABC </u>
7.1.4	STARTUP HV X 3 CONTROL HV X 1 switch in Startup HV X 3 .	<u> ABC </u>
7.1.5	Startup High Voltage meter reading: <u> 780 </u> VDC (800 to 800 VDC).	<u> ABC </u>
 <u>RANGE CHECKS</u>		
7.2.1	Local Trouble bistable lamp is extinguished.	<u> </u>
7.2.3	Place OPERATE/TEST LOW/TEST HIGH switch to Test-Low.	<u> </u>
7.2.4	Local Trouble bistable lamp is illuminated.	<u> </u>
7.2.5	Control/Startup Channel 1(2) Trouble alarms (M-3 (M-4), Cabinet H).	<u> </u>
7.2.6	<u>LOCATION</u>	<u>REQUIRED</u>
	Drewer local counts	<u>ACTUAL</u>
	Remote recorder ENI-UR-0005 (0005)	<u> 5 x 10¹ to 2 x 10² CPS </u> CPS <u> </u>
	Remote meter ENI-JJ-0005 (0005)	<u> 5 x 10¹ to 2 x 10² CPS </u> CPS <u> </u>
		<u> 5 x 10¹ to 2 x 10² CPS </u> CPS <u> </u>

Waterford 3 Job Performance Measure
Examinee Handout

10.1 STARTUP CHANNEL FUNCTIONAL TEST DATA SHEET (CONT'D)

Startup Channel X 1 and 2 (Check Applicable Space)

<u>STEP</u>	<u>DESCRIPTION</u>	<u>INITIALS</u>												
RANGE CHECKS (CONT'D)														
7.2.7	Place OPERATE/TEST LOW/TEST HIGH switch to Test-High.	_____												
7.2.8	Channel 1(2) Neutron Flux High alarms (K-3 (K-4), Cabinet H).	_____												
7.2.9	RCS Boron Chnl 1(2) Dilution Hi alarms (L-3 (L-4), Cabinet G).	_____												
7.2.10	<table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;"><u>LOCATION</u></th> <th style="text-align: left; width: 30%;"><u>REQUIRED</u></th> <th style="text-align: left; width: 30%;"><u>ACTUAL</u></th> </tr> </thead> <tbody> <tr> <td>Drawer local counts</td> <td>5×10^4 to 2×10^5 CPS</td> <td>_____ CPS</td> </tr> <tr> <td>Remote recorder ENI-IJR-0005 (0006)</td> <td>5×10^4 to not pegged hi</td> <td>_____ CPS</td> </tr> <tr> <td>Remote meter ENI-IJI-0005 (0006)</td> <td>5×10^4 to not pegged hi</td> <td>_____ CPS</td> </tr> </tbody> </table>	<u>LOCATION</u>	<u>REQUIRED</u>	<u>ACTUAL</u>	Drawer local counts	5×10^4 to 2×10^5 CPS	_____ CPS	Remote recorder ENI-IJR-0005 (0006)	5×10^4 to not pegged hi	_____ CPS	Remote meter ENI-IJI-0005 (0006)	5×10^4 to not pegged hi	_____ CPS	_____
<u>LOCATION</u>	<u>REQUIRED</u>	<u>ACTUAL</u>												
Drawer local counts	5×10^4 to 2×10^5 CPS	_____ CPS												
Remote recorder ENI-IJR-0005 (0006)	5×10^4 to not pegged hi	_____ CPS												
Remote meter ENI-IJI-0005 (0006)	5×10^4 to not pegged hi	_____ CPS												
7.2.11	Place OPERATE/TEST LOW/TEST HIGH switch in Operate.	_____												
7.2.12	Local Trouble bistable lamp is extinguished.	_____												
7.2.13	Control/Startup Channel 1 (2) Trouble annunciators (M-3(M-4), Cabinet H) are clear.	_____												
7.2.14	Channel 1 (2) Neutron Flux High annunciators (K-3(K-4) Cabinet H) are clear.	_____												
7.2.15	RCS Boron Channel 1 (2) Dilution Hi annunciator (L-3(L-4) Cabinet G) is clear.	_____												

Waterford 3 Job Performance Measure
Examinee Handout

10.1 STARTUP CHANNEL FUNCTIONAL TEST DATA SHEET (CONT'D)

Startup Channel X 1 and _____ 2 (Check Applicable Space)

<u>STEP</u>	<u>DESCRIPTION</u>		<u>INITIALS</u>
	AUDIBLE COUNT RATE		
7.3.1	Audible count rate is present on Channel 1:	Control Room Containment	_____ _____
7.3.2	Audible count rate is present on Channel 2:	Control Room Containment	_____ _____

RESTORATION SWITCH		<u>POSITION</u>	<u>PERFORMED</u>	<u>VERIFIED</u>
7.4.1.1	OPERATE/TEST LOW/TEST HIGH	Operate	_____	_____
7.4.1.2	ZERO/OPERATE/125%	Operate	_____	_____
7.4.1.3	TRIP TEST	Off	_____	_____

TEST ACCEPTANCE: _____ INITIAL _____

Startup Channel Functional Test performed satisfactory in accordance with Section 6.0, Acceptance Criteria. _____

Remarks: _____

Performed By: _____ / _____
 Operator Date/Time

Verified By: _____ / _____
 Operator Date/Time

Reviewed By: _____ / _____
 SM/CRS Date/Time

Waterford 3 Job Performance Measure

KEY



START AND LOAD EDG B FROM CONTROL ROOM

JPM S3 Exam Submittal Rev. 1

JPM S3

Site W3 **Job** RO **System/Duty Area** EDG **Mode** NORM **Number** 3

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** YES

References

OP-009-002, Emergency Diesel Generator Rev. 302

OP-500-004, Control Room Cabinet D Rev. 019

NRC KA Number

G-2.1.20 RO: 4.3, SRO: 4.2

3.6-064-A4.01 RO: 4.0, SRO: 4.3

3.6-064-A4.07 RO: 3.4, SRO: 3.4

Evaluation Methods

PERFORM

Trainee

Evaluator

Observer

Date

Satisfactory

Unsatisfactory

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. Emergency Diesel Generator B was started by MANUAL REMOTE to troubleshoot the governor circuitry.
2. Emergency Diesel Generator B has been running at 600 rpm for 30 minutes.
3. Emergency Diesel Generator B CONTROL MODE is selected to the RTGB position.

INITIATING CUE

The CRS directs you to parallel Emergency Diesel Generator B to the B3 bus, load to 4.4 MW and 1 MVAR from the Control Room in accordance with OP-009-002, Section 6.4.

TERMINATING CUE

1. Emergency Diesel Generator B loaded to the specified MW and MVAR values
2. (ALT) Emergency Diesel Generator B shutdown

STANDARD

1. EDG B synchronized and loaded
2. (ALT) EDG B tripped with no cooldown

TOOLS

1. Synchronizer key

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Equipment damage

HUMAN INTERFACES

1. SM/CRS
2. NAO

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC-121
Ensure no SIAS present
Insert Annunciator Window D_H3 Cabinet D, EDG B Trouble when MW load = 1 MW
Insert remote ED10B to trip EDG B if NAO ordered to trip diesel locally

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. Verify Emergency Diesel Generator operating with voltage between 3920 - 4580 VAC.

CUES: Simulator provides cues

STANDARDS: 1. Examinee Adjusts EDG B voltage on CP-1 between 3920 - 4580. (If required)

SAT _____ **UNSAT** _____

2. Verify Emergency Diesel Generator operating with frequency between 58.8 - 61.2 Hz.

CUES: Simulator provides cues

STANDARDS: 1. Examinee adjusts EDG B frequency on CP-1 between 58.8 - 61.2 Hz.
2. (If required)

SAT _____ **UNSAT** _____

3. Verify Volt Regulator Mode Select (Sevr Manual/Auto) Switch is in Auto.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies EDG B VOLT REGULATOR MODE SELECT switch in AUTO.

SAT _____ **UNSAT** _____

4. Check Main Generator Voltage >25.95 KV

CRIT

CUES: Simulator provides cues

NOTE: WARNING prior to step 6.4.3
EMERGENCY DIESEL GENERATOR B SHOULD NOT BE OPERATED IN PARALLEL WITH THE MAIN GENERATOR WHEN MAIN GENERATOR VOLTAGE IS >25.95 KV AS INDICATED BY PID A58003. REACTIVE LOAD (MVAR) MAY BE LOWERED TO REDUCE MAIN GENERATOR VOLTAGE. OPERATING EDG B IN PARALLEL WITH THE MAIN GENERATOR WHEN MAIN GENERATOR VOLTAGE IS >25.95 KV HAS THE POTENTIAL TO CAUSE THE 3B32 BUS BREAKERS, UPON A FAULT, TO STRUCTURALLY DECOMPOSE AND EXPLODE.

STANDARDS: 1. Examinee checks Main Generator Voltage > 25.95 KV on CP-1

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

-
5. Position the Emergency Diesel Generator A(B) Synchronizer Switch (Man/Off/Auto Synch Switch) to Gen Man (Man). **CRIT**

CUES: Simulator provides cues

- STANDARDS:**
2. Examinee obtains Key 209 for EDG B synchronizer switch from locker and inserts into EDG B Synchronizer switch.
 3. Examinee positions Synchronizer switch to Gen Man position.
 4. Examinee verifies Running and Incoming voltmeters energize and EDG B Synchroscope on CP-1 energizes. **(Not Critical)**

SAT _____ **UNSAT** _____

6. Verify proper voltage response using the Volt Adjust (Sevr Potentiometer Adjust).

CUES: Simulator provides cues

Note; Verify Student tracking 5 minutes

- STANDARDS:**
1. Examinee rotates EDG B Voltage Adjust switch on CP-1 to raise.
 2. Examinee rotates EDG B Voltage Adjust switch on CP-1 to lower.
 3. Examinee verifies proper EDG B voltage response on Incoming or Running voltmeters on CP-1.

SAT _____ **UNSAT** _____

7. Adjust Emergency Diesel Generator B voltage to slightly higher than system voltage. **CRIT**

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee rotates EDG B Voltage Adjust switch to obtain 3920-4580 VAC.
 2. Examinee adjusts Incoming voltage slightly higher than Running voltage.

SAT _____ **UNSAT** _____

8. Verify proper frequency response using the Speed Adjust (Engine Speed Adjustment), then adjust engine speed until the Synchroscope is rotating slowly in the clockwise direction.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee adjusts EDG B Speed Adjust switch on CP-1 to raise.
 2. Examinee adjusts EDG B Speed Adjust switch on CP-1 to lower.
 3. Examinee verifies proper response by checking EDG B Frequency meters and Synchroscope response on CP-1.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

9. Adjust engine speed until Synchroscope rotating slowly in the clockwise direction. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee rotates speed adjust switch on CP-1 to raise or lower to obtain desired rotation.
2. Examinee verifies EDG B on Synchroscope on CP-1 is rotating slowly in the clockwise direction.

NOTE: This step is CRITICAL if the Synchroscope is rotating in the counter-clockwise direction.

SAT _____ **UNSAT** _____

10. Verify Emergency Diesel Generator B Red Start Light Illuminated.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies EDG B Red Start light on CP-1 is lit.

SAT _____ **UNSAT** _____

11. Observing Synchroscope rotating slowly in the clockwise direction, Close the Diesel Generator output breaker at the 5 minutes to twelve position on the Synchroscope. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee rotates EDG B output breaker control switch on CP-1 to Close at ~ the 12:00 position on EDG B Synchroscope.
2. Examinee verifies EDG B output breaker red Closed light on CP-1 is lit.

SAT _____ **UNSAT** _____

12. Immediately apply a small load, approximately 0.1 MW, to the Emergency Diesel Generator B using the Speed Adjust (Engine Speed Adjustment) Control Switch. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies a ~ 0.1 MW load on EDG B MW meter on CP-1.

NOTE: This step is CRITICAL if EDG load is less than 0.1 MW after closing the EDG output breaker.

SAT _____ **UNSAT** _____

13. Position the Emergency Diesel Generator B Synchronizer Switch (Man/Off/Auto Synch Switch) to Off.

CUES: Simulator provides cues

NOTE; Check 5 minutes not exceeded

STANDARDS: 1. Examinee rotates EDG B Synchronizer switch on CP-1 to Off.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

14. Adjust the Volt Adjust to obtain 1 MVAR.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee rotates Volt Adjust switch to obtain 1 MVAR on EDG B MVAR meter while verifying bus voltage does not exceed 4470 VAC.

SAT _____ **UNSAT** _____

15. Adjust Emergency Diesel Generator B real load (MW) as directed by the SM/CRS.

CRIT

CUES: As CRS, inform Examinee to adjust EDG B load to 1 MW and hold for 5 minutes.

STANDARDS: 1. Examinee rotates Speed Adjust switch to raise load at .5 MW/min.
2. Examinee verifies EDG B MW meter on CP-1 reads 1 - 1.2 MW.

SAT _____ **UNSAT** _____

16. Hold load at 1 MW for 5 minutes.

CUES: CUE Examinee that 5 minutes have elapsed.

Simulator NOTE: initiate event trigger 2Annunciator H-3 Cabinet D.

STANDARDS: None

SAT _____ **UNSAT** _____

17. (ALT) Perform Emergency Shutdown of EDG B.

CRIT

CUES: **BOOTH** When Examinee locates and refers to EDG B Trouble alarm procedure, REPORT as NAO that EDG has Turbo Lube oil Press Low reading 3 psig.
If necessary, CUE Examinee as CRS to perform appropriate actions

STANDARDS: 1. Examinee references annunciator response for EDG B Trouble.
2. Examinee depresses EDG B Trip pushbutton on CP-1.
a. NOTE if Examinee directs NAO to pull overspeed trip lever insert malfunction EG10B and report that EDG B overspeed trip lever pulled.
3. Examinee verifies EDG B frequency meter on CP-1 pegged low and the Green light on EDG B Start switch on CP-1 is lit.
4. Examinee verifies output breaker open
5. Examinee may contact NAO to verify EDG B at 0 rpm.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. Emergency Diesel Generator B was started by MANUAL REMOTE to troubleshoot the governor circuitry.
2. Emergency Diesel Generator B has been running at 600 rpm for 30 minutes.
3. Emergency Diesel Generator B CONTROL MODE is selected to the RTGB position.

INITIATING CUE

The CRS directs you to parallel Emergency Diesel Generator B to the B3 bus, load to 4.4 MW and 1 MVAR from the Control Room in accordance with OP-009-002, Section 6.4.

Waterford 3 Job Performance Measure

KEY

6.4 Emergency Diesel Generator Synchronization and Load Transfer

NOTE:

- (1) Diesel Generator load changes can be accomplished by performing the following:
- Manual voltage control, when in parallel, will raise or lower reactive load.
 - Manual voltage control, when not in parallel, will raise or lower generator voltage.
 - Switch in parallel engine speed control is used to raise or lower generator load.
- (2) The operations necessary to synchronize the Diesel Generator when from the Control Room or locally are identical. The point of control is determined by whether the Control mode is selected for Local or Remote (Control Room). Switch positions for the local control panel are in parentheses.

CAUTION:

WHENEVER POSSIBLE, THE EFFICIENCY OF SOLE GENERATOR SHOULD BE MAINTAINED FOR A MINUTE BEFORE TOI COLLISION. THIS WILL HELP TO MINIMIZE THE LOAD STRESS ON THE ENGINE TO ENSURE OPTIMUM ENGINE LIFE AND PERFORMANCE.

- 6.4.1 Verify Emergency Diesel Generator operating with voltage 3800 - 4000 VAC and frequency 59.5 - 61.2 Hz.
- 6.4.2 Verify Voltage Regulator Mode Switch (New Manual/Auto) Switch is in Auto.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Emergency Diesel Generator

GP-009-002
Revision 302

CAUTION

RELAY DAMAGE MAY RESULT IF SYNCHRONIZER IS ENERGIZED FOR LONGER THAN 5 MINUTES.

WARNING

EMERGENCY DIESEL GENERATOR B SHOULD NOT BE OPERATED IN PARALLEL WITH THE MAIN GENERATOR WHEN MAIN GENERATOR VOLTAGE IS >25.95 KV AS INDICATED BY PID A58003. REACTIVE LOAD (MVAR) MAY BE LOWERED TO REDUCE MAIN GENERATOR VOLTAGE. OPERATING EDG B IN PARALLEL WITH THE MAIN GENERATOR WHEN MAIN GENERATOR VOLTAGE IS >25.95 KV HAS THE POTENTIAL TO CAUSE THE 3B32 BUS BREAKERS, UPON A FAULT, TO STRUCTURALLY DECOMPOSE AND EXPLODE. [CR-WFD-2004-02320]

- 6.4.3 Position the Emergency Diesel Generator A(B) Synchronizer Switch (Man/Off/Auto Synch Switch) to Gen Man (Man).
- 6.4.4 Verify proper voltage response using the Volt Adjust (Sevr Potentiometer Adjust), then adjust Emergency Diesel Generator A(B) voltage to slightly higher than system voltage.
- 6.4.5 Verify proper frequency response using the Speed Adjust (Engine Speed Adjustment), then adjust engine speed until the synchroscope is rotating slowly in the clockwise direction.

NOTE

If the Red Start light is out, then the Emergency Diesel Generator control circuit may not be lined up to automatically shift to the Test Mode of operation when the Emergency Diesel Generator output breaker is Closed. This may make the Emergency Diesel Generator trip when the Emergency Diesel Generator output breaker is closed.

- 6.4.6 Verify Emergency Diesel Generator A(B) Red Start Light Illuminated.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Emergency Diesel Generator

OP-009-002
Revision 302

NOTE

Do not simultaneously connect both Emergency Diesel Generator A(B) to their respective busses during non-emergency conditions or with offsite power available.

CAUTION

WHEN EMERGENCY DIESEL GENERATOR IS CONNECTED TO THE GRID, MAINTAIN OUTGOING REACTIVE LOAD (MVAR) AND AT LEAST 0.1 MW REAL LOAD TO PREVENT A REVERSE POWER TRIP.

- 6.4.7 Observing Synchroscope rotating slowly in the clockwise direction, Close the Diesel Generator output breaker at the 5 minutes to twelve position on the synchroscope.
- 6.4.8 Immediately apply a small load, approximately 0.1 MW, to the Emergency Diesel Generator A(B) using the Speed Adjust (Engine Speed Adjustment) Control Switch.
- 6.4.9 Position the Emergency Diesel Generator A(B) Synchronizer Switch (Man/Off/Auto Synch Switch) to Off.

CAUTION

WHILE ADJUSTING MVAR DO NOT EXCEED BUS VOLTAGE OF 4470 VAC.

- 6.4.10 Adjust the Volt Adjust to obtain 1 MVAR.

Waterford 3 Job Performance Measure

KEY

System Operating Procedures
Emergency Diesel Generator

01-0000-000
Revision 002

NOTE:

- (1) During normal operations, the diesel generator ratings of 4.4 MW continuous load and 4.84 MW for 21 hours out of every 24-hour period should not be exceeded.
- (2) The following chart is the recommended Emergency Diesel Generator loading sequence:

Diesel Generator Load (MW)	Hold Time
Start Unloaded	5 minutes
>1.0 MW to 1.2 MW	5 minutes
>2.1 MW to 2.5 MW	10 minutes
>3.2 MW to 3.4 MW	10 minutes
>4.0 MW to 4.4 MW	>5.5 hours or at SSMCS 25 at no-load
0.5 MW to 1.0 MW	15 minutes

- (3) The Diesel Generator should be loaded at a rate of approximately 0.5 MW/minute.

- 6.A.11 Adjust Emergency Diesel Generator A(1) rated load (MW) and relative load (MW/10) as directed by the SSMCS 25.
- 6.A.12 If in Full Mode and partial load is called, then for each 5-hour interval the Diesel Generator operates at 40% load (1.8 MW) perform the following:
- 6.A.12.1 Raise load to 3.5 MW for 15 - 30 minutes.

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. Emergency Diesel Generator B was started by MANUAL REMOTE to troubleshoot the governor circuitry.
2. Emergency Diesel Generator B has been running at 600 rpm for 30 minutes.
3. Emergency Diesel Generator B CONTROL MODE is selected to the RTGB position.

INITIATING CUE

The CRS directs you to parallel Emergency Diesel Generator B to the B3 bus, load to 4.4 MW and 1 MVAR from the Control Room in accordance with OP-009-002, Section 6.4.

PERFORM BOP IMMEDIATE ACTIONS ON CR EVACUATION

JPM S4 Exam Submittal Rev 1



JPM S4

Site W3 **Job** RO **System/Duty Area** PPO **Mode** OFFNOR
M **Number** 5

Revision 1

Approval _____

Estimated Time 10 Min

Time Critical Yes **Critical Time** 10 Min **Alternate Path** YES

References

OP-901-502, Evacuation of Control Room & Subsequent Plant Shutdown Rev. 015

NRC KA Number

4.2-A68-AK3.12 RO: 4.1, SRO: 4.5
4.2-A68-AA1.15 RO: 3.7, SRO: 3.7
4.2-A68-AA1.16 RO: 3.2, SRO: 3.3

Evaluation Methods

PERFORM/SIMULATE

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. The ATC has tripped the reactor from 100 percent.
2. A fire has occurred in Control Room Panel CP-7.
3. A Control Room Evacuation has been ordered.

INITIATING CUE

NOTE: This JPM is Time Critical.

You are directed to perform the **IMMEDIATE OPERATOR ACTIONS** as the BOP for Control Room Evacuation per OP-901-502, Evacuation of Control Room & Subsequent Plant Shutdown.

TERMINATING CUE

1. IMMEDIATE OPERATOR ACTIONS completed.
2. Exiting Control Room for + 35 RAB.

STANDARD

All IMMEDIATE OPERATOR ACTIONS for BOP are taken within 10 minutes. IAW OP-901-502 Attachment 3, Step 2

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

1. Turbine not tripped - excessive cooldown
2. Generator not tripped - generator damage
3. ADV not closed- excessive cooldown

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC-121

1. verify Reactor tripped
2. **(ALT) verify** Generator Breaker B Fails to Open EG04B setup
3. **(ALT)** Fail setpoint for Atmospheric Dump Valve #1 low MS23A set to 900 event 4 inserted
4. **This JPM must be done last when used in conjunction with other JPMs**

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____ **Begin Time Critical action**

1. Verify Turbine trip:

- Governor valves Closed
- Throttle valves Closed

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies all Governor and Throttle valves indicate Closed on CP-1, Turbine Mimic (Green CLOSED lights lit).

SAT _____ **UNSAT** _____

2. (ALT) Verify Generator trip:

- Exciter Field Breaker Tripped
- Generator Breaker A Tripped
- Generator Breaker B Tripped

CUES: ▪ Simulator provides cues

STANDARDS: 1. The Examinee attempts to verify all Generator breakers Open on CP-1.

SAT _____ **UNSAT** _____

3. (ALT) Manually open Generator Breaker B.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. The Examinee rotates Generator Breaker B control switch to TRIP position, verifies green OPEN light on, red CLOSED light off on CP-1.

NOTE: Examinee may attempt to open breaker by pushing Generator EMERG TRIP buttons

SAT _____ **UNSAT** _____

4. Reset Moisture Separator Reheater controls.

CUES: Simulator provides cues

STANDARDS: 1. Examinee depresses MSR RESET pushbutton on CP-1.
2. Examinee verifies red RESET light lit.
3. Examinee verifies all four MSR valves green CLOSED lights lit.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5. (ALT) IF EITHER of the following valves has spuriously Opened, THEN place the applicable controller(s) in MANUAL AND lower the output to zero: CRIT

- MS-116A, SG 1 Atmospheric Dump
- MS-116B, SG 2 Atmospheric Dump

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee places MS-116A controller on CP-8 in MANUAL.
 2. Examinee lowers MS-116A controller setpoint to 0%.
 3. Examinee verifies MS-116B controller on CP-8 at 0%.

SAT _____ **UNSAT** _____

6. Close the following valves: CRIT

- MS-124A, Main Steam Isol Valve #1

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee rotates MS-124A control switch on CP-8 to CLOSE.
 2. Examinee verifies MS-124A green CLOSED light lit, red OPEN light off on CP-8.

SAT _____ **UNSAT** _____

7. Close the following valves: CRIT

- MS-124B, Main Steam Isol Valve #2

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee rotates MS-124B control switch on CP-8 to CLOSE.
 2. Examinee verifies MS-124B green CLOSED light lit, red OPEN light off on CP-8.

SAT _____ **UNSAT** _____

8. Obtain Operations Security Key Ring AND proceed to RAB +35 Relay Room. CRIT

CUES: Examinee has required keys.

- STANDARDS:**
1. Examinee locates Security Keys from Shift Managers office and states will proceed to the +35 Relay Room.

NOTE: JPM may be terminated when Examinee states they will go to +35 Relay Room.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____ **End Time Critical actions.**

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. The ATC has tripped the reactor from 100 percent.
2. A fire has occurred in Control Room Panel CP-7.
3. A Control Room Evacuation has been ordered.

INITIATING CUE

NOTE: This JPM is Time Critical.

You are directed to perform the **IMMEDIATE OPERATOR ACTIONS** as the BOP for Control Room Evacuation per OP-901-502, Evacuation of Control Room & Subsequent Plant Shutdown.

Waterford 3 Job Performance Measure

KEY

Off Normal Procedure
Evacuation of Control Room and Subsequent Plant Shutdown

OP-901-502
Revision 015

D. IMMEDIATE OPERATOR ACTIONS (CONT'D)

		PLACEKEEPER		
		START	DONE	N/A
2.	BOP Operator perform the following:	<input type="checkbox"/>	<input type="checkbox"/>	
2.1	Verify Turbine trip:		<input type="checkbox"/>	
	• Governor valves Closed		<input type="checkbox"/>	
	• Throttle valves Closed		<input type="checkbox"/>	
2.2	Verify Generator trip:		<input type="checkbox"/>	
	• Exciter Field Breaker Tripped		<input type="checkbox"/>	
	• Generator Breaker A Tripped		<input type="checkbox"/>	
	• Generator Breaker B Tripped		<input type="checkbox"/>	
2.3	RESET Moisture Separator Reheater controls.		<input type="checkbox"/>	
2.4	<u>IF</u> evacuating the Control Room due to fire, <u>THEN</u> perform the following:		<input type="checkbox"/>	<input type="checkbox"/>
2.4.1	<u>IF EITHER</u> of the following valves has spurious Opened, <u>THEN</u> place the applicable controller(s) in <u>MANUAL AND</u> lower the output to zero:	<input type="checkbox"/>	<input type="checkbox"/>	
	• MS-116A SG 1 Atmospheric Dump		<input type="checkbox"/>	<input type="checkbox"/>
	• MS-116B SG 2 Atmospheric Dump		<input type="checkbox"/>	<input type="checkbox"/>
2.4.2	Close the following valves:			
	• MS-124A Main Steam Isol Valve #1		<input type="checkbox"/>	
	• MS-124B Main Steam Isol Valve #2		<input type="checkbox"/>	
2.5	Obtain Operations Security Key Ring <u>AND</u> proceed to RAB +35 Relay Room.		<input type="checkbox"/>	

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. The ATC has tripped the reactor from 100 percent.
2. A fire has occurred in Control Room Panel CP-7.
3. A Control Room Evacuation has been ordered.

INITIATING CUE

NOTE: This JPM is Time Critical.

You are directed to perform the **IMMEDIATE OPERATOR ACTIONS** as the BOP for Control Room Evacuation per OP-901-502, Evacuation of Control Room & Subsequent Plant Shutdown.

BLENDING MAKEUP TO VCT USING MANUAL MODE
JPM S5 Exam Submittal rev 1



JPM S5

Site W3 **Job** RO **System/Duty Area** CVC **Mode** NORM **Number** 25

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** No

References

OP-002-005, Chemical and Volume Control, Rev. 23

NRC KA Number

3.1-004-A4.07 RO: 3.9, SRO: 3.7
3.1-004-A4.12 RO: 3.8, SRO: 3.3

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3.
2. RCS Temperature is 543°F.
3. Current RCS boron concentration is 783 ppm.
4. BAMT A Concentration is 5850 ppm.
5. BAMT B Concentration is 5725 ppm.

INITIATING CUE

The CRS directs you to calculate and perform a blended makeup to the VCT using Manual Mode in accordance with OP-002-005, Chemical and Volume Control. Raise level in the VCT by 5% using BAMT A as the boric acid source and a Primary Water flowrate of 100 GPM. Control PMU and Boric Acid Flow controllers in Manual. Show calculation results on Att. 11.5.

TERMINATING CUE

The Makeup System has been returned to Standby conditions.

STANDARD

1. Blended makeup is complete and system returned to Standby conditions.

TOOLS

OP-002-005, Att. 11.5.

SAFETY CONSIDERATIONS

N/A

PERFORMANCE CONSEQUENCES

Loss of reactivity management

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC 121
Provide a blank copy of Attachment 11.5, Calculation of Boric Acid Flow Rate for VCT Blended Makeup.

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. Inform SM/CRS that this section is being performed.

CUES: The CRS has been informed.

STANDARDS: 1. Examinee communicates that he is commencing the ordered manual blend to the VCT.

SAT _____ **UNSAT** _____

2. At SM/CRS discretion, calculate the Boric Acid flow rate to be used on Attachment 11.5, Calculation of Boric Acid Flow Rate for VCT Blended Makeup.

CUES: Cue the Examinee that the CRS directs that the calculation be performed.

STANDARDS: 1. Examinee calculates a 15.5 gpm boric acid flowrate for the VCT blend and documents on Att. 11.5.

SAT _____ **UNSAT** _____

3. Note Boric Acid and Water Totalizer readings for use in verifying proper final blend ratio.

CUES: Simulator provides cues

STANDARDS: 1. Examinee notes the Boric Acid Totalizer and PMU Totalizer readings on CP-4 and enters readings on Att. 11.5.

SAT _____ **UNSAT** _____

4. Verify Direct Boration Valve, BAM-143, control switch in CLOSE.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates BAM-143 control switch on CP-4, verifies in CLOSE position and Green light is lit.

SAT _____ **UNSAT** _____

5. Verify Makeup Mode selector switch in MANUAL.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates Makeup Mode Selector Switch on CP-4, verifies in MANUAL position.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

6. Start the desired Boric Acid Makeup Pump (A).

CRIT

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates Boric Acid Makeup Pump A control switch on CP-4 and places in the RUN position.
 2. Examinee verifies the control switch Red light lit on CP-4
 3. Examinee verifies the Boric Acid Header Pressure Lo Alarm on CP-4, Cabinet G remains clear. (**NOT CRITICAL**)

SAT _____ **UNSAT** _____

7. Open VCT Makeup Valve, CVC-510.

CRIT

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates CVC-510 control switch on CP-4 and momentarily places in the OPEN position.
 2. Examinee verifies control switch Red light lit and Green light out.

SAT _____ **UNSAT** _____

8. If manual control of Boric Acid flow is desired, then perform the following: Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates BAM-IFIC-0210Y on CP-4 and verifies the Red MAN light lit and AUTO light out.
- OR
2. Examinee depresses BAM-IFIC-0210Y MAN pushbutton and verifies Red light lit and AUTO light out.

SAT _____ **UNSAT** _____

9. Adjust Boric Acid Flow controller, BAM-IFIC-0210Y, output to > 3 GPM flow rate.

CRIT

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee depresses BAM-IFIC-0210Y RAISE and LOWER pushbuttons as necessary to obtain flow rate recorded on Attachment 11.5 (15.5 ± .5gpm).

SAT _____ **UNSAT** _____

10. Verify Boric Acid Makeup Control Valve, BAM-141, Intermediate or Open.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates BAM-141 indication on CP-4 and verifies Red light lit, or both Red and Green lights lit.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

11. Verify Primary Makeup Water Flow controller, PMU-IFIC-0210X, in Manual.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates PMU-IFIC-0210X on CP-4 and verifies Red MAN light lit and AUTO light out.

OR

2. Examinee depresses PMU-IFIC-0210X MAN pushbutton and verifies the Red light lit and AUTO light out.

SAT _____ UNSAT _____

12. Adjust Primary Makeup Water Flow controller, PMU-IFIC-0210X, output to > 5 GPM flow rate.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee depresses PMU-IFIC-0210Y RAISE and LOWER pushbuttons as necessary to obtain flow rate recorded on Attachment 11.5 (~100 gpm).

SAT _____ UNSAT _____

13. Verify Primary Makeup Water Control Valve, PMU-144, Intermediate or Open.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates PMU-144 indication on CP-4 and verifies Red light lit, or both Red and Green lights lit.

SAT _____ UNSAT _____

14. Observe Primary Makeup water flow rate and Boric Acid flow rate for proper indications.

CUES: Simulator provides cues.

STANDARDS: 1. Examinee monitors Boric Acid flowrate and totalizer for correspondence.
2. Examinee monitors Primary Water flowrate and totalizer for correspondence.

SAT _____ UNSAT _____

15. When desired makeup has been achieved, then perform the following:

CRIT

- Verify Boric Acid and Water Totalizer readings reflect the desired blend ratio has been added.

CUES: Simulator provides cues

STANDARDS: 1. Examinee verifies changes in totalizer values correspond to the calculated ratio (~6.45 to 1 plus or minus .2)

SAT _____ UNSAT _____

Waterford 3 Job Performance Measure

KEY

16. Stop the operating Boric Acid Makeup Pump A.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates Boric Acid Makeup Pump A control switch on CP-4 and places in the STOP position.
2. Examinee verifies the control switch Green light lit on CP-4

SAT _____ **UNSAT** _____

17. Close VCT Makeup Valve, CVC-510.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates CVC-510 control switch on CP-4 and momentarily places in the CLOSE position.
2. Examinee verifies control switch Green light lit and Red light out.

SAT _____ **UNSAT** _____

18. Verify Primary Makeup Water Flow controller, PMU-IFIC-0210X, in Manual.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates PMU-IFIC-0210X on CP-4 and verifies Red MAN light lit and AUTO light out.

SAT _____ **UNSAT** _____

19. Verify both Primary Makeup Water Flow controller, PMU-IFIC-0210X, output and setpoint potentiometer set to zero.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee depresses PMU-IFIC-0210X LOWER pushbutton as necessary to obtain zero output on the controller.
2. Examinee verifies PMU-IFIC-0210X setpoint potentiometer set to zero.

SAT _____ **UNSAT** _____

20. Verify Primary Makeup Water Control Valve, PMU-144, Closed.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates indication on CP-4 and verifies Green light lit and Red light out.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

21. Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates BAM-IFIC-0210Y on CP-4 and verifies Red MAN light lit and AUTO light out.

OR

2. Examinee depresses BAM-IFIC-0210Y MAN pushbutton and verifies Red MAN light lit and AUTO light out.

SAT _____ **UNSAT** _____

22. Verify both Boric Acid Flow controller, BAM-IFIC-0210Y, output and setpoint potentiometer set to zero. **CRIT**

CUES: Simulator provides cues

STANDARDS: 1. Examinee depresses BAM-IFIC-0210Y LOWER pushbutton as necessary to obtain zero output on the controller.

2. Examinee verifies BAM-IFIC-0210Y setpoint potentiometer set to zero.

SAT _____ **UNSAT** _____

23. Verify Boric Acid Makeup Control Valve, BAM-141, Closed.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates BAM-141 indication on CP-4 and verifies Green light lit and Red light out.

SAT _____ **UNSAT** _____

24. Make up to the VCT with ≥ 100 gallons of Primary Makeup water in accordance with Section 6.11, VCT Makeup Using Acid/Water Batches.

CUES: Cue Examinee that this completes the JPM , acknowledging that the flush step would normally be done.

STANDARDS: None

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions To Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3.
2. RCS Temperature is 543°F.
3. Current RCS boron concentration is 783 ppm.
4. BAMT A Concentration is 5850 ppm.
5. BAMT B Concentration is 5725 ppm.

INITIATING CUE

The CRS directs you to calculate and perform a blended makeup to the VCT using Manual Mode in accordance with OP-002-005, Chemical and Volume Control. Raise level in the VCT by 5% using BAMT A as the boric acid source and a Primary Water flowrate of 100 GPM. Control PMU and Boric Acid Flow controllers in Manual. Show calculation results on Att. 11.5.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Chemical and Volume Control

OP-002-005
Revision 23

6.10 VCT BLENDED MAKEUP USING THE MANUAL MAKEUP MODE (C)

CAUTION

THIS SECTION AFFECTS REACTIVITY. THIS EVOLUTION SHOULD BE CROSS-CHECKED AND COMPLETED PRIOR TO LEAVING CP-4.

6.10.1 Inform SM/CRS that this section is being performed.

NOTE

When performing a Plant down power where final RCS Boron Concentration needs to be determined, the following Plant Data Book figure(s) will assist the Operator in determining the required RCS Boron PPM change.

- 1.2.1.1 Power Defect Vs Power Level
- 1.4.3.1 Inverse Boron Worth Vs. T_{mod} at BOC (<30 EFPD)
- 1.4.4.1 Inverse Boron Worth Vs. T_{mod} at Peak Boron (30 EFPD up to 170 EFPD)
- 1.4.5.1 Inverse Boron Worth Vs. T_{mod} at MOC (170 EFPD up to 340 EFPD)
- 1.4.6.1 Inverse Boron Worth Vs. T_{mod} at EOC (≥ 340 EFPD)

6.10.2 At SM/CRS discretion, calculate the Boric Acid flow rate to be used on Attachment 11.5, Calculation of Boric Acid Flow Rate for VCT Blended Makeup.

6.10.3 Note Boric Acid and Water Totalizer readings for use in verifying proper final blend ratio.

6.10.4 Verify Direct Boration Valve, BAM-143, control switch in CLOSE.

6.10.5 Verify Makeup Mode selector switch in MANUAL.

6.10.6 Start the desired Boric Acid Makeup Pump A(B).

6.10.7 Open VCT Makeup Valve, CVC-510.

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Chemical and Volume Control

OP-002-005
Revision 23

NOTE

The Boric Acid Flow Totalizer will not register below 3 GPM. The Boric Acid Flow Totalizer is most accurate in the range of 10 - 25 GPM.

6.10.8 If manual control of Boric Acid flow is desired, then perform the following:

6.10.8.1 Verify Boric Acid Flow controller, BAV-FIC-0210Y, in Manual.

6.10.8.2 Adjust Boric Acid Flow controller, BAV-FIC-0210Y, output to >3 GPM flow rate.

6.10.9 If automatic control of Boric Acid flow is desired, then perform the following:

6.10.9.1 Place Boric Acid Flow controller, BAV-FIC-0210Y, in Auto.

6.10.9.2 Adjust Boric Acid Flow controller, BAV-FIC-0210Y, setpoint potentiometer to > 3 GPM flow rate.

6.10.10 Verify Boric Acid Makeup Control Valve, BAM-14-1, Intermediate or Open.

NOTE

The Dilution Flow Totalizer will not register below 5 GPM. The Dilution Flow Totalizer is most accurate at > 10 GPM.

CAUTION

DILUTION SHALL IMMEDIATELY BE STOPPED IF PRE-POWER DEPENDENT INSERTION LIMIT (H-9, CABINET H) ALARM IS INITIATED OR ANY UNEXPECTED REACTIVITY CHANGE OCCURS.

6.10.11 If manual control of Primary Makeup Water flow is desired, then perform the following:

6.10.11.1 Verify Primary Makeup Water Flow controller, PMU-FIC-0210X, in Manual.

6.10.11.2 Adjust Primary Makeup Water Flow controller, PMU-FIC-0210X, output to > 5 GPM flow rate.

44

Waterford 3 Job Performance Measure

KEY

System Operating Procedure
Chemical and Volume Control

OP-002-005
Revision 23

- 6.10.12 If automatic control of Primary Makeup Water flow is desired, then perform the following:
- 6.10.12.1 Place Primary Makeup Water Flow controller, PMU-IFIC-0210X, in Auto.
 - 6.10.12.2 Adjust Primary Makeup Water Flow controller, PMU-IFIC-0210X, setpoint potentiometer to > 5 GPM flow rate.
- 6.10.13 Verify Primary Makeup Water Control Valve, PMU-144, Intermediate or Open.
- 6.10.14 Observe Primary Makeup water flow rate and Boric Acid flow rate for proper indications.
- 6.10.15 When desired makeup has been achieved, then perform the following:
- 6.10.15.1 Verify Boric Acid and Water Totalizer readings reflect the desired blend ratio has been added.
 - 6.10.15.2 Stop the operating Boric Acid Makeup Pump A(B).
 - 6.10.15.3 Close VCT Makeup Valve, CVC-510.
 - 6.10.15.4 Verify Primary Makeup Water Flow controller, PMU-IFIC-0210X, in Manual.
 - 6.10.15.5 Verify both Primary Makeup Water Flow controller, PMU-IFIC-0210X, output and setpoint potentiometer set to zero.
 - 6.10.15.6 Verify Primary Makeup Water Control Valve, PMU-144, Closed.
 - 6.10.15.7 Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual.
 - 6.10.15.8 Verify both Boric Acid Flow controller, BAM-IFIC-0210Y, output and setpoint potentiometer set to zero.
 - 6.10.15.9 Verify Boric Acid Makeup Control Valve, BAM-141, Closed.
- 6.10.16 Make up to the VCT with > 100 gallons of Primary Makeup water in accordance with Section 6.11, VCT Makeup Using Acid/Water Batches.

Waterford 3 Job Performance Measure

KEY

11.5 CALCULATION OF BORIC ACID FLOW RATE FOR VCT BLENDED MAKEUP

11.5.1 Record the following data:

Desired Primary Makeup water flow rate (F_{PW}): 100 GPM

RCS or VCT Boron Concentration (C_{RCS}): 783 PPM

BAMT Concentration (C_{BAMT}): 5850 PPM

11.5.2 Calculate the Boric Acid flow rate to be used (F_{BA}):

$$F_{BA} = F_{PW} \times \left(\frac{C_{RCS}}{C_{BAMT} - C_{RCS}} \right)$$

$$F_{BA} = \underline{100} \text{ GPM} \times \left(\frac{\underline{783} \text{ PPM}}{(\underline{5850} \text{ PPM}) - (\underline{783} \text{ PPM})} \right) = \underline{15.5} \text{ GPM}$$

Performed by: John Doe today Verified by ①: Jane Doe today
(Signature) (Date) (Signature) (Date)

① The independent verifier is responsible for verifying the accuracy of recorded data as well as calculations.

Initial Totalizer Readings: Boric Acid Totalizer: _____ Primary Makeup Water: _____

Final Totalizer Readings: Boric Acid Totalizer: _____ Primary Makeup Water: _____

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. The plant is in Mode 3.
2. RCS Temperature is 543°F.
3. Current RCS boron concentration is 783 ppm.
4. BAMT A Concentration is 5850 ppm.
5. BAMT B Concentration is 5725 ppm.

INITIATING CUE

The CRS directs you to calculate and perform a blended makeup to the VCT using Manual Mode in accordance with OP-002-005, Chemical and Volume Control. Raise level in the VCT by 5% using BAMT A as the boric acid source and a Primary Water flowrate of 100 GPM. Control PMU and Boric Acid Flow controllers in Manual. Show calculation results on Att. 11.5.

ALIGN A LPSI PUMP TO REPLACE A CONTAINMENT SPRAY PUMP
JPM S6 Exam Submittal Rev 1



RO JPM S6

Site W3 **Job** RO **System/Duty Area** SI **Mode** EMERG **Number** 1

Revision 1

Approval _____

Estimated Time 10 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-902-009, Emergency Operating Procedure Standard Appendices, Attachment 28-A

NRC KA Number

4.4-E09-EA1.1 RO: 4.2, SRO: 4.0

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. A large break LOCA has occurred.
2. The CS pump B was OOS on a tagout prior to the event and the CS pump A failed in the event.
3. All ESFAS actuations have occurred as required.
4. OP-902-008, Safety Function Recovery has been implemented.
5. The CRS has implemented containment temperature and pressure control continuing actions and has decided to align LPSI Pump A to replace CS Pump A.
6. The TSC concurs with the decision.

INITIATING CUE

The CRS directs you to align LPSI Pump A to replace CS Pump A in accordance with OP-902-009, Emergency Operating Procedure Standard Appendices, Attachment 28-A.

TERMINATING CUE

Spray flow is established to containment using the selected LPSI pump.

STANDARD

LPSI Pump A is aligned to CS with acceptable flow to containment.

TOOLS

1. Locked valve keys

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

1. Loss of containment integrity
2. Possible offsite dose
3. Damage to equipment

HUMAN INTERFACES

CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC-100

JPM S6 Exam Submittal rev 1

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. Obtain TSC concurrence prior to performing this evolution.

CUES: TSC concurs as per JPM Initial Conditions.

STANDARDS: None

SAT _____ **UNSAT** _____

2. Verify LPSI Pump A control switch in "OFF".

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates LPSI Pump A control switch on CP-8 and verifies in Off.

SAT _____ **UNSAT** _____

3. Verify Containment Spray Pump A control switch in "OFF".

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates CS Pump A control switch on CP-8 and verifies in OFF.

SAT _____ **UNSAT** _____

4. Place SI-129A, LPSI FLOW CONTROL VALVE to "AUTO". (Key 137)

CRIT

CUES: Simulator provides cues.

STANDARDS:

1. Examinee obtains Key 137 from Key Locker.
2. Examinee locates SI-129A control switch on CP-8.
3. Examinee inserts Key, momentarily places control switch in AUTO, then releases the control switch to the MID POSITION.

SAT _____ **UNSAT** _____

5. Place SI-IFIC-0307, LPSI FLOW CONTROLLER HEADER 2A/2B in "MAN".

CRIT

CUES: Simulator provides cues.

STANDARDS:

1. Examinee locates SI-IFIC-0307 controller on CP-8.
2. Examinee depresses controller pushbutton and verifies MAN White light lit.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

6 Adjust SI-IFIC-0307, LPSI FLOW CONTROLLER HEADER 2A/2B to 0% output. CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates SI-IFIC-0307 on CP-8.
 2. Examinee depresses controller Manual output decrease pushbutton until output reads 0%.

SAT _____ **UNSAT** _____

7. Verify the following valves Closed: CRIT

- SI-415A, SHUTDOWN TEMP CONTROL VALVE (Key 138)

CUES: Simulator provides cues.

STANDARDS: 1. Examinee locates SI-415A control switch on CP-8 and verifies the analog valve position indicator reads 0%, and Green light lit and Red light out.

SAT _____ **UNSAT** _____

8. Verify the following valves Closed: CRIT

- SI-138A, LPSI FLOW CONTROL COLD LEG 2B

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates SI-138A control switch on CP-8, places to the more position to override SIAS and then back to less until the digital indicator reads 0%, or Green light lit and Red light out.

SAT _____ **UNSAT** _____

9. Verify the following valves Closed: CRIT

- SI-139A, LPSI FLOW CONTROL COLD LEG 2A

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates SI-138A control switch on CP-8, places to the more position to override SIAS and then back to less until the digital indicator reads 0%, or Green light lit and Red light out.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

10. Open SI-125A/SI-412A, SHDN HX A ISOL VALVES (Key 136)

CRIT

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee obtains Key 136 from the Key Locker.
 2. Examinee locates SI-125A/SI-412A control switch on CP-8, inserts key, and momentarily places control switch to Open and releases.
 3. Examinee verifies SI-125A/SI-412A control switch Red lights lit and Green lights out.

SAT _____ **UNSAT** _____

11. Verify CS-125A, CNTMT SPRAY HEADER A ISOL VALVE Open.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates CS-125A control switch on CP-8.
 2. Examinee verifies control switch Red light lit and Green light out.

SAT _____ **UNSAT** _____

12. Start LPSI Pump A.

CRIT

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates LPSI Pump A control switch on CP-8, momentarily places to Start, and verifies Red light lit and Green light out.
 2. Examinee verifies LPSI Pump A discharge pressure indicator on CP-8 increases. **(Not CRITICAL)**
 3. Examinee verifies current indication on CP-8 is steady and not pegged after starting current drops off. **(Not CRITICAL)**

SAT _____ **UNSAT** _____

13. Verify Containment Spray Header A flow.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates Containment Spray Header A flow indication on CP-8.
Note: Examinee may be looking for >1750 GPM flow but based on the lack of spray flow containment pressure may be inhibiting flow rate initially.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. A large break LOCA has occurred.
2. The CS pump B was OOS on a tagout prior to the event and the CS pump A failed in the event.
3. All ESFAS actuations have occurred as required.
4. OP-902-008, Safety Function Recovery has been implemented.
5. The CRS has implemented containment temperature and pressure control continuing actions and has decided to align LPSI Pump A to replace CS Pump A.
6. The TSC concurs with the decision.

INITIATING CUE

The CRS directs you to align LPSI Pump A to replace CS Pump A in accordance with OP-902-009, Emergency Operating Procedure Standard Appendices, Attachment 28-A.

Waterford 3 Job Performance Measure

KEY

WATERFORD 3 SES STANDARD APPENDICES	OP-902-009	Revision 301
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	Appendix 28	Page 1 of 4

Aligning LPSI to Replace CS

Attachment 28-A: Aligning LPSI Pump A to Replace CS Pump A

INSTRUCTIONS

CONTINGENCY ACTIONS

- ___ 1.1 Obtain TSC concurrence prior to performing this evolution.

- ___ 1.2 Verify LPSI Pump A control switch in "OFF."

- ___ 1.3 Verify Containment Spray Pump A control switch in "OFF."

- ___ 1.4 Place SI-129A, LPSI FLOW CONTROL VALVE to "AUTO."
(Key 137)

- ___ 1.5 Place SI-IFIC-0307, LPSI FLOW CONTROLLERS HEADER 2A/2B in "MAN."

- ___ 1.6 Adjust SI-IFIC-0307, LPSI FLOW CONTROLLERS HEADER 2A/2B to 0% output.

Waterford 3 Job Performance Measure

KEY

WATERFORD 3 S6S STANDARD APPENDICES	OP-002-000 Revision 301 Page 1/3 of 100
INSTRUCTIONS	CONTINGENCY ACTIONS
<p>____ 1.7 Verify the following valves Closed:</p> <ul style="list-style-type: none">○ SI-415A, LPSI SHUTDOWN TEMP CONTROL valve (Key 130)○ SI-130A, LPSI FLOW CONTROL COLD LEG 2B○ SI-130A, LPSI FLOW CONTROL COLD LEG 2A	
<p>____ 1.8 Open SI-120A/SI-412A, SHDN I/O A ISOL valves. (Key 130)</p>	
<p>____ 1.9 Verify CS-120A, ONTMT SPRAY HEADER ISOL valve open.</p>	
<p>____ 1.10 Start LPSI Pump A.</p>	
<p>____ 1.11 Verify Containment Spray Header A flow.</p>	
<p>End of Attachment 26-A</p>	

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. A large break LOCA has occurred.
2. The CS pump B was OOS on a tagout prior to the event and the CS pump A failed in the event.
3. All ESFAS actuations have occurred as required.
4. OP-902-008, Safety Function Recovery has been implemented.
5. The CRS has implemented containment temperature and pressure control continuing actions and has decided to align LPSI Pump A to replace CS Pump A.
6. The TSC concurs with the decision.

INITIATING CUE

The CRS directs you to align LPSI Pump A to replace CS Pump A in accordance with OP-902-009, Emergency Operating Procedure Standard Appendices, Attachment 28-A.

VERIFY SIAS AUTOMATIC ACTIONS - TRAIN A
JPM S7 Exam Submittal Rev 1



RO JPM S7

Site W3 **Job** RO **System/Duty Area** **SI** **Mode** EMERG **Number**

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** YES

References

OP-902-009, Standard Appendices, Attachment 4-C, SIAS Automatic Actions, Rev. 301

NRC KA Number

3.2-013-A4.01 RO: 4.5, SRO: 4.8
4.4-A16-AA1.1 RO: 3.4, SRO: 3.6

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. A large break LOCA has occurred.
2. All ESFAS actuations have occurred as required.
3. OP-902-002, Loss of Coolant Accident Recovery has been implemented.
4. RCS cooldown and depressurization is in progress.

INITIATING CUE

The CRS directs you to verify Train A SI automatic actions for CP-8, CP-4, and CP-1 in accordance with OP-902-009, Standard Appendices, Attachment 4-C, SIAS Automatic Actions.

TERMINATING CUE

Train A SI automatic actions verified and complete.

STANDARD

Train A SI automatic actions verified and complete.

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

HUMAN INTERFACES

CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Reset to IC-100

Reposition the following components:

- **CVC 510**, VCT Makeup valve to open
- **CC 501**, CCW NNS Loop Supply Isol to Open
- **BAM 126B**, Boric Acid Makeup Pump B Recirc Valve to Open

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

NOTE: The term "verify" implies that if the component is not in the proper position then the operator is to place it there

START TIME _____

1. Verify CP-8 Train A SI components and reposition as necessary.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates and verifies CP-8 Train A SI component positions:
 - SI0001A, LPSI Pump A - Start
 - SI 139A, LPSI Flow Control Cold Leg 2A - Open
 - SI 138A, LPSI Flow Control Cold Leg 2B - Open
 - SI 0002A, HPSI Pump A - Start
 - SI 225A, HPSI Cold Leg Injection 1A – Open
 - SI 226A HPSI Cold Leg Injection 1B - Open
 - SI 227A, HPSI Cold Leg Injection 2A - Open
 - SI 228A, HPSI Cold Leg Injection 2B – Open
 - SI 301, HPSI Hot Leg 1 Injection Drain - Close
 - SI 602A, ESF Pumps Suction SI Sump - Close
 - SI 106A, ESF Pumps Suction RWSP - Open
 - SI 331A, Safety Injection Tank 1A Isolation - Open
 - SI 332A, Safety Injection Tank 2A Isolation - Open
 - SI 303A, Safety Injection Tank 1A Leakage Drain - Close
 - SI 304A, Safety Injection Tank 2A Leakage Drain - Close
 - SI 6011, LPSI A to RC Loop 2B Upstr Auto Vent Isol - Close
 - SI 14023A, LPSI A to RC Loop 2B Upstr Auto Vent Contmt Isol - Close
 - SI 14024A, LPSI A to RC Loop 2B Upstr Auto Vent Auto Isol - Close

SAT _____ **UNSAT** _____

2. (ALT Verify CP-8 Train A CCW components and reposition as necessary.)

CRIT

CUES: Simulator provides cues

NOTE: Components in Bold require repositioning to the required position.

- STANDARDS:**
1. Examinee locates and verifies CP-8 Train A CCW component positions:
 - CC 0001A, CCW Pump A - Start
 - CC 126A/114A, CCW Suct & Disch Header Tie Vlvs AB to A - Close
 - CC 126B/114B, CCW Suct & Disch Header Tie Vlvs AB to B - Close
 - **CC 501, CCW NNS Loop Supply Isol - Close**

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

3. (ALT) Verify CP-4 Train A components and reposition as necessary.

CRIT

CUES: Simulator provides cues

NOTE: Components in Bold require repositioning to the required position.

- STANDARDS:**
1. Examinee locates and verifies CP-4 Train A component positions:
 - CVC 0001A, Charging Pump A - Start
 - BAM 0001A, Boric Acid Pump A - Start
 - BAM 0001B, Boric Acid Pump B - Start
 - BAM 126A, Boric Acid Makeup Pump A Recirc Valve - Close
 - **BAM 126B, Boric Acid Makeup Pump B Recirc Valve - Close**
 - BAM 133, Emergency Boration Valve - Open
 - **CVC 510, VCT Makeup Valve - Close**
 - CVC 101, Cntmt Isol Valves Letdown Stop Valve - Close

SAT _____ UNSAT _____

4. Verify CP-1 Train A components and reposition as necessary.

CUES: Simulator provides cues

- STANDARDS:**
1. Examinee locates and verifies CP-1 Train A component positions:
 - EGA 0001A, Emergency Diesel Gen A - Start

SAT _____ UNSAT _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR TRAINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. A large break LOCA has occurred.
2. All ESFAS actuations have occurred as required.
3. OP-902-002, Loss of Coolant Accident Recovery has been implemented.
4. RCS cooldown and depressurization is in progress.

INITIATING CUE

The CRS directs you to verify Train A SI automatic actions for CP-8, CP-4, and CP-1 in accordance with OP-902-009, Standard Appendices, Attachment 4-C, SIAS Automatic Actions.

Waterford 3 Job Performance Measure

KEY

WATERFORD 3 SES STANDARD APPENDICES	OP-902-009	Revision 301
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ESFAS Auto Actions

Attachment 4-C: SIAS Automatic Actions

Component Number	Component Noun Name	Location	Action	Verified
CP-8 Train A SI				
SI 0001A	LPSI Pump A	CP-8	Start	
SI 139A	LPSI Flow Control Cold Leg 2A	CP-8	Open	
SI 138A	LPSI Flow Control Cold Leg 2B	CP-8	Open	
SI 0002A	HPSI Pump A	CP-8	Start	
SI 225A	HPSI Cold Leg Injection 1A	CP-8	Open	
SI 226A	HPSI Cold Leg Injection 1B	CP-8	Open	
SI 227A	HPSI Cold Leg Injection 2A	CP-8	Open	
SI 228A	HPSI Cold Leg Injection 2B	CP-8	Open	
SI 301	HPSI Hot Leg 1 Injection Drain	CP-8	Close	
SI 602A	ESF Pumps Suction SI Sump	CP-8	Close	
SI 106A	ESF Pumps Suction RWSP	CP-8	Open	
SI 331A	Safety Injection Tank 1A Isolation	CP-8	Open	
SI 332A	Safety Injection Tank 2A Isolation	CP-8	Open	
SI 303A	Safety Injection Tank 1A Leakage Drain	CP-8	Close	
SI 304A	Safety Injection Tank 2A Leakage Drain	CP-8	Close	
SI 6011	LPSI A to RC Loop 2B Upstr Auto Vent Isol	CP-8	Close	
SI 14023A	LPSI A to RC Loop 2B Upstr Auto Vent Contmt Isol	CP-8	Close	
SI 14024A	LPSI A to RC Loop 2B Upstr Auto Vent Auto Isol	CP-84	Close	

Waterford 3 Job Performance Measure

KEY

WATERFORD 3 SES STANDARD APPENDICES	OP-902-009	Revision 301
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Component Number	Component Noun Name	Location	Action	Verified
CP-8 Train A CCW				
CC 0001A	CCW Pump A	CP-8	Start	
CC 126A/ 114A	CCW Suct & Disch Header Tie Vlvs AB to A	CP-8	Close (1)	
CC 126B/ 114B	CCW Suct & Disch Header Tie Vlvs AB to B	CP-8	Close (4)	
CC 501	CCW NNS Loop Supply Isol	CP-8	Close	
CP-4 Train A				
CVC 0001A	Charging Pump A	CP-4	Start	
BAM 0001A	Boric Acid Pump A	CP-4	Start	
BAM 0001B	Boric Acid Pump B	CP-4	Start	
BAM 126A	Boric Acid Makeup Pump A Recirc Valve	CP-4	Close	
BAM 126B	Boric Acid Makeup Pump B Recirc Valve	CP-4	Close	
BAM 133	Emergency Boration Valve	CP-4	Open	
CVC 510	VCT Makeup Valve	CP-4	Close	
CVC 101	Cntmt Isol Valves Letdown Stop Valve	CP-4	Close	
CP-1 Train A				
EGA 0001A	Emergency Diesel Gen A	CP-1	Start	
(1) - IF CCW Pump AB is replacing CCW Pump A, THEN <u>verify</u> valve is open. (4) - IF CCW Pump AB is replacing CCW Pump B, THEN <u>verify</u> valve is open.				

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. A large break LOCA has occurred.
2. All ESFAS actuations have occurred as required.
3. OP-902-002, Loss of Coolant Accident Recovery has been implemented.
4. RCS cooldown and depressurization is in progress.

INITIATING CUE

The CRS directs you to verify Train A SI automatic actions for CP-8, CP-4, and CP-1 in accordance with OP-902-009, Standard Appendices, Attachment 4-C, SIAS Automatic Actions.

Waterford 3 Job Performance Measure

KEY



RESPOND TO WASTE GAS DISCHARGE HIGH ACTIVITY

JPM S8 Exam Submittal Rev 1

JPM S8

Site W3 **Job** RO **System/Duty Area** **GWM** **Mode** **OFFNOR**
M **Number**

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** YES

References

OP-007-003, Gaseous Waste Management Rev 300
OP-901-413, Waste Gas Discharge High Radiation Rev. 001

NRC KA Number

3.9-071-A4.05 RO: 2.6, SRO: 2.6
3.9-071-A3.03 RO: 3.6, SRO: 3.8

Evaluation Methods

PERFORM

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. A Gaseous Release Permit has been issued to release Gas Decay Tank A.
2. A RAB Exhaust Fan is running.
3. Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 has been source checked satisfactorily and documented on the Gaseous Release Permit.
4. OP-007-003, Attachment 11.4, Gas Decay Tank Discharge Checklist has been completed through Step 19.
5. The Waste Gas Discharge Flow Recorder is in service.

INITIATING CUE

The CRS directs you to discharge Gas Decay Tank A in accordance with OP-007-003, Gaseous Waste Management beginning at Step 6.4.8.

TERMINATING CUE

1. The GDT has been discharged
2. THE GDT discharge has been terminated

STANDARD

The GDT has been released or terminated by manual actions after receipt of hi activity alarm.

TOOLS

- Approved Gaseous Waste Release Permit for release of all Gas Decay Tanks
- Attachment 11.4, Gas Decay Tank Discharge Checklist complete through Step 18.4.3.

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Unmonitored release of radioactivity

HUMAN INTERFACES

1. SM/CRS
2. NAO

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

- Reset to IC 121 Sleeve procedures for use
- Initiate Hi radiation on PRM-IRE-0648 when waste gas flow has been established. RM02C trigger 5

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

NOTE: Examinee may validate Meteorological conditions are within permissible limits

Cue: Wind Speed 3.35 m/s

1. Open Waste Gas Discharge Flow Control Valve, GWM-309.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates and places GWM-309 in Open position, verifies Red open light lit and Green closed light off.

SAT _____ **UNSAT** _____

2. If the Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 is operable and sample flow has risen to > 2 scfm as seen locally and documented on Attachment 11.4, then continue to throttle Open Waste Gas Discharge GWM-IFIT-0648 Outlet Isolation Valve, GWM-311, to establish desired flow within limit indicated on Gaseous Release Permit.

CUES:

1. When requested report flow is 10cfm
2. When requested, report as NAO that GWM-311 is throttled for desired flow in accordance with Gaseous Release Permit will inform CR when valve is opened.

STANDARDS: 1. Examinee directs NAO to throttle GWM-311 to obtain required flow rate.

SAT _____ **UNSAT** _____

3 (ALT) Waste Gas Discharge High Activity alarm E-10 Cabinet G.

CUES: Simulator provides cues

STANDARDS:

1. Examinee recognizes and refers to E-10 Cabinet G alarm response procedure.
2. Examinee refers to OP-901-413, Waste Gas Discharge High Radiation.

SAT _____ **UNSAT** _____

4 (ALT) Verify Waste Gas Discharge Flow Control, GWM-309 closed.

CRIT

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates and places GWM-309 in Close position, verifies Green closed light lit and Red open light off.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5 Verify alarm valid by checking Waste Gas Discharge Radiation Monitor chart recorder GWM-IFRR-0648.

CUES: Simulator provides cues

STANDARDS: 1. Examinee locates and verifies alarm valid by checking GWM-IFRR-0648.

NOTE: Step may have been previously performed in response to previous Waste Gas Discharge High Activity alarm.

SAT _____ **UNSAT** _____

6. Isolate Gas Decay Tank being discharged by placing Charge/Release Control Switch on LCP-42 to OFF AND verify outlet valve closes.

CUES: 1. When directed by Examinee, report as NAO that CHARGE/RELEASE switch on LCP-43 is OFF and Gas Decay Tanks outlet valves are Closed.

STANDARDS: 1. Examinee directs NAO to isolate gas decay tanks at LCP-42 and verify outlet valve Closed.

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. A Gaseous Release Permit has been issued to release Gas Decay Tank A.
2. A RAB Exhaust Fan is running.
3. Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 has been source checked satisfactorily and documented on the Gaseous Release Permit.
4. OP-007-003, Attachment 11.4, Gas Decay Tank Discharge Checklist has been completed through Step 19.
5. The Waste Gas Discharge Flow Recorder is in service.

INITIATING CUE

The CRS directs you to discharge Gas Decay Tank A in accordance with OP-007-003, Gaseous Waste Management beginning at Step 6.4.8.

Waterford 3 Job Performance Measure

KEY

6.4 DISCHARGING GAS DECAY TANK [Commitment P-13496]

NOTE

GDT Discharge Permits normally are written to discharge all GDTs simultaneously due to the potential of GDT inlet valve(s) to leak.

CAUTION

ADDITIONS TO THE GAS SURGE TANK FROM THE VCT, GAS SURGE HEADER OR THE CONTAINMENT VENT HEADER SHOULD NOT BE MADE DURING GDT RELEASES DUE TO POTENTIAL LEAKAGE OF GDT INLET VALVES. [CR-98-1291]

CAUTION

GAS DECAY TANK RELEASE MAY BE INITIATED CONCURRENT WITH CONTAINMENT PURGE PROVIDED THE FOLLOWING CONDITIONS ARE MET:

- CONTAINMENT PURGE IS IN PROGRESS AND CONTAINMENT PURGE IS NOT ON A BATCH RELEASE
- IF CONTAINMENT PURGE FLOW IS INTERRUPTED OR PLANT STACK FLOW IS CHANGED, THEN GDT RELEASE SHALL BE SECURED

6.4.1 Verify a Gaseous Release Permit has been issued to release the Gas Decay Tank(s) (GDT), unless ALL of the following conditions exist:

- The GDT has been discharged under an approved release permit.
- A N_2 purge has been started following the release in preparation for another discharge to further reduce GDT activity or Hydrogen and Oxygen concentration.
- The GDT has NOT been placed in service

6.4.2 If discharging all GDTs, then have Chemistry verify the Waste Gas Analyzer Sample Pump is aligned to the VGCH.

Waterford 3 Job Performance Measure

KEY

Operating Procedures
Gaseous Waste Management

CP 8004/0005
Revision 14

NOTE:

Successful performance of step 6.4.3 satisfies 11.6d, Table 11.6, Source Check prior to release. [Government H-2000]

- 6.4.3 Perform a source check for the Gaseous Waste Exchange Isolation Permit, IFDM-1411-0040, as follows:

NOTE:

The GWS substitution backlight should illuminate on step 6.4.3.1.

- 6.4.3.1 Perform a source check in accordance with CP 8004-001.
- 6.4.3.2 Verify monitor passes source check.
- 6.4.3.2.1 If not, then consult the Technical Requirements Manual SM-11.2 and contact Chemistry Department for perform two independent samples.
- 6.4.3.3 Upon completion of a successful source check, initial the appropriate line of the Gaseous Release Permit.
- 6.4.4 Refer to Attachment 11.3, Meteorological Conditions Requirements, to verify that proper meteorological conditions for release exist.

NOTE:

SM-11.3s permission signifies that the plant is in a condition that will allow for the exchange of the appropriate tank. [Government H-2000]

- 6.4.5 Obtain SM-11.3s permission to exchange One Downy Tank(s) and document on Attachment 11.4, One Downy Tank Exchange Checklist, and Gaseous Release Permit.
- 6.4.6 Reset the Waste One Exchange Flow Indicator to Zero.
- 6.4.7 Perform Steps 1 through 10 of Attachment 11.4, One Downy Tank Exchange Checklist.
- 6.4.8 Open Waste One Exchange Flow Control Valve, OWM-800.

Waterford 3 Job Performance Measure

KEY

Operating Procedure
Gaseous Waste Management

OP-007-003
Revision 14

CAUTION

1. IF DISCHARGE ACTIVITY EXCEEDS THE GASEOUS RELEASE PERMIT SETPOINT THEN OP-901-413, WASTE GAS DISCHARGE HIGH RADIATION, SHALL BE ENTERED.
2. AT LEAST **ONE** RAB EXHAUST FAN SHALL BE OPERATING WHILE DISCHARGING.
3. THE RELEASE SHOULD BE TERMINATED IF METEOROLOGICAL CONDITIONS ARE OUTSIDE THE PERMISSIBLE LIMITS.
4. THE RELEASE SHALL BE TERMINATED IF THE IN SERVICE GDT PRESSURE BEGINS TO DECREASE UNTIL ADDITIONS TO THE GAS SURGE HEADER HAVE BEEN SECURED. IF NO NEW GASES HAVE BEEN INTRODUCED AND A WR HAS BEEN WRITTEN ON THE LEAKING INLET VALVE, THEN DISCHARGING CAN CONTINUE.
5. IF DISCHARGING **ALL THREE** GDTs SIMULTANEOUSLY, THEN ADDITIONS TO THE GAS SURGE TANK FROM THE VCT, GAS SURGE HEADER OR THE CONTAINMENT VENT HEADER SHOULD **NOT** BE MADE DURING GDT RELEASES DUE TO POTENTIAL LEAKAGE OF GDT INLET VALVES. DISCHARGING ALL GDTs SIMULTANEOUSLY IS THE PREFERRED METHOD. [CR-98-1291]

- 6.4.9 If the Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648, is operable and sample flow has risen to > 2 scfm as seen locally and documented on Attachment 11.4, then continue to throttle Open Waste Gas Discharge GWM-IFIT-0648 Outlet Isolation Valve, GWM-311, to establish desired flow within limit indicated on Gaseous Release Permit.
- 6.4.10 If Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648, is not operable, then commence discharging by Throttling Open Waste Gas Discharge GWM-IFIT-0648 Outlet Isolation Valve, GWM-311, to establish the desired flow rate within the limit indicated on the Gaseous Release Permit.
- 6.4.11 Record the 0-hour data readings on the Gaseous Release Permit.

Waterford 3 Job Performance Measure

KEY

Operating Procedure
Gaseous Waste Management

OP-007-003
Revision 14

NOTE

Successful performance of step 6.4.12 satisfies TRM Table 4.3-9 Channel Check.
[P-2390, P-2414]

- 6.4.12 Verify indication of GWM discharge flow using any of the following indications:
- GWM-IFRR-0648 Waste Gas Flow & Rad Recorder (CP-4)
 - GWM-IFIT-0648 Waste Gas Flow Indic Transmitter (local)
 - GWM-IFI-6712 Waste Gas Decay Tanks to Plant Vent Flow Indic (LCP-42A)
 - PMC PID A41300 Gas to Stack Flow
 - GWM-IFQI-0648 Waste Gas Flow (CP-4) counting upward
- 6.4.12.1 On the Gaseous Release Permit, initial for satisfactory performance of the Channel Check of GWM-IFIT-0648.

Waterford 3 Job Performance Measure

KEY

Operating Procedure
Gaseous Waste Management

OP-007-003
Revision 14

- 6.4.13 Verify discharge flow and activity are within the limits specified on the Gaseous Release Permit.
- 6.4.13.1 Record data at the required intervals on the Gaseous Release Permit.
- 6.4.14 If the Waste Gas Flow and Radiation Recorder, GWM-IFRR-0648, is out of service, then estimate the Waste Gas discharge flow every four hours by performing the following:
- 6.4.14.1 Multiply Gas Decay Tank (GDT) change in pressure by the conversion factor, 40.87 scf/psig.
- 6.4.14.2 Divide result in step 6.4.14.1 by the change in time.
- 6.4.14.3 Record results in step 6.4.14.2 on Technical Specification Addendum Logsheet.
- 6.4.14.4 Verification of results required on Technical Specification Addendum Logsheet.
- 6.4.15 When GDT(s) Pressure lowers to approximately 19 psig, or to 9 psig if maintenance is to be performed, then secure discharging by performing the following:
- 6.4.15.1 Depress Flow pushbutton on RM-11 or locally at Radiation Monitor to secure Sample Pump.
- 6.4.15.2 Close Waste Gas Discharge Flow Control Valve, GWM-309.
- 6.4.16 If purging of GDTs is necessary, then perform the following:
- 6.4.16.1 Close Waste Gas Discharge GWM-IFIT-0648 Outlet Isolation Valve GWM-311.
- 6.4.16.2 Open Gas Decay Tank Nitrogen Pressure Regulator Inlet Isolation Valve NG-226.
- 6.4.16.3 Open Gas Decay Tank Nitrogen Pressure Regulator Outlet Isolation Valve NG-229.
- 6.4.16.4 Open Gas Decay Tank A(B)(C) N₂ Supply Isolation Valve NG-230A(B)(C).
- 6.4.16.5 When desired pressure is reached in GDT A(B)(C), then Close the following:
- NG-226, Gas Decay Tank Nitrogen Pressure Regulator Inlet Isolation
 - NG-229, Gas Decay Tank Nitrogen Pressure Regulator Outlet Isolation
 - NG-230A(B)(C), Gas Decay Tank A(B)(C) N₂ Supply Isolation
- 6.4.16.6 Open Waste Gas Discharge Flow Control Valve, GWM-309.

Waterford 3 Job Performance Measure

KEY

Operating Procedure
Gaseous Waste Management

OP-007-003
Revision 14

- 6.4.16.7 Start sample pump by pressing Flow pushbutton on RM-80 or locally and verify the following:
- 6.4.16.7.1 Flow pushbutton backlights
 - 6.4.16.7.2 Pump ON light energizes (red)
 - 6.4.16.7.3 Sample flow rises to > 2 scfm as seen locally on Gaseous Waste Discharge Radiation Monitor, PRM-IFI-0648.
- 6.4.16.8 Throttle Open Waste Gas Discharge GWM-IFIT-0648 Outlet Isolation Valve, GWM-311, to establish desired flow within limit indicated on Gaseous Release Permit.
- 6.4.16.9 Document purge duration on Attachment 11.6, Nitrogen Purge Data.
- 6.4.16.10 Verify flow on Gaseous Waste Discharge Radiation Monitor, GWM-IFRR-0648, deflects upscale to provide discharge flow indication.
- 6.4.16.11 If the Waste Gas Flow and Radiation Recorder, GWM-IFRR-0648, is out of service, then estimate the Waste Gas discharge flow every four hours by performing the following:
- 6.4.16.11.1 Multiply Gas Decay Tank (GDT) change in pressure by the conversion factor, 40.97 scf/psig.
 - 6.4.16.11.2 Divide result in step 6.4.16.11.1 by the change in time.
 - 6.4.16.11.3 Record results in step 6.4.16.11.2 on Tech Spec Addendum Logsheat.
 - 6.4.16.11.4 Verification of results required on Tech Spec Addendum Logsheat.
- 6.4.16.12 Verify discharge flow and activity are within the limits specified on the Gaseous Release Permit.
- 6.4.16.13 When GDT(s) Pressure lowers to approximately 10 psig, or to 0 psig if maintenance is to be performed, then secure discharging by performing the following:
- 6.4.16.13.1 Secure Sample Pump in accordance with OP-004-001 or locally Depress the Flow Pushbutton at the Radiation Monitor.
 - 6.4.16.13.2 Close Waste Gas Discharge Flow Control Valve, GWM-309.
- 6.4.16.14 Repeat Step 6.4.16 as necessary to lower hydrogen and oxygen concentrations to acceptable limits.
- 6.4.17 Complete steps 20-30 of Attachment 11.4, Gas Decay Tank Discharge Checklist.
- 6.4.18 Drain the liquid from the discharged GDT(s) in accordance with Subsection 6.6, Draining Liquid From Gas Decay Tank.
- 6.4.19 Complete the Gas Release Permit and forward to Chemistry.

Waterford 3 Job Performance Measure
EXAMINEE HANDOUT

Directions to Examinee:

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

INITIAL CONDITIONS

1. A Gaseous Release Permit has been issued to release Gas Decay Tank A.
2. A RAB Exhaust Fan is running.
3. Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648 has been source checked satisfactorily and documented on the Gaseous Release Permit.
4. OP-007-003, Attachment 11.4, Gas Decay Tank Discharge Checklist has been completed through Step 19.
5. The Waste Gas Discharge Flow Recorder is in service.

INITIATING CUE

The CRS directs you to discharge Gas Decay Tank A in accordance with OP-007-003, Gaseous Waste Management beginning at Step 6.4.8.

Waterford 3 Job Performance Measure
Examinee handout

11.4 GAS DECAY TANK DISCHARGE CHECKLIST
[COMMITMENT P-11570]

PERMISSION: Shift Manger / Today/ 1 hour ago
SM/CRS Date:Time

NOTE

GDT Discharge Permits normally are written to discharge all GDTs simultaneously due to the potential of GDT inlet valve(s) to leak. Chemistry should sample all three GDTs and consider activity levels of each tank when completing Gaseous Release Permit.

CAUTION

ADDITIONS TO THE GAS SURGE TANK FROM THE VCT, GAS SURGE HEADER OR THE CONTAINMENT VENT HEADER SHOULD **NOT** BE MADE DURING GDT RELEASES DUE TO POTENTIAL LEAKAGE OF GDT INLET VALVES. [CR-98-1291]

CAUTION

GAS DECAY TANK RELEASE MAY BE INITIATED CONCURRENT WITH CONTAINMENT PURGE PROVIDED THE FOLLOWING CONDITIONS ARE MET:

- ◆ CONTAINMENT PURGE IS NOT ON A BATCH RELEASE.
- ◆ IF CONTAINMENT PURGE FLOW IS INTERRUPTED OR PLANT STACK FLOW IS CHANGED, THEN GDT RELEASE SHALL BE SECURED.

CAUTION

INDEPENDENT VERIFICATION OF THIS CHECKLIST, IN ITS ENTIRETY, IS ONLY REQUIRED WHEN GWM RADIATION MONITOR, PRM-IRE-0648, IS OUT OF SERVICE IN ACCORDANCE WITH TRM, TABLE 3.3-13 ACTION 1. SOME DESIGNATED PORTIONS ALWAYS REQUIRE INDEPENDENT VERIFICATION.

	PERFORMED BY INITIALS	VERIFIED BY INITIALS
1. Gas Decay Tank(s) to be discharged:	<u>ABC</u>	<u>DEF</u>
<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C All (Circle Applicable)		
2. Record the Gaseous Release Permit No. GRP # <u>GB 2008-002</u>		

OP-007-003 Revision 14

Attachment 11.4 (1 of 6)

Waterford 3 Job Performance Measure
Examinee handout

11.4 GAS DECAY TANK DISCHARGE CHECKLIST (CONT'D)

	PERFORMED BY INITIALS	VERIFIED BY INITIALS
3. Verify one RAB Normal Ventilation Exhaust Fan, HVR-MFAN-0009A(B), running.	<u>ABC</u>	<u>DEF</u>
4. Verify the Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648, alarm setpoint is as specified on the Gaseous Release Permit. (N/A this step if monitor is inoperable). Setpoint <u>2.19 e+00</u>	<u>ABC</u>	<u>DEF</u>
5. <u>If Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648, has been declared inoperable, then install a jumper in the junction box behind the RM-80 between the following terminals:TB5 Terminal 6 and TB3 Terminal 7. (N/A this step if monitor is operable)</u>	<u>NA</u>	
6. Start the Moisture Control Unit by positioning the Unit Control Switch to Reset, then Manual. The Switch will spring return to Auto and the pump will start. (N/A if PRM-IRE-0648 is inoperable)	<u>ABC</u>	<u>DEF</u>
7. Verify Gas Decay Tanks Bypass Manual Isolation, GWM-304, Locked Closed.	<u>ABC</u>	<u>DEF</u>
8. Verify Gas Decay Tanks Discharge Pressure Control Valve, GWM-306, Open and Set @ 50 psig.	<u>ABC</u>	<u>DEF</u>
9. Verify Gas Decay Tanks Discharge PCV GWM-IPIC-6770-AB Root, GWM-307, Open.	<u>ABC</u>	<u>DEF</u>
10. Verify Waste Gas Discharge to VGCH Drain Isolation, GWM-3091, Closed.	<u>ABC</u>	<u>DEF</u>
11. Verify Waste Gas Discharge to VGCH Drain, GWM-3092, Closed.	<u>ABC</u>	<u>DEF</u>
12. Verify Waste Gas Discharge to VGCH Drain, Isolation, GWM-3095, Closed.	<u>ABC</u>	<u>DEF</u>

OP-007-003 Revision 14

Attachment 11.4 (2 of 6)

Waterford 3 Job Performance Measure
Examinee handout

11.4 GAS DECAY TANK DISCHARGE CHECKLIST (CONT'D)

		PERFORMED BY INITIALS	VERIFIED BY INITIALS
13.	Verify Waste Gas Discharge to VCCH Drain, CWM-310, Closed.	<u>ABC</u>	<u>DEF</u>
14.	Open Gas Decay Tank A(B)(C) Discharge Manual Isolator for the GDT(s) to be discharged.		
	CWM-3051A, 3051B, 3051C, All (Circle Applicable)	<u>ABC</u>	<u>DEF</u>
15.	Position the GDT Charge/Off/Release Switch for the GDT(s) to be discharged to RELEASE and verify the other GDT(s) CHARGE/OFF/RELEASE Switches are in OFF or CHARGE.		
	GDT A - CHARGE OFF <u>RELEASE</u> (Circle One)	<u>ABC</u>	<u>DEF</u>
	GDT B - CHARGE <u>OFF</u> RELEASE (Circle One)	<u>ABC</u>	<u>DEF</u>
	GDT C - CHARGE <u>OFF</u> RELEASE (Circle One)	<u>ABC</u>	<u>DEF</u>
16.	Verify the Gas Decay Tank Discharge Isolation for the GDT(s) to be discharged indicates Open and the other GDT(s) Discharge Valves indicate Closed.		
	GDT A - CWM-305A <u>Open</u> Closed (Circle One)	<u>ABC</u>	<u>DEF</u>
	GDT B - CWM-305B <u>Open</u> Closed (Circle One)	<u>ABC</u>	
	GDT C - CWM-305C <u>Open</u> Closed (Circle One)	<u>ABC</u>	<u>DEF</u>

Waterford 3 Job Performance Measure
Examinee handout

11.4 GAS DECAY TANK DISCHARGE CHECKLIST (CONT'D)

	PERFORMED BY INITIALS	VERIFIED BY INITIALS
17. Verify the Gas Decay Tank Inlet Flow Control for the GDT(s) to be discharged indicates Closed. GWM-206A, 206B, 206C (Circle Applicable)	<u>ABC</u>	<u>DEF</u>
18. <u>If Gaseous Waste Discharge Radiation Monitor, PRM-IRE-0648, is operable, then commence discharging by performing the following:</u>		
18.1 Unlock <u>and</u> Open GWM Moisture Control Unit Inlet Isolation, GWM-309301.	<u>ABC</u>	<u>DEF</u>
18.2 Throttle Open Waste Gas Discharge GWM-IFIT-0648 Outlet Isol, GWM-311, to establish 0 - 4 psig as read on Waste Gas Management Pressure Indicator, GWM-IPI-0648.3, located on Moisture Control Unit (MCU).	<u>ABC</u>	<u>DEF</u>
18.3 Position sample pump control switch to Auto on RM-80.	<u>ABC</u>	<u>DEF</u>
18.4 Start sample pump by pressing Flow pushbutton on RM-80 and verify the following: [Commitment P-17220]		
18.4.1 Flow pushbutton backlights.		
18.4.2 Pump On light energizes (red).		
18.4.3 Sample flow rises to > 2 scfm as seen locally on Gaseous Waste Discharge Radiation Monitor, PRM-IFI-0648.	<u>ABC</u>	<u>DEF</u>
19. <u>GO TO</u> step 6.4.8 to continue discharge.		

Waterford 3 Job Performance Measure
Examinee handout

11.4 GAS DECAY TANK DISCHARGE CHECKLIST (CONT'D)

	PERFORMED BY INITIALS	VERIFIED BY INITIALS
20. Position the GDT CHARGE/OFF/RELEASE Switch, for the GDT(s) that was discharged, to OFF and verify the Gas Decay Tank Discharge indicates Closed. GWM - 305A, 305B, 305C (Circle Applicable)	_____	_____
21. Secure the Moisture Control Unit by positioning the Unit Control Switch to Reset, then back to Auto. (N/A if PRM-IRE-0648 is inoperable)	_____	_____
22. Lock Closed GWM Moisture Control Unit Inlet Isolation, GWM-309301.	_____	_____*
23. Lock Closed GWM Waste Gas Discharge GWM-IFIT-0648 Outlet, GWM-311.	_____	_____*
24. Open Nitrogen Purge Valve to Rad Monitor, NG-4091.	_____	_____
25. Depress Flow pushbutton on RM-11 or Rad Monitor and verify Sample pump starts.	_____	_____
26. To secure purge, depress Flow pushbutton and verify Sample pump stops.	_____	_____
27. Lock Closed Nitrogen Purge Valve to Rad Monitor, NG-4091.	_____	_____*
28. Close Gas Decay Tank Discharge Manual Isolation for the GDT(s) that was discharged. GWM-3051A, 3051B, 3051C (Circle Applicable)	_____	_____

* These valves shall be verified Locked Closed after every discharge.

Waterford 3 Job Performance Measure
Examinee handout

11.1 (Gas Discharge Tank) Discharge Radiation Monitor (DRT) (Cont'd)

	PERFORMED BY	VERIFIED BY
	INITIALS	INITIALS
28. Remove jumper installed in the junction box behind the DRT back from the following terminals: DRT Terminal 6 and DRT Terminal 7. (N/A this step if jumper was not installed)		
29. Position the Pump Control Switch to Off at the Gas Discharge Radiation Monitor, DRT-131-0043, Control Panel.		

Performed by:

((Signature))

((Date))

Verified by:

((Signature))

((Date))

SMAGLES Review:

((Signature))

((Date/Time))

Waterford 3 Job Performance Measure
Examinee handout

BATCH GASEOUS RADIOACTIVE RELEASE REQUEST
OPERATIONS

- GAS DECAY TANK** A B C
(Enter All of the Tank Pressures) 172.5 psig 113.1 psig 172 psig
(Gas Decay Tank in Service) A B C
- Containment Purge With Mechanical Stops Installed (16000 CFM)
 Containment Purge Without Mechanical Stops (60000 CFM)
 Containment ILRT Depressurization - CTMT Pressure - _____ psia

LCO's Affecting Release: none

Requested By: *Daniel Smith* Date/Time: 3/23/08 0708

CHEMISTRY

(For Containment Purge/Depressurization Only)
Tritium Sampled By: N/A Date/Time: N/A
(Attach Results to Release Request)

Release Permit # GB- 08-002

Gas Decay Tank Volume Calculation (N/A as Appropriate):

GDT A Volume = 40.82 (172.5) = 7041 SCF
PRESS

GDT B Volume = 40.82 (N/A) = N/A SCF
PRESS

GDT C Volume = 40.82 (N/A) = N/A SCF
PRESS

Total Press = 172.5

TOTAL
VOLUME = 7041 SCF

Waterford 3 Job Performance Measure

Examinee handout

EG&G ORTEC g v - i (1215) npp32 I4W03.35 07-SEP-2005 15:36:22 Page 1
Entergy Spectrum name: 01_08903.An1

Sample description

GDT A Noble Gas Duplicate

Spectrum Filename: C:\User\SPC\01_08903.An1

Acquisition information

Start time 15:02:39
Live time 2000
Real time 2019
Dead time .95%
Detector/Geometry IDs 1 & 0

Detector system

Hot Lab #1

Calibration

Filename: 01_33cc_Gas_Sphere_01.clb
Created: 06-Nov-2002 10:47:58 & 06-Nov-2002 10:47:59
Detector #1 33cc Gas Sphere Shelf #1

Zero offset .190 keV; Gain .500 keV/channel
Quadratic .371E-07 keV/channel^2

Efficiency Calibration

Polynomial Uncertainty = .77%
Coefficients:
-.320824 -5.532561 .741966 -.094283 .005212 -.000122

Library Files

Main analysis library: Noble_Gas.lib
Library Match Width: .500
Library based peak stripping used.

Analysis parameters

Start channel 80 for an energy of 40.18keV
Stop channel 4000 for an energy of 2000.14keV
Peak rejection level 35.000%
Peak search sensitivity: 1
Sample Size: 10.000
Activity scaling factor 1.0000E+00/(1.0000E+00* 1.0000E+01)
= 1.0000E-01
Detection limit method:
Nureg 0472 Method
Additional random error: 1.0000000E+00
Additional systematic error: 1.0000000E+00
Fraction Limit: .000%
Background width: best method (based on spectrum).

Waterford 3 Job Performance Measure

Examinee handout

EG&G ORTEC g v - i (1215) npp32 I4W03.35 23-mar-2008 15:36:22 Page 2
 Entergy Spectrum name: 01_08903.An1

Corrections	Status	Comments
Decay correct to date	YES	23-Mar-2008 15:01:00
Decay during acquisition	YES	
Decay during collection	NO	
Peaked background correction	YES	01 Background.Pbc 23-Mar-2008 01:22:49
Absorption (Internal)	NO	
Geometry correction	NO	
Random summing	NO	

Energy calibration normalized difference: 1.0000

***** S U M M A R Y O F P E A K S I N R A N G E *****

PEAK ENERGY	AREA	UNCERT	FWHM	CORRECTN FACTOR	NUCLIDE ENERGY	BRNCH. RATIO	ACT. uCi/cc	NUC
80.99	2567.	2.90	1.10	2.236E-02	81.00	37.100	4.180E-04	Xe131
233.20	29.	31.32	1.05	2.260E-02	233.20	10.300	1.671E-05	Xe135

***** U N I D E N T I F I E D P E A K S U M M A R Y *****

PEAK CHANNEL	CENTROID ENERGY	BACKGROUND COUNTS	NET AREA COUNTS	EFFICIENCY * AREA	UNCERT 1 SIGMA %	FWHM keV	SUSPECTED NUCLIDE
1323.19	661.64	0.	62.	7.697E+03	12.70	1.518	- s
1591.06	795.55	0.	18.	2.656E+03	23.57	1.229	- s

- s Peak fails shape tests.
- D Peak area deconvoluted.
- L Peak written from unknown list.
- C Area < Critical level.

***** D I S C A R D E D I S O T O P E P E A K S *****

NUCLIDE	CENTROID ENERGY	BACKGROUND COUNTS	NET AREA COUNTS	INTENSITY CTS/SEC	UNCERT 1 SIGMA %	ACTIVITY
P - Peakbackground subtraction						

 This section based on library: Noble_Gas.lib

Waterford 3 Job Performance Measure

Examinee handout

EG&G ORTEC g v - i (1215) npp32 I4W03.35 23-Mar-2008 15:36:22 Page 3
Entergy Spectrum name: 01_08903.An1

```
***** I D E N T I F I E D   P E A K   S U M M A R Y *****
NUCLIDE      PEAK CENTROID  BACKGROUND  NET AREA   INTENSITY  UNCERT    FWHM
              CHANNEL    ENERGY    COUNTS     COUNTS     CTS/SEC   1 SIGMA %  keV
+-----+-----+-----+-----+-----+-----+-----+-----+
Xe-133      161.64    80.99      397.       2567.      1.283     2.90      1.099s
Xe-133m     465.16    232.70     18.        29.        .014     31.32     1.054s
```

s Peak fails shape tests.
D Peak area deconvoluted.
A Derived peak area.

```
***** S U M M A R Y   O F   L I B R A R Y   P E A K   U S A G E   *****
- NUCLIDE - AVERAGE ----- PEAK -----
NAME  CODE  ACTIVITY      ENERGY  ACTIVITY CODE  MDA VALUE      COMMENTS
      uCi/cc          keV  uCi/cc          uCi/cc
+-----+-----+-----+-----+-----+-----+-----+
Xe-133      4.1802E-04
           81.00 4.180E-04 @ ( 1.512E-05      5.29E+00
           160.60 0.000E+00 %  1.226E-03  293.26  6.50E-02 G
           302.85 0.000E+00 %  1.300E-02  161.25  5.00E-03 G
```

```
Xe-133m     1.6707E-05
           233.20 1.671E-05 *( 1.163E-05      2.26E+00
           31.32  1.03E+01
(- This peak used in the nuclide activity average.
```

- * - Peak is too wide, but only one peak in library.
- ! - Peak is part of a multiplet and this area went negative during deconvolution.
- ? - Peak is too narrow.
- @ - Peak is too wide at FW25M, but ok at FWHM.
- % - Peak fails sensitivity test.
- \$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
- + - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
- = - Peak outside analysis energy range.
- & - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
- P - Peakbackground subtraction
- } - Peak is too close to another for the activity to be found directly.

Nuclide Codes:

- T - Thermal Neutron Activation
- F - Fast Neutron Activation
- I - Fission Product
- N - Naturally Occurring Isotope
- P - Photon Reaction

Waterford 3 Job Performance Measure

Examinee handout

EG&G ORTEC g v - i (1215) npp32 I4W03.35 0 23-Mar-2008 5:36:22 Page 4
Entergy Spectrum name: 01_08903.An1

C - Charged Particle Reaction
M - No MDA Calculation

Peak Codes:

G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

NUCLIDE	TIME OF COUNT	TIME CORRECTED	UNCERTAINTY	1 SIGMA
	ACTIVITY	ACTIVITY	COUNTING	
	uCi/cc	uCi/cc		
Kr-87 <	1.6420E-06	1.6668E-06	0.000E+00%	0.000E+00%
Kr-88 <	4.5779E-06	4.6088E-06	0.000E+00%	0.000E+00%
Xe-133 #	4.1795E-04	4.1802E-04	2.900E+00%	
Xe-133m#	1.6701E-05	1.6707E-05	3.132E+01%	
Xe-135 <	1.1626E-06	1.1650E-06	0.000E+00%	0.000E+00%
Xe-138 <	9.5604E-06	1.0366E-05	0.000E+00%	0.000E+00%

- # All peaks for activity calculation had bad shape.
- * Activity omitted from total
- & Activity omitted from total and all peaks had bad shape.
- < MDA value printed.
- A Activity printed, but activity < MDA.
- C Area < Critical level.

----- S U M M A R Y -----

TOTAL ACTIVITY (40.2 to 2000.1 keV) 4.3465510E-04 uCi/cc
TOTAL DECAYED ACTIVITY (40.2 to 2000.1 keV) 4.3472370E-04 uCi/cc

RESTORE POWER TO DRY COOLING TOWER SUMP PUMPS DURING CONTROL ROOM EVACUATION

JPM P1 Exam Submittal rev1



JPM P1

Site W3 **Job** RO **System/Duty Area** SP **Mode** OFFNOR
M **Number** 1

Revision 1

Approval _____

Estimated Time 20 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-902-009, Appendix 20 Operation of DCT Sumps Pumps Rev 301

NRC KA Number

G-2-4-11 RO: 3.4, SRO: 3.6
G-2-4-34 RO: 3.8, SRO: 3.6
4.2-A68-AK3.18 RO: 4.2, SRO: 4.5

Evaluation Methods

SIMULATE

Trainee

Evaluator

Observer

Date

Satisfactory

Unsatisfactory

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. A loss of offsite power occurred.
2. Emergency Diesel Generator B is supplying power to the B Safety Busses.
3. Emergency Diesel Generator A failed to start.
4. EDG B Sequencer has timed out
5. A PMP (Probable Maximum Precipitation) event is NOT in progress.

INITIATING CUE

The CRS directs you to restore power to B Train Dry Cooling Tower Sump Pumps in accordance with OP-902-009, Appendix 20, Operation of DCT Sump Pumps.

TERMINATING CUE

Power restored to B Train Dry Cooling Power Sump Pumps

STANDARD

Power restored to B Train Dry Cooling Tower Sump Pumps

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Possible flooding of DCT area

HUMAN INTERFACES

CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. At MCC 314B, place the following switches to bypass:

CRIT

- East Dry Cooling Tower Sump Pump B bypass switch
- West Dry Cooling Tower Sump Pump B bypass switch

CUES: When Examinee locates and simulates placing the radiation monitor bypass switches to Bypass CUE that switches are in position selected by Examinee .

NOTE: Switches are located on respective pump breaker cubicles at MCC-314B in +1 FHB SWGR Room.

STANDARDS: 1. Examinee locates and simulates placing East and West Dry Cooling Tower Sump Pump B bypass switches in Bypass position.

SAT _____ **UNSAT** _____

2. **IF** MCC 314B is energized **AND** the MCC 314B Safety to Nonsafety Tie, SSD-EBKR-314B- 2M, is Open, **THEN** perform the following:

CUES: Cues that breaker indicates OPEN.

STANDARDS: 1. Examinee contacts CR and verifies EDG B Sequencer timed out.

SAT _____ **UNSAT** _____

3. Open **ALL** MCC-314B non-safety load breakers.

CRIT

CUES: When Examinee locates and simulates opening all non-safety-related bus load breakers on MCC-314B, CUE that breakers are Open.

NOTE: All breakers are to the LEFT side of the Safety to Non-Safety Tie Bkr

STANDARDS: 1. Examinee locates and simulates placing all non-safety-related bus load breakers on MCC-314B in Open position.

SAT _____ **UNSAT** _____

4. Close SSD-EBKR-314B-2M, MCC 314B Safety to Non-Safety Tie,.

CRIT

CUES: 1. If Examinee asks condition of Closing Spring Indicator, CUE that Indicator shows Charged.

2. When Examinee locates and simulates closing the safety to non-safety tie breaker by depressing CLOSE pushbutton or operating MANUAL Closing Spring Latch Lever, CUE that breaker is Closed.

STANDARDS: 1. Examinee locates and simulates placing MCC 314B Safety to Non-Safety Tie Breaker in Closed position.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

5. Close the following supply breakers: **CRIT**
SP-EBKR-314B-4F West Dry Cooling Tower Sump Pump B.

CUES: When Examinee locates and simulates closing the West DCT sump pump breaker, CUE sound of Mechanical linkage closing and breaker indicates CLOSED.
If Examinee does not simulate closing then cue breaker is in position selected by examinee

STANDARDS: 1. Examinee locates and simulates placing West DCT Sump Pump B breaker in Closed position.

SAT _____ **UNSAT** _____

6. Close the following supply breakers: **CRIT**
SP-EBKR-314B-5F East Dry Cooling Tower Sump Pump B.

CUES: When Examinee locates and simulates closing the EAST DCT sump pump breaker, CUE sound of Mechanical linkage closing and breaker indicates CLOSED.
If Examinee does not simulate closing then cue breaker is in position selected by examinee

STANDARDS: 1. Examinee locates and simulates placing East DCT Sump Pump B breaker in Closed position.

SAT _____ **UNSAT** _____

7. **IF** a PMP event is in progress **THEN** align DCT Portable Sump Pump A(B) in accordance with OP-003-024, Sump Pump Operation.

CUES: Cues contained in initial conditions.

STANDARDS: 1. Examinee determines that DCT portable Sump does not need to be aligned.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. A loss of offsite power occurred.
2. Emergency Diesel Generator B is supplying power to the B Safety Busses.
3. Emergency Diesel Generator A failed to start.
4. EDG B Sequencer has timed out
5. A PMP (Probable Maximum Precipitation) event is NOT in progress.

INITIATING CUE

The CRS directs you to restore power to B Train Dry Cooling Tower Sump Pumps in accordance with OP-902-009, Appendix 20, Operation of DCT Sump Pumps.

Waterford 3 Job Performance Measure
Examinee Handout

WATERFORD 3 SES STANDARD APPENDICES	OP-902-009 Revision 301 Page 135 of 195
	Appendix 20 Page 1 of 3

Operation of DCT Sump Pumps

INSTRUCTIONS

CONTINGENCY ACTIONS

----- **NOTE** -----

This attachment should be performed following any power interruption to either the 3A or 3B safety buses (as directed from EOPs).

IF a Probable Maximum Precipitation (PMP) event is in progress **AND ANY** Dry Cooling Tower (DCT) Motor Driven Sump Pump is unavailable, **THEN BOTH** of the following shall be performed for the affected DCT sump to prevent flooding of associated 315A(B) Motor Control Center and Transformer within time frames as listed:

- One DCT Motor Driven Sump Pump is aligned for operation within 30 minutes of the PMP event.
- The DCT Portable Sump Pump (diesel driven) is aligned for operation within 3 hours of the PMP event.

____ 1.1 At MCC 314A(B), place the following switches to Bypass:

- DCT #1 Sump Pump A
Radiation Monitor bypass
switch
- DCT #2 Sump Pump A
Radiation Monitor bypass
switch
- DCT #1 Sump Pump B
Radiation Monitor bypass
switch
- DCT #2 Sump Pump B
Radiation Monitor bypass
switch

Waterford 3 Job Performance Measure

Examinee Handout

WATERFORD 3 SES STANDARD APPENDICES	OP-902-008 Revision 301 Page 136 of 195
Appendix 20 Page 2 of 3	

INSTRUCTIONS

CONTINGENCY ACTIONS

____ 1.2 IF MCC 314A is energized AND the MCC 314A Safety to Nonsafety Tie, SSD-EBKR-314A-2M, is Open, THEN perform the following:

- a. Verify EDG A SEQUENCER has timed out.
- b. Open ALL MCC-314A nonsafety load breakers.
- c. Close SSD-EBKR-314A-2M, MCC 314A Safety to Nonsafety Tie.
- d. Close the following supply breakers:
 - SP-EBKR-314A-4F, West Dry Cooling Tower Sump Pump A
 - SP-EBKR-314A-5F, East Dry Cooling Tower Sump Pump A

Waterford 3 Job Performance Measure

Examinee Handout

WATERFORD 3 SES

OP-902-009

Revision 301

STANDARD APPENDICES

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Appendix 20

Page 3 of 3

INSTRUCTIONS

CONTINGENCY ACTIONS

_____ 1.3 IF MCC 314B is energized AND the MCC 314B Safety to Nonsafety Tie, SSD-EBKR-314B-2M, is Open, THEN perform the following:

- a. Verify EDG B SEQUENCER has timed out.
- b. Open ALL MCC-314B nonsafety load breakers.
- c. Close SSD-EBKR-314B-2M, MCC 314B Safety to Nonsafety Tie.
- d. Close the following supply breakers:
 - SP-EBKR-314B-4F, West Dry Cooling Tower Sump Pump B
 - SP-EBKR-314B-6F, East Dry Cooling Tower Sump Pump B

_____ 1.4 IF a PMP event is in progress THEN align DCT Portable Sump Pump A(B) in accordance with OP-003-024, Sump Pump Operation.

End of Appendix 20

Waterford 3 Job Performance Measure
Examinee Handout

Directions to Examinee:

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

INITIAL CONDITIONS

1. A loss of offsite power occurred.
2. Emergency Diesel Generator B is supplying power to the B Safety Busses.
3. Emergency Diesel Generator A failed to start.
4. EDG B Sequencer has timed out
5. A PMP (Probable Maximum Precipitation) event is NOT in progress.

INITIATING CUE

The CRS directs you to restore power to B Train Dry Cooling Tower Sump Pumps in accordance with OP-902-009, Appendix 20, Operation of DCT Sump Pumps.

RESET EFW PUMP AB MECHANICAL OVERSPEED DURING CONTROL ROOM EVACUATION
JPM P2 Exam Submittal Rev 1



JPM P2

Site W3 **Job** RO **System/Duty Area** EFW **Mode** EMERG **Number** 1

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown Rev 015

NRC KA Number

3.4-061-A2.04 RO: 3.4, SRO: 3.8

3.4-061-K4.07 RO: 3.1, SRO: 3.3

4.2-068-AA1.02 RO: 4.3, SRO: 4.5

Evaluation Methods

SIMULATE

Trainee

Evaluator

Observer

Date

Satisfactory

Unsatisfactory

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. The Control Room has been evacuated due to a fire in CP-2.
2. A mechanical overspeed trip of Emergency Feedwater Pump AB has occurred.
3. The Reactor has been shutdown for 1 hour.
4. The AB AC busses have been deenergized per OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown.
5. Power is deenergized to 3A Safety Bus and MS-407, EFW Pump AB Drip Pot to Normal Drain Bypass is failed open.

INITIATING CUE

The ATC directs you to reset the EFW Pump AB Mechanical Overspeed Trip and reopen MS-416, EFW Pump AB Turbine Stop Valve in accordance with OP-901-502, Subsection E1, Step 2.2. Step 2.2.1 has already been completed by the ATC.

TERMINATING CUE

EFW Pump AB Mechanical Overspeed Trip Device reset and EFW Pump AB Turbine Stop Valve reopened

STANDARD

EFW Pump AB Mechanical Overspeed Trip Mechanism reset

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Loss of EFW pump capability

HUMAN INTERFACES

ATC

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

KEY

NOTE: Components to be operated during this JPM are located on the -35' elevation near EFW pump AB. Critical steps are denoted by **CRIT**.

START TIME _____

1. CLOSE the following:

- MS-401A, EFW Pump AB Turbine Steam Supply From SG1
- MS-401B, EFW Pump AB Turbine Steam Supply From SG2

CUES: When Examinee requests that Control Room close MS-401A & B, CUE that ATC reports MS-401A & B are Closed.

STANDARDS: 1. Examinee requests ATC to close MS-401A and MS-401B.

SAT _____ **UNSAT** _____

2. Verify the following Open:

- MS-407, EFW Pump AB Drip Pot Normal Drain Bypass
- MS-408, EFWPT MS Supply Drip Pot Normal Drain Isolation

NOTE MS-407 Label reads EFWPT MS Supply Drip Pot Normal Drain Bypass PAI requested

CUES: When Examinee locates valves, CUE that valves are Open.

STANDARDS: 1. Examinee verifies MS-407 and MS-408 are open by

- visual indication of limit switches MS-407.
- Dial indicator on MS-408

SAT _____ **UNSAT** _____

3. Throttle Open MS-409, EFWPT MS Supply Drip Pot Drain to EDT Sump as necessary to verify steam header depressurized.

CUES: When Examinee locates and demonstrates throttling open valve, CUE that MS-409 is Open and no steam issuing to floor drain..

STANDARDS: 1. Examinee simulates opening MS-409 using manual Handwheel.
2. Examinee verifies steam header depressurized by determining no steam issuing to floor drain.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

-
4. Close the following: **CRIT**
- MS-409, EFWPT MS Supply Drip Pot Drain to EDT Sump
 - MS-407, EFW Pump AB Drip Pot Normal Drain Bypass
 - MS-416, EFW Pump AB Turbine Stop Valve

CUES: When Examinee locates and demonstrates closing valves, CUE that valves are Closed.

- STANDARDS:**
1. Examinee simulates closing MS-409 using local Handwheel.
 2. Examinee simulates closing MS-407 using manual handwheel on valve actuator. Direction to close or open valve is indicated on handwheel.
 3. Examinee simulates closing MS-416 by depressing motor declutch lever and turning the handwheel clockwise until handwheel travel stops. Examinee verifies latch arm on valve is positioned to accept latch.

SAT _____ **UNSAT** _____

-
5. Verify EFW Pump AB mechanical overspeed trip assembly is Reset. **CRIT**

CUES: When Examinee demonstrates resetting mechanical overspeed trip assembly, CUE by visual indication that mechanical overspeed linkage is reset.

- STANDARDS:**
1. Examinee simulates pushing connecting rod lever towards stop valve.
 2. Examinee verifies tappet nut fully recessed in Overspeed Trip Mechanism.
 3. Examinee verifies latch fully engaged with latch arm.
 4. Examinee simulates releasing the connecting rod.
 5. Examinee verifies latch remains engaged with latch arm.

SAT _____ **UNSAT** _____

-
6. Open MS-416, EFW Pump AB Turbine Stop Valve. **CRIT**

CUES: When Examinee demonstrates opening valve, CUE that MS-416 is Open.

- STANDARDS:**
1. Examinee simulates opening MS-416 by depressing motor declutch lever and turning the handwheel counterclockwise until handwheel travel stops.

NOTE: Examinee may verify external open limit switch on valve is made up.

SAT _____ **UNSAT** _____

Waterford 3 Job Performance Measure

KEY

7. OPEN at least one of the following to start EFW Pump AB:

CRIT

- MS-401A, EFW Pump AB Turbine Steam Supply From SG1
- MS-401B, EFW Pump AB Turbine Steam Supply From SG2

CUES: When requested by Examinee, report as ATC that MS- 401A & B are open and EFW PUMP AB is running at normal speed.

STANDARDS: 1. Examinee requests ATC to open MS-401A and/or MS-401B.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

6. The Control Room has been evacuated due to a fire in CP-2.
7. A mechanical overspeed trip of Emergency Feedwater Pump AB has occurred.
8. The Reactor has been shutdown for 1 hour.
9. The AB AC busses have been deenergized per OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown.
10. Power is deenergized to 3A Safety Bus and MS-407, EFW Pump AB Drip Pot to Normal Drain Bypass is failed open.

INITIATING CUE

The ATC directs you to reset the EFW Pump AB Mechanical Overspeed Trip and reopen MS-416, EFW Pump AB Turbine Stop Valve in accordance with OP-901-502, Subsection E1, Step 2.2. Step 2.2.1 has already been completed by the ATC.

Waterford 3 Job Performance Measure
Examinee handout

Off Normal Procedure
Evacuation of Control Room and Subsequent Plant Shutdown
E₁ CONTROL ROOM EVACUATION WITH FIRE (CONT'D)

OP-901-502
Revision 015

		PLACEKEEPER		
		START	DONE	N/A
2.2	<u>IF</u> EFW Pump AB has tripped, <u>THEN</u> reset as follows:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.1	CLOSE the following:			
	• MS-401A EFW Pump AB Turbine Steam Supply From SG1		<input checked="" type="checkbox"/>	
	• MS-401B EFW Pump AB Turbine Steam Supply From SG2		<input checked="" type="checkbox"/>	
2.2.2	Verify the following Open:			
	• MS-407 EFW Pump AB Drip Pot Normal Drain Bypass		<input type="checkbox"/>	
	• MS-408 EFWPT MS Supply Drip Pot Normal Drain Isolation		<input type="checkbox"/>	
2.2.3	Throttle Open EFWPT MS Supply Drip Pot Drain to EDT Sump, MS-409, as necessary to verify steam header depressurized.		<input type="checkbox"/>	
2.2.3	Close the following:			
	• MS-409 EFWPT MS Supply Drip Pot Drain to EDT Sump		<input type="checkbox"/>	
	• MS-407 EFW Pump AB Drip Pot Normal Drain Bypass		<input type="checkbox"/>	
	• MS-416 EFW Pump AB Turbine Stop Valve		<input type="checkbox"/>	
2.2.4	Verify EFW Pump AB mechanical overspeed trip assembly is Reset.		<input type="checkbox"/>	
2.2.5	Open EFW Pump AB Turbine Stop Valve, MS-416.		<input type="checkbox"/>	
2.2.6	OPEN <u>at least</u> one the following to start EFW Pump AB:			
	• MS-401A EFW Pump AB Turbine Steam Supply From SG1		<input type="checkbox"/>	
	• MS-401B EFW Pump AB Turbine Steam Supply From SG2		<input type="checkbox"/>	

Waterford 3 Job Performance Measure
Examinee handout

Directions to Examinee:

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

INITIAL CONDITIONS

11. The Control Room has been evacuated due to a fire in CP-2.
12. A mechanical overspeed trip of Emergency Feedwater Pump AB has occurred.
13. The Reactor has been shutdown for 1 hour.
14. The AB AC busses have been deenergized per OP-901-502, Evacuation of Control Room and Subsequent Plant Shutdown.
15. Power is deenergized to 3A Safety Bus and MS-407, EFW Pump AB Drip Pot to Normal Drain Bypass is failed open.

INITIATING CUE

The ATC directs you to reset the EFW Pump AB Mechanical Overspeed Trip and reopen MS-416, EFW Pump AB Turbine Stop Valve in accordance with OP-901-502, Subsection E1, Step 2.2. Step 2.2.1 has already been completed by the ATC.

TRANSFER AB SUPPS FROM ALTERNATE TO NORMAL POWER SUPPLY
JPM P3 Exam Submittal Rev 1



JPM P3

Site W3 **Job** NAO **System/Duty Area** **ID** **Mode** NORM **Number** 2

Revision 1

Approval _____

Estimated Time 15 Min

Time Critical No **Critical Time** N/A **Alternate Path** NO

References

OP-006-005, Inverters and Distribution Rev. 300

NRC KA Number

3.6-062-K4.10 RO: 3.1, SRO: 3.5
3.6-062-A2.10 RO: 3.0, SRO: 3.3
3.6-062-A3.04 RO: 2.7, SRO: 2.9

Evaluation Methods

SIMULATE

Trainee	<input type="text"/>	Evaluator	<input type="text"/>
Observer	<input type="text"/>	Date	<input type="text"/>
Satisfactory	<input type="checkbox"/>	Unsatisfactory	<input type="checkbox"/>

Waterford 3 Job Performance Measure

KEY

Directions to Examinee:

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

INITIAL CONDITIONS

1. SUPS AB was placed on alternate source for Maintenance.
2. SUPS AB is ready to be transferred to the normal power supply.

INITIATING CUE

The ATC directs you to transfer SUPS AB from alternate to normal power supply in accordance with OP-006-005, Inverters and Distribution, Section 6.4.2.

TERMINATING CUE

SUPS AB energized from normal power supply.

STANDARD

SUPS AB energized from normal power supply.

TOOLS

None

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Equipment damage

HUMAN INTERFACES

ATC

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Provide Examinee OP-006-005, Attachment 11.13

Waterford 3 Job Performance Measure

KEY

Critical steps are denoted by **CRIT**.

START TIME _____

1. If SUPS AB Manual Bypass Switch is in SYNC DISCONNECT, then place Manual Bypass Switch to ALTERNATE SOURCE TO LOAD. **CRIT**

CUES: When Examinee locates SUPS AB Manual Bypass Switch, CUE that bypass switch is in SYNC DISCONNECT position.

STANDARDS: 1. Examinee locates and simulates placing SUPS AB Manual Bypass Switch in ALTERNATE SOURCE TO LOAD position.

SAT _____ **UNSAT** _____

2. If SUPS AB inverter was isolated in accordance with step 6.4.1.3 or section 8.3, then depress and hold Pre-charge pushbutton until the following are met: **CRIT**

- Pre-charge light illuminates
- DC Input voltage > 120 VDC

CUES: If asked, CUE Examinee that inverter was previously isolated IAW OP-006-005 Step 6.4.1.3.

When Examinee locates Pre-charge pushbutton, CUE that Pre-Charge light is lit.

When Examinee locates DC Input indication, CUE that Precharge voltage is approximately 125 VDC on DC Input Meter.

STANDARDS: 1. Examinee locates and simulates depressing Pre-charge pushbutton until Pre-charge light lit.
2. Examinee locates and verifies DC Input voltage > 120 VDC on DC Input Meter.

SAT _____ **UNSAT** _____

3. Verify the following in SUPS AB: **CRIT**

- SUPS AB Emergency Feeder (DC) (ID-EBKR-2572AB-1) On
- Inverter Output frequency ~ 60 Hz (59.7 to 60.3 Hz)
- SUPS AB Normal Feeder (ID-EBKR-2572AB-3) On
- Rectifier DC Output voltage ~140 VDC (138.5 to 141.5 VDC)

CUES: When Examinee locates breakers and indications, CUE that:

- SUPS AB Emergency Feeder breaker is On.
- Inverter Output frequency is approximately 60 Hz.
- SUPS AB Normal Feeder breaker is On.
- Rectifier DC Output voltage is approximately 140 VDC.

STANDARDS: 1. Examinee locates and simulates positioning breakers and verifying frequency and voltage within specified ranges.

SAT _____ **UNSAT** _____

JPM P3 Exam Submittal rev1

Waterford 3 Job Performance Measure

KEY

4. Verify SUPS AB In Sync light Illuminated, then place Manual Bypass Switch to NORMAL OPERATION. **CRIT**

CUES: When Examinee locates SUPS AB In Sync Light Illuminated, CUE that Inverter In Sync Light is lit.

STANDARDS: Examinee locates and simulates placing Manual Bypass Switch to NORMAL OPERATION..

SAT _____ **UNSAT** _____

5. Depress and release SUPS AB Inverter To Load pushbutton, then verify Inverter Supplying Load light Illuminated. **CRIT**

CUES: When Examinee Depresses and releases SUPS AB Inverter To Load pushbutton, CUE that Inverter Supplying Load light is lit.

STANDARDS: 1. Examinee locates and simulates depressing and releasing SUPS AB Inverter to Load pushbutton and verifies Inverter Supplying Load light lit.

SAT _____ **UNSAT** _____

6. Verify SUPS AB Static Switch Transfer To Bypass Source alarm Clears at local annunciator panel.

CUES: When Examinee locates SUPS AB Static Switch To Bypass Source alarm, CUE that alarm light is NOT illuminated.

STANDARDS: 1. Examinee locates and verifies SUPS AB Static Switch to Bypass Source alarm clear.

SAT _____ **UNSAT** _____

End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

KEY

INFORMATION FOR EXAMINEE

Directions to Examinee:

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

INITIAL CONDITIONS

1. SUPS AB was placed on alternate source for Maintenance.
2. SUPS AB is ready to be transferred to the normal power supply.

INITIATING CUE

The ATC directs you to transfer SUPS AB from alternate to normal power supply in accordance with OP-006-005, Inverters and Distribution, Section 6.4.2.

Waterford 3 Job Performance Measure
Examinee Handout

System Operating Procedure
Inverters and Distribution

OP-006-005
Revision 11

6.4.2 Transfer SUPS AB from Alternate to Normal AC Power as follows:

6.4.2.1 If SUPS AB Manual Bypass Switch is in SYNC DISCONNECT, then place Manual Bypass Switch to ALTERNATE SOURCE TO LOAD.

NOTE

At least 60 seconds must be allowed for capacitors to fully discharge prior to re-energizing inverter.

6.4.2.2 If SUPS AB inverter was isolated in accordance with step 6.4.1.3 or section 8.3, then depress and hold Pre-charge pushbutton until the following are met:

- Pre-charge light illuminates
- DC Input voltage \geq 120 VDC

CAUTION

BATTERY INPUT BREAKER SHALL NOT BE PLACED TO "ON" UNLESS PRE-CHARGE LIGHT IS ILLUMINATED AND DC INPUT VOLTAGE IS \geq 120 VDC.

6.4.2.3 Verify the following in SUPS AB:

- SUPS AB Emergency Feeder (DC) (ID-EBKR-2572AB-1) On
- Inverter Output frequency ~60 Hz (59.7 to 60.3 Hz)
- SUPS AB Normal Feeder (ID-EBKR-2572AB-3) On
- Rectifier DC Output voltage ~140 VDC (138.5 to 141.5 VDC)

6.4.2.4 Verify SUPS AB In Sync light Illuminated, then place Manual Bypass Switch to NORMAL OPERATION.

CAUTION

1. TO PREVENT INVERTER DAMAGE, AN INVERTER SHOULD NOT BE OPERATED WITH BATTERY DISCONNECTED.
2. TO PREVENT INVERTER DAMAGE, THE "IN SYNC" LIGHT MUST BE ILLUMINATED PRIOR TO DEPRESSING "INVERTER TO LOAD" PUSHBUTTON.

6.4.2.5 Depress and release SUPS AB Inverter To Load pushbutton, then verify Inverter Supplying Load light Illuminated.

6.4.2.6 Verify SUPS AB Static Switch Transfer To Bypass Source alarm Clears at local annunciator panel.

Waterford 3 Job Performance Measure
Examinee Handout

11.13 SUPS AB BREAKER LINEUP

CAUTION

ALL REPOSITIONING OF BREAKERS SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE SECTION OF THIS PROCEDURE.

<u>REQUIRED COMP #</u>	<u>EQUIPMENT DESCRIPTION</u>	<u>LOCATION</u>	<u>POSITION</u>	<u>PERFORMED BY (Initial / Date)</u>	<u>VERIFIED BY (Initial / Date)</u>
ID-EBKR-311AB-3H	SUPS AB Normal Supply	RAB +21 COL. 11A&J	ON	_____	_____
ID-EBKR-312AB-2BR	SUPS AB Bypass Supply	RAB +21 COL. 10A&J	ON	_____	_____
ID-EBKR-AB-13	SUPS AB Emergency Supply (DC)	RAB +21 COL. 10A&J	ON	_____	_____
ID-EBKR-2572AB-1	SUPS AB Emergency Feeder (DC)	RAB +21 COL. 10A&J	ON	_____	_____ 6
ID-EBKR-2572AB-2	SUPS AB Bypass Feeder	RAB +21 COL. 10A&J	ON	_____	_____
ID-EBKR-2572AB-3	SUPS AB Normal Feeder	RAB +21 COL. 10A&J	ON	_____	_____
ID-EBKR-2572AB-4	SUPS AB Inverter Output To Static Switch	RAB +21 COL. 10A&J	ON	_____	_____
ID-EBKR-2572AB-5	SUPS AB Output To PDP AB1	RAB +21 COL. 10A&J	ON	_____	_____ 6

Waterford 3 Job Performance Measure
Examinee Handout

Directions to Examinee:

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

INITIAL CONDITIONS

1. SUPS AB was placed on alternate source for Maintenance.
2. SUPS AB is ready to be transferred to the normal power supply.

INITIATING CUE

The ATC directs you to transfer SUPS AB from alternate to normal power supply in accordance with OP-006-005, Inverters and Distribution, Section 6.4.2.

EXAM SUBMITTAL Rev. 1

Facility:	WATERFORD 3	Scenario No.:	2	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> • ~60% power, MOC, AB buses aligned to "B" side. • "A" EFW pump OOS for seal replacement, "A" ACCW pump OOS for motor pm,. 				
Turnover:	<ul style="list-style-type: none"> • The "A" main feed pump outboard pump bearing vibration is elevated shortly after being placed in service and the crew is holding power while engineering evaluates. 				
Critical Task:	<ul style="list-style-type: none"> • Ensuring Reactivity control post trip by actions to initiate Diverse Trip. • Ensuring feedwater to at least one SG utilizing Auxiliary Feedwater. 				
Event No.	Malf. No.	Event Type*	Event Description		
1		R – ATC N – BOP/SRO	15 MW/MIN downpower to remove "A" Main feed pump from service due to high vibration.		
2	FW26B	I – BOP, SRO	Steam Generator Feedwater Flow instrument fails HIGH to FWCS #2.		
3	RD02A72	C – ALL TS – SRO	Dropped Regulating group CEA, #72 and recovery.		
4	CV12A2	I – ATC, SRO TS - SRO	VCT level inst., CVC-ILT-0227, fails LOW.		
5	FW03B RP01A-D RP02A-D	M - ALL	Second main feed pump trips, reactor fails to auto or manually trip. Diverse Scram successful.		
6	FW05 FW07B DI-08A07S09-1	C – BOP, SRO	"AB" EFW pump trips on overspeed, "B" EFW pump fails to start, manual start is also unsuccessful.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

EXAM SUBMITTAL Rev. 1

Facility:	WATERFORD 3	Scenario No.:	2	Op Test No.:	NRC
Examiners:	_____		Operators:	_____	
Initial Conditions:	<ul style="list-style-type: none"> • ~60% power, MOC, AB buses aligned to "B" side. • "A" EFW pump OOS for seal replacement, "A" ACCW pump OOS for motor pm,. 				
Turnover:	<ul style="list-style-type: none"> • The "A" main feed pump outboard pump bearing vibration is elevated shortly after being placed in service and the crew is holding power while engineering evaluates. 				
Critical Task:	<ul style="list-style-type: none"> • Ensuring Reactivity control post trip by actions to initiate Diverse Trip. • Ensuring feedwater to at least one SG utilizing Auxiliary Feedwater. 				
Event No.	Malf. No.	Event Type*	Event Description		
1		R – ATC N – BOP/SRO	15 MW/MIN downpower to remove "A" Main feed pump from service due to high vibration.		
2	FW26B	I – BOP, SRO	Steam Generator Feedwater Flow instrument fails HIGH to FWCS #2.		
3	RD02A72	C – ALL TS – SRO	Dropped Regulating group CEA, #72 and recovery.		
4	CV12A2	I – ATC, SRO TS - SRO	VCT level inst., CVC-ILT-0227, fails LOW.		
5	FW03B RP01A-D RP02A-D	M - ALL	Second main feed pump trips, reactor fails to auto or manually trip. Diverse Scram successful.		
6	FW05 FW07B DI-08A07S09-1	C – BOP, SRO	"AB" EFW pump trips on overspeed, "B" EFW pump fails to start, manual start is also unsuccessful.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Team 2
did not perform Event 4

Scenario Event Description

NRC Scenario 2

EXAM SUBMITTAL Rev. 1

Waterford 3 2008 NRC Scenario #2

The crew assumes the shift at ~60% power with elevated vibrations on the "A" FWPT outboard pump bearing which had just been placed in service. A team consisting of Engineering, Maintenance and Operations Management are in the field evaluating. Shortly after turnover the crew will be directed by the Ops Manager to reduce power to 50% at 15 MW/MIN and take the "A" FWPT OOS. As the crew arrives at 55% the vibrations worsen on indications in the control room and the team reports from the field that local vibrations are excessive on A FWPT. The crew will then trip the A FWPT and verify feedwater control systems restore SG levels automatically.

When SG levels have stabilized the Feed Flow input to the FWCS #2 fails high requiring the BOP to take manual control of the #2 SG feedwater control.

After the plant is stabilized then a regulating group CEA drops into the core. OP-901-102, CEA or CEDMCS Malfunction is entered and the CEA can be recovered.

When the CEA has been recovered or during the recovery the VCT level instrument, CVC-ILT-0227, fails low, causing the charging pump suction to shift to the RWSP. The crew implements OP-901-113, Volume Control Tank Makeup Control Malfunction.

After the crew completes the actions for the VCT level instrument failure the "B" FWPT trips and the crew attempts a manual Rx trip which is unsuccessful and the crew must utilize the Diverse Reactor Trip. If the crew doesn't manually trip the auto trips are also not successful.

Post-trip the "AB" EFW pump trips on overspeed when started and the "B" EFW pump failed to auto start and manual start is also unsuccessful.

EOP flowpath is OP-902-000, STANDARD POST TRIP ACTIONS, OP-902-006, LOSS OF MAIN FEEDWATER RECOVERY. Feedwater recovery success path is aligning Auxiliary feedwater IAW App 32 of OP-902-009 Standard Appendices.

If NRC Lead Examiner asks SRO candidate(s) to determine Emergency Plan classification, the candidate should determine the following: No E-Plan call unless auto trip indicated first. If auto trip failed, then manual Diverse Reactor Trip was used, then the call would be Alert (SA3), Failure of Reactor Protection System instrumentation to complete or initiate an automatic reactor trip once a Reactor Protection System setpoint has been exceeded and manual trip was successful."

Scenario Event Description

NRC Scenario 2

EXAM SUBMITTAL Rev. 1

Scenario Notes:

1. Reset Simulator to IC-92.
2. Verify the following Scenario Malfunctions are loaded:
 - a. FW12A; FWPT A outbd brg vib : set to 3 (setup)
 - b. RP01A-D; RPS manual Switch fail set to TRUE; (setup)
 - c. RP02A-D; RPS Channel A-D auto trip fail ,set to TRUE; (setup)
 - d. FW26B; SG 2 Feed Flow fail High; set to 100, (5 second ramp) Event Trigger 2
 - e. RD02A72; CEA 72 dropped Set to TRUE; Event trigger 3
 - f. CV12A2; VCT Level transmitter 0227 fail lo set to TRUE Event Trigger 4
 - g. FW03B; FWPT overspeed trip set to TRUE 30 Event Trigger 5
 - h. FW05; EFW AB overspeed set to TRUE Event sec delay Trigger 6 tied to SG NR lvl <27.4
3. Verify the following overrides
 - a. DI-08A07S09-1 EFW Pump B CS fail to norm (setup)
 - b. F_G12 FAIL OFF DWST Strg Lvl SETUP
4. Verify the following components
 - a. EFW Pump A
 - i. Breaker racked out (Red & Green lights out)
 - ii. CS in OFF
 - iii. Danger Tag on CS
 - b. Annunciators D-1 and E-1, Cabinet M, in alarm
 - c. ACCW Pump A
 - i. Breaker racked out (Red & Green lights out)
 - ii. CS in OFF
 - iii. Danger Tag on CS
5. Ensure Protected Train B sign is placed in SM office window.
6. Ensure FWPT A mimic displayed on SDS at CRS desk
7. Verify EOOS is 9.4 YELLOW
8. Complete the simulator setup checklist.

Scenario Event Description

NRC Scenario 2

EXAM SUBMITTAL Rev. 1

EVENT 1 – Power Reduction to 50 %

1. On Lead Examiner's cue call as OPS Manager and direct rapid downpower at 15Mw/min and remove A FWPT from service.
2. At approx 55 % modify FW12A to 5 and report as TGB watch vibs worsening recommend tripping A FWPT
3. If Woodlands called acknowledge power reduction to 50 percent
4. If called as TGB Watch to monitor equipment during down-power, report will monitor equipment.
5. If called as TGB watch to check FWPT A locally report excessive vibration felt locally.
6. If directed to trip FWPT A locally insert FW03A
7. If directed to place A FWPT in manual and null out speed meter insert FWR87 to local
8. If directed to Remove CDP to maintain DP insert FWR77 – 79 as necessary

EVENT 2 – Feed Flow input to the FWCS #2 fails high

1. On Lead Examiner's cue, initiate Event Trigger 2.
2. If Work Week Manager or I&C is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

Event 3 - CEA 72 drops into the core,

1. On Lead Examiner's cue, initiate Event Trigger 3.
2. IF called as I&C report no abnormal indications found and request permission to run traces on CEA 72
3. **DELETE RD02A72**
4. When permission given to run traces inform CR I&C ready to withdraw CEA 72
5. If called as RAB to go to CDMECS alley report nothing abnormal seen.
6. If called as I&C report nothing obvious wrong, need to take traces. After traces recommend CEA withdrawal.

Event 4 – VCT level instrument, CVC-ILT-0227, fails low.

1. When the CEA has been recovered *or* On Lead Examiners cue initiate Event Trigger 4.
2. If called as work week manager report will have a team sent to control room immediately

Event 5 - “B” FWPT trips manual Reactor trip.

1. After the crew completes the actions for the VCT level instrument failure or On Lead Examiners cue initiate Event Trigger 5

Event 6 - “AB” EFW pump trips on overspeed “B” EFW pump failed to auto start.

1. Verify Event 6 inserted and times out when SG NR level < 27.4
2. If called as RCA watch to investigate EFW AB report overspeed trip linkage is broken.
3. If called to investigate EFW B report breaker open no visible damage

Scenario Event Description

NRC Scenario 2

EXAM SUBMITTAL Rev. 1

Scenario Timeline:

Event	Malfunction	Severity	Ramp HH:MM:SS	Delay	Trigger	Time (Min)
1	Power Reduction to 50 %	0	NA	NA	NA	1 min
2	FW26B SG 2 SG2 Feed flow transmitter fail	100	00:00:05	NA	2	15 min
3	RD02A72 Dropped CEA 72	TRUE	N/A	NA	3	25 min
4	CCV12A2 VCT level transmitter 0227 fails low	TRUE	N/A	NA	4	35 min
5	FW03B FWPT B overspeed trip	TRUE	NA	NA	5	45 min
6	FW05 EFW AB mechanical overspeed trip	TRUE	N/A	00:00:30	6	60 min
	FW12A FWP A otbd vib multiplier	3	N/A	NA	SETUP	
	RP01A-D RPS manual pushbutton	TRUE	N/A	NA	SETUP	
	RP02 A-D RPS Channel A,B,C,D auto trip failure	TRUE	N/A	NA	SETUP	
	FW07B EFW B fail to auto start.	TRUE	N/A	NA	SETUP	

REFERENCES:

Event	Procedure	Description
1	OP-010-005, Rev. 302 OP-004-004, Rev. 15	Plant Shutdown, Attachment 9.1 and 9.9 Control Element Drive
2	OP-500-006, Rev. 13 OP-901-201, Rev. 03	Annunciator Response Procedure – Cabinet F Steam Generator Level Control System Malfunction
3	OP-500-008, Rev. 26 OP-901-102, Rev. 300	Annunciator Response Procedure – Cabinet H CEA or CEDMCS Malfunction
4	OP-500-007, Rev. 17 OP-901-113, Rev. 300	Annunciator Response Procedure – Cabinet G Volume Control Tank Makeup Control Malfunction
5,6,7	OP-902-000, Rev. 10 OP-902-006, Rev. 12 OP-902-009, Rev. 301	Standard Post Trip Actions Loss of Main Feedwater Recovery Standard Appendices, App. 32 – Establishing Main Feedwater

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>27</u>
Event Description:	15 MW/MIN Downpower to Remove "A" Main Feed Pump From Service Due to HIGH Vibration.								
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:		
Indications Available:		
NOTE:	Event #2 should not be run until after the downpower and when SG levels have recovered.	
		Report received from the Ops Manager shortly after turnover directing a 15 MW/MIN Downpower to remove the "A" Main Feed pump from service due to vibration issues
	CRS	Directs activities IAW OP-010-005, Plant Shutdown or OP-901-212, Rapid Plant Power Reduction
	ATC	Begin RCS Boration by:
		<ul style="list-style-type: none"> Set Boric Acid Makeup Batch Counter to volume of Boric Acid desired.
		<ul style="list-style-type: none"> Verify Boric Acid Makeup Pumps selector switch aligned to desired Boric Acid Makeup Pump A(B).
		<ul style="list-style-type: none"> Place Direct Boration Valve, BAM-143, control switch to AUTO
		<ul style="list-style-type: none"> Place Makeup Mode selector switch to BORATE.
		<ul style="list-style-type: none"> Verify selected Boric Acid Makeup Pump A(B) Starts
		<ul style="list-style-type: none"> Verify Direct Boration Valve, BAM-143, Opens
		<ul style="list-style-type: none"> If manual control of Boric Acid flow is desired, then perform the following:
		<ul style="list-style-type: none"> Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual.
		<ul style="list-style-type: none"> Adjust Boric Acid Flow controller, BAM-IFIC-0210Y, output to >3 GPM flow rate
		<ul style="list-style-type: none"> If automatic control of Boric Acid flow is desired, then perform the following:

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>27</u>
Event Description:	15 MW/MIN Downpower to Remove "A" Main Feed Pump From Service Due to HIGH Vibration.								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Place Boric Acid Flow controller, BAM-IFIC-0210Y, in Auto.
		<ul style="list-style-type: none"> Adjust Boric Acid Flow controller, BAM-IFIC-0210Y, setpoint potentiometer to > 3 GPM flow rate
		<ul style="list-style-type: none"> Verify Boric Acid Makeup Control Valve, BAM-141, Intermediate or Open
		<ul style="list-style-type: none"> Observe Boric Acid flow rate for proper indication
		<ul style="list-style-type: none"> When Boric Acid Makeup Batch Counter has counted down to desired value, then verify Boric Acid Makeup Control Valve, BAM-141, Closed
		<ul style="list-style-type: none"> If additional boric acid addition is required and with SM/CRS permission, then perform the following: <ul style="list-style-type: none"> Reset Boric Acid Makeup Batch Counter.
		<ul style="list-style-type: none"> Verify Boric Acid Makeup Control Valve, BAM-141, Intermediate or Open.
		<ul style="list-style-type: none"> Observe Boric Acid flow rate for proper indication.
		<ul style="list-style-type: none"> When Boric Acid Makeup Batch Counter has counted down to desired value, then verify Boric Acid Makeup Control Valve, BAM-141, Closed.
		OR
		<ul style="list-style-type: none"> Borate from the RWSP using one Charging
		Pump as follows:
		<ul style="list-style-type: none"> Open RWSP to Charging Pumps
		<ul style="list-style-type: none"> Suction Isolation, CVC-507.
		<ul style="list-style-type: none"> Close Volume Control Tank Outlet
		<ul style="list-style-type: none"> Isolation, CVC-183.
		Perform Boron Equalization as follows:
		<ul style="list-style-type: none"> Place available Pressurizer Pressure Backup Heater Control Switches to ON.

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>8</u>	of	<u>27</u>
Event Description:	15 MW/MIN Downpower to Remove "A" Main Feed Pump From Service Due to HIGH Vibration.								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Reduce Pressurizer Spray Valve Controller (RC-IHIC-0100) setpoint potentiometer to establish spray flow and maintain RCS pressure 2250 PSIA (2175 – 2265).
		Operate CEAs in accordance with OP-004-004, Control Element Drive, to maintain ASI using CEA Reg. Group 5, 6 or Group P Control Element Assemblies in accordance with OP-010-005, Plant Shutdown, Attachment 9.9, Axial Shape Control Guidelines. (ATTACHED)
	CRS	Notify the Load Dispatcher (Woodlands) that a power reduction is in progress Announce to Station Personnel over the Plant Paging System that a plant power reduction is in progress.
	ATC	Maintain RCS Cold Leg Temperature 536°F to 549°F.
	BOP	Commence Turbine load reduction by performing the following:
		<ul style="list-style-type: none"> Depress LOAD RATE MW/MIN pushbutton.
		<ul style="list-style-type: none"> Set selected rate in Display Demand Window. (Target will be 15)
		<ul style="list-style-type: none"> Depress ENTER pushbutton.
		<ul style="list-style-type: none"> Depress REFERENCE pushbutton.
		<ul style="list-style-type: none"> Set desired load in Reference Demand Window.
		<ul style="list-style-type: none"> Depress ENTER pushbutton.
		<ul style="list-style-type: none"> Depress GO pushbutton.
		<ul style="list-style-type: none"> When Condensate flow is <18,000 gpm, verify Gland Steam Condenser Bypass, CD-154, Closed (PMC PID D02404).

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>9</u>	of	<u>27</u>
Event Description:	15 MW/MIN Downpower to Remove "A" Main Feed Pump From Service Due to HIGH Vibration.								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> When Reactor Power is approximately 55%, then at SM/CRS discretion, remove one Main Feedwater Pump from service in accordance with OP-003-033, Main Feedwater. <p>Note: Vibration conditions worsen and reports from the field prompt the crew to trip the A FWPT.</p>
	ALL	Stabilize power with Tave –Tref matched
	ATC	Secure RCS Boration by:
		<ul style="list-style-type: none"> Securing Direct Boration
		<ul style="list-style-type: none"> Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual
		<ul style="list-style-type: none"> Verify both Boric Acid Flow controller, BAM-IFIC-0210Y, output and set point potentiometer set to zero.
		<ul style="list-style-type: none"> Place Makeup Mode selector switch to MANUAL.
		<ul style="list-style-type: none"> Verify Selected Boric Acid Makeup Pump A(B) Stops.
		<ul style="list-style-type: none"> Verify Direct Boration Valve, BAM-143, Closed.
		<ul style="list-style-type: none"> Place Direct Boration Valve, BAM-143, control switch to CLOSE.
		OR
		<ul style="list-style-type: none"> Secure Borating from the RWSP as follows:
		<ul style="list-style-type: none"> Open Volume Control Tank Outlet Isolation, CVC-183.
		<ul style="list-style-type: none"> Close RWSP to Charging Pumps Suction Isolation, CVC-507.
	BOP	Depress the Hold button on the DEH Control panel.
When SG levels have stabilized and At the Discretion of the Lead Examiner Move to Event 2.		

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>10</u>	of	<u>27</u>
Event Description: Steam Generator Feedwater Flow instrument fails HIGH to FWCS #2.									
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:**Indications Available:**

	BOP	Recognize and report:
		<ul style="list-style-type: none"> • Alarms:
		<ul style="list-style-type: none"> • SG 1 Steam/FW Flow Signal Dev (T-17)
		<ul style="list-style-type: none"> • SG 2 Steam/FW Flow Signal Dev (U-17)
		<ul style="list-style-type: none"> • SG 2 Level Hi/Lo (U-18)
		<ul style="list-style-type: none"> • Indications:
		<ul style="list-style-type: none"> • FW-IFR-1121 Feedwater Failed High
		<ul style="list-style-type: none"> • SG 2 levels lowering(all indicators)
	CRS	Direct Implementation of OP-901-201, SG Level Control Malfunction.
	CREW	If actual S/G level rises to 87.7 or drops to 27.4% NR, verify reactor trip and go to OP-902-000. (NOTE 87.7% NR if not bypassed.)
	BOP	If actual S/G level rises to 81% NR verify high level override has closed the MFW and startup control valves to that S/G.
	BOP	Stop any turbine load changes except to match Tave and Tref.
	BOP	Places either, FW IHIC1121, Main Feedwater Regulating Valve B Controller or the SG 2 Master Controller to Manual and restores Steam Generator level to 50 – 70% NR.
	BOP	When conditions stabilize places controls back to auto as allowed by the Note #3 of Att #1 of OP-901-201. (Note the crew may or may not opt to perform this action)
At the Discretion of the Lead Examiner Move to Event 3.		

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>11</u>	of	<u>27</u>
Event Description: Dropped Regulating Group CEA, #72 and Recovery									
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:		
Indications Available:		
	ATC	Recognize and report:
		<ul style="list-style-type: none"> Multiple alarms on Panels H, K and L. The event is diagnosed by the alarms associated with the CEA insertion, the CEA position indications and Reactor Power and RCS temperatures dropping.
		<ul style="list-style-type: none"> POWER DEPENDENT INSERTION LIMIT H-8, Cab K
		<ul style="list-style-type: none"> PREPOWER DEPENDENT INSERTION LIMIT H-9, Cab K
		<ul style="list-style-type: none"> CEA GROUP MINOR DEVIATION M-8, Cab H
		<ul style="list-style-type: none"> CEA GROUP MAJOR DEVIATION N-8, Cab H
		<ul style="list-style-type: none"> CORE MIMIC ROD BOTTOM LIGHT
		<ul style="list-style-type: none"> CEAPDS indicates CEA insertion
		<ul style="list-style-type: none"> CEDMCS Panel indicates CEA insertion
	CRS	Directs actions IAW OP-901-102, CEA or CEDMCS Malfunction
	ATC	If in Mode 1 and 2 CEAs DROP, Manually Trip Reactor and go to OP-902-000.
	ATC	Place CEDMCS Mode select switch to OFF.
	BOP	Match Tref with Tave.
NOTE: Downpower not required from current power level.		
	CRS	Enters TS 3.1.3.1c for CEA misaligned >19 inches.
	CRS/ATC	If PMC is Operable, then verify CEA Pulse Counter indication is correct or enter the correct CEA position in the PMC database.

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>12</u>	of	<u>27</u>
Event Description: Dropped Regulating Group CEA, #72 and Recovery									
Time	Position	Applicant's Actions or Behavior							

	CRS	Declare COLSS Inoperable and enter OP-901-501, PMC or COLSS Inoperable and perform concurrently with this procedure due to COLSS being Inoperable
	CRS	Declare the CEA inoperable and has shutdown margin verified acceptable within one hour using OP-903-090 if:
		<ul style="list-style-type: none"> Any CEA is misaligned from its group by 7" and can not be aligned.
	CRS/ATC	Monitor Core Power Distribution for compliance with Technical Specifications for LPD, DNBR, AZ Tilt and ASI.
	CRS/ATC	Enters TS 3.2.3b and verifies in < 30 minutes that COLSS is detecting CEA misalignment if measured azimuthal power tilt is > .03.
	ATC	Maintain ASI +/- .05 of ESI.
	ATC	Correct cause of dropped CEA.
		<ul style="list-style-type: none"> Coordinates with I&C to obtain coil stack traces for troubleshooting by withdrawal and insertion of CEA # 72 IAW OP-004-004:
		<ul style="list-style-type: none"> Select desired CEA to be inserted or withdrawn as follows: <ul style="list-style-type: none"> Position Individual CEA Selection switches to desired CEA Position Group Select switch to group containing CEA
		<ul style="list-style-type: none"> Place Mode Select switch to MI and verify the following: <ul style="list-style-type: none"> MI light Illuminates White lights Illuminates on Group Selection Matrix for group that contains the CEA to be moved White selection light for individual CEA to be moved Illuminates

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>13</u>	of	<u>27</u>
Event Description: Dropped Regulating Group CEA, #72 and Recovery									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • Operate CEA Manual Shim switch to WITHDRAW or INSERT CEA to desired height while monitoring the following: <ul style="list-style-type: none"> ○ CEA Position Indicator for selected CEA is moving in desired direction. ○ If Reactor is critical, then monitor the following: <ul style="list-style-type: none"> ▪ Reactor Power ▪ Reactor Coolant System (RCS) temperature ▪ Axial Shape Index (ASI)
		<ul style="list-style-type: none"> • When desired set of moves have been completed, then place Mode Select switch to OFF.
		NOTE: Investigation will reveal no faults and I&C will recommend CEA withdrawal.
	ATC	Withdraw dropped CEA IAW OP-901-102, CEA or CEDMCS Malfunction as follows:
		<ul style="list-style-type: none"> • Borate as necessary to prevent Reactor power from rising during CEA alignment
		<ul style="list-style-type: none"> • Withdraw CEA in a slow, smooth manner at a rate not to exceed 15 inches per minute until aligned with rest of group
At the Discretion of the Lead Examiner Move to Event 4.		

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Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>4</u>	Page	<u>14</u>	of	<u>27</u>
Event Description: VCT Level Inst., CVC-ILT-0227, Fails LOW									
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:		
Indications Available:		
	ATC	Recognize and report:
		<ul style="list-style-type: none"> Alarms:
		VCT LEVEL LO-LO (Panel G, B-3)
	CRS	Enter OP-901-113, VCT Makeup Control Malfunction and direct actions as follows.
	ATC	<ul style="list-style-type: none"> Simultaneously secure ALL Charging Pumps AND close LETDOWN STOP VALVE (CVC 101).
		<ul style="list-style-type: none"> Operate Charging Pumps as necessary to maintain Pressurizer Level above minimum level for operation in accordance with Attachment 1, Pressurizer Level Versus Tave Curve.
	BOP	Match TAVG and TREF by adjusting Turbine Load.
	CRS	Initiate corrective action to repair level instrument.
		Evaluate TS requirements for charging pumps.
		<ul style="list-style-type: none"> When the lead pump (B) is secured it must be taken to hard off and the crew should enter TS 3.1.2.4. <p>NOTE: If all pumps are taken to hard off and left there the crew should enter TS 3.0.3. The crew may discuss placing the switches in off momentarily as not affecting operability.</p>
At the Discretion of the Lead Examiner Move to Events 5 & 6.		

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>15</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:**Indications Available:**

	BOP	Reports feed pump failure based on feed pump trip alarm and multiple feed related alarms.
	CRS	Directs Reactor trip (SG level may reach auto trip setpoint first.)
	ATC	Reports Reactor did not trip automatically if setpoints reached.
CRITICAL TASK	ATC/CRS	Attempts to manually trip the reactor using reactor trip pushbuttons unsuccessfully and then initiates the Diverse Rx Trip which is successful and then:
		<ul style="list-style-type: none"> Verify Reactivity Control
		<ul style="list-style-type: none"> Check reactor power dropping on CP-2 or CP-7
		<ul style="list-style-type: none"> Check startup rate is negative on CP-2 or CP-7
		<ul style="list-style-type: none"> Check less than 2 CEAS not fully inserted using <ul style="list-style-type: none"> CEAC CRT on CP-2, or CEDMCS LEL Lights illuminated on CP-2, or CEA Rod Bottom Lights illuminated on CP-2
	BOP/CRS	Verify Maintenance Of Vital Auxiliaries
		<ul style="list-style-type: none"> Check the main turbine tripped by verifying all throttle and governor valves indicate green at Turbine Mimic on CP-1
		<ul style="list-style-type: none"> Check the generator tripped by verifying green indication on both Generator Output Breakers and Exciter Field Breaker on CP-1
		<ul style="list-style-type: none"> Check train A and B station loads are energized from offsite power by:

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>16</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Voltage available to A1, A2, A3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1
		<ul style="list-style-type: none"> Voltage available to B1, B2, B3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1
		<ul style="list-style-type: none"> A and B DC bus indicators on CP-1
		<ul style="list-style-type: none"> Vital AC Instrument Bus Indicators on CP-7 (4 total)
	ATC/CRS	Verify RCS Inventory Control
		<ul style="list-style-type: none"> Check PZR level 7% to 60% and trending to 33% to 60% on CP-2
		<ul style="list-style-type: none"> Check Subcooling Margin greater than or equal to 28° on CP-2
	ATC/CRS	Verify RCS Pressure Control
		<ul style="list-style-type: none"> Checks PZR pressure between 1750 psia and 2300 psia (CP-2, CP-7, PMC or QSPDS) and trending to between 2125 and 2275 psia
	ATC/CRS	Verify Core Heat Removal
		<ul style="list-style-type: none"> Check at least one RCP operating on CP-2,
		<ul style="list-style-type: none"> Operating loop delta-T less than 13°F, and
		<ul style="list-style-type: none"> RCS Subcooling (CP-2) greater than or equal to 28°F.
	BOP/CRS	Verify RCS Heat Removal
		<ul style="list-style-type: none"> Check at least one S/G is both 5-80% NR (CP-1 or CP-8) and Main Feedwater is available to restore level
		(Should observe and report no Main Feedwater is available) OR
		<ul style="list-style-type: none"> Verify EFW is available to restore level in at least one S/G within 50% - 70% NR [60% - 80% NR].

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>17</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> EFAS-1 or EFAS-2 actuation occurred if < 27.4% NR (PPS ROM lights extinguished CP-7)
		<ul style="list-style-type: none"> EFW pumps operating (CP-8) if EFAS-1 or 2 actuated
CRITICAL TASK		<p>If EFAS actuation has occurred then it should be reported that the "AB" EFW and "B" EFW pumps are not running. Manual actions to start both pumps should be initiated- neither pump starts and operators should analyze Annunciators to determine the "AB" EFW pump has tripped on overspeed.</p>
	ATC/BOP/CRS	Verify RCS Tc (CP-2 or CP-7) is 530-550°F or
		<ul style="list-style-type: none"> If Tc is > 550°F verify level is being restored to at least one S/G (CP-1 or CP-8) and verify SBCS (CP-1) or ADVS (CP-8) are maintaining RCS temp 530-550°F.
		<ul style="list-style-type: none"> If Tc is < 530°F then verify feed flow (MFW-CP-1 or EFW-CP-8) is not excessive and verify SBCS or ADVs are restoring RCS Tc 530-550°F
	BOP/CRS	Verify S/G pressure 885-1040 psia (CP-1 or CP-7) or
		<ul style="list-style-type: none"> If S/G press < 885 psia verify steam bypass valves and ADVs are closed.
		<ul style="list-style-type: none"> If S/G press > 1040 psia verify SBCs or ADVs are restoring S/G press to < 1040 psia
	BOP/CRS	Verify FWCS in Reactor Trip Override (CP-1)
		<ul style="list-style-type: none"> Check Main Feed Reg Valves are closed,
		<ul style="list-style-type: none"> Startup Feed Reg Valves are 13-21% open, and
		<ul style="list-style-type: none"> Operating Feed Pumps are 3800 to 4000 rpm or
		<ul style="list-style-type: none"> Manually operate feedwater system to restore level in at least one S/G to 50-70% NR.
		NOTE: Should report no Main feedwater available

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>18</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

	BOP/CRS	Reset Moisture Separator Reheaters
		<ul style="list-style-type: none"> Check the Temp Control Valves closed (Reheat Control Panel CP-1)
	BOP/CRS	Verify Containment Isolation
		<ul style="list-style-type: none"> Check Containment pressure (CP-7 or CP-8) < 16.4 psia,
		<ul style="list-style-type: none"> Check that no Containment Area rad monitors (RMS CRT/CP-14/PMC) are in alarm or show an unexplained rise in activity, and
		<ul style="list-style-type: none"> Check that no steam plant rad monitors (RMS CRT/CP-14/PMC) alarm or show an unexplained rise in activity.
	BOP/CRS	Verify Containment Temperature And Pressure Control
		<ul style="list-style-type: none"> Verifying Containment Temperature (CP-18 or QSPDS) less than or equal to 120°F and Containment pressure is < 16.4 psia
	CRS	Direct Diagnostic Action
		<ul style="list-style-type: none"> If ANY Safety Function Acceptance Criteria are not met OR ANY contingency action was taken perform Diagnostics Flowchart OP-902-009, Appendix 1
	CRS	Diagnoses into OP-902-006, Loss of Main Feedwater Recovery, procedure.
	CRS	Confirm diagnosis
		<ul style="list-style-type: none"> Direct STA to perform safety function status check list
		<ul style="list-style-type: none"> Direct Chemistry to sample both SGs for activity.
	CREW	Announce the event using plant page

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>19</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

	CRS	Direct SM to refer to Emergency Plan
	CRS	Implement Placekeeper and records time of Reactor Trip
	ATC/CRS	Verify no more than two RCPs are operating
		<ul style="list-style-type: none"> Starts a lift pump and secures one pump in each loop
	ATC/CRS	IF ANY of the following conditions exist, THEN perform the following:
		<ul style="list-style-type: none"> IF MFW is lost for greater than 30 minutes AND ONE Motor Driven EFW pump is the only EFW pump available, THEN stop ALL RCPs.
		<ul style="list-style-type: none"> IF ALL feedwater is lost, THEN stop ALL RCPs.
	BOP/CRS	Verify CCW operation by checking a CCW pump (CP-8) is operating for each energized 4 KV safety bus (CP-1)
	BOP/CRS	Conserve steam generator inventory:
		<ul style="list-style-type: none"> Verify the following steam generator blowdown isolation valves are closed:
		<ul style="list-style-type: none"> BD 102A, SG BLOWDOWN ISOL STM GEN 1 (IN)
		<ul style="list-style-type: none"> BD 102B, SG BLOWDOWN ISOL STM GEN 2 (IN)
		<ul style="list-style-type: none"> BD 103A, SG BLOWDOWN ISOL STM GEN 1 (OUT)
		<ul style="list-style-type: none"> BD 103B, SG BLOWDOWN ISOL STM GEN 2 (OUT)
		<ul style="list-style-type: none"> Verify the following steam generator sampling valves are closed:
		<ul style="list-style-type: none"> SSL 8006A, SAMPLING ISOLATION SG 1
		<ul style="list-style-type: none"> SSL 8006B, SAMPLING ISOLATION SG 2
		<ul style="list-style-type: none"> SSL 301A, SAMPLING ISOLATION MAIN STM LINE 1
		<ul style="list-style-type: none"> SSL 8004A, SAMPLING ISOLATION SG 1

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>20</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • SSL 8004B, SAMPLING ISOLATION SG 2
		<ul style="list-style-type: none"> • SSL 301B, SAMPLING ISOLATION MAIN STM LINE 2
	BOP/ATC/CRS	Replenish inventory in at least one steam generator by performing ANY of the following:
		<ul style="list-style-type: none"> • Check emergency feedwater available to at least one steam generator
		If not already reported based on alarm response the BOP determines that no EFW is available- This requires tripping all RCP's.
		<ul style="list-style-type: none"> • IF EFW pump AB has tripped, THEN reset LOCALLY:
NOTE: The NAO will report that the mechanical linkage is broken.		
CRITICAL TASK	CRS/BOP	REFER TO Appendix 32, "Establishing Main Feedwater" and restore main feedwater flow to at least one steam generator as follows:
		<ul style="list-style-type: none"> • Verify MAIN FW ISOL VALVES open:
		<ul style="list-style-type: none"> • FW-184A
		<ul style="list-style-type: none"> • FW-184B
		<ul style="list-style-type: none"> • Place the following controllers to "MAN" and set to minimum:
		<ul style="list-style-type: none"> • FW-IFIC-8202, AUX FEEDWATER FLOW
		<ul style="list-style-type: none"> • FW-IHIC-1105, SG 1 STARTUP FW REG
		<ul style="list-style-type: none"> • FW-IHIC-1106, SG 2 STARTUP FW REG
		<ul style="list-style-type: none"> • Verify the following valves closed:
		<ul style="list-style-type: none"> • •FW-170A, SG 1 MAIN FW REG ISOLATION
		<ul style="list-style-type: none"> • FW-170B, SG 2 MAIN FW REG ISOLATION
		<ul style="list-style-type: none"> • Verify the following valves open:
		<ul style="list-style-type: none"> • FW-163A, SG 1 STARTUP FW REG ISOLATION

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>21</u>	of	<u>27</u>
Event Description:	Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> FW-163B, SG 2 STARTUP FW REG ISOLATION
		<ul style="list-style-type: none"> Start Auxiliary Feedwater Pump.
		<ul style="list-style-type: none"> Adjust the following controllers to 5% output:
		<ul style="list-style-type: none"> FW-IHIC-1105, SG 1 STARTUP FW REG
		<ul style="list-style-type: none"> FW-IHIC-1106, SG 2 STARTUP FW REG
		<ul style="list-style-type: none"> Adjust the following controllers and valve to achieve desired flow rates:
		<ul style="list-style-type: none"> FW-IHIC-1105, SG 1 STARTUP FW REG
		<ul style="list-style-type: none"> FW-IHIC-1106, SG 2 STARTUP FW REG
		<ul style="list-style-type: none"> FW-IFIC-8202, AUX FEEDWATER FLOW
		<ul style="list-style-type: none"> AFW-125, AUXILIARY FEEDWATER PRESSURE RELIEF
When feedwater is restored the scenario may be terminated at the discretion of the Lead Examiner.		
	BOP/CRS	Verify ALL steam generators capable of steaming are being maintained or restored to within the following level:
		<ul style="list-style-type: none"> 50% to 70% NR using MFW or EFW in auto or manual
	BOP/CRS	Verify RCS TC is less than 550°F and being controlled by ANY of the following:
		<ul style="list-style-type: none"> Steam bypass valves
		<ul style="list-style-type: none"> Atmospheric dump valves
	ATC/CRS	Maintain pressurizer level 33% to 60% by controlling charging and letdown.
	ATC/CRS	Maintain the RCS within the limits of Appendix 2A-D, "RCS Pressure and Temperature Limits" by performing ANY of the following:

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>5 & 6</u>	Page	<u>22</u>	of	<u>27</u>
Event Description:		Second Main Feed Pump Trips, Reactor Fails to AUTO or MANUALLY TRIP Diverse Scram Successful; "AB" EFW Pump Trips on Overspeed, "B" EFW Pump FAILS to START, MANUAL START is Also Unsuccessful							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Control pressurizer heaters, and main or auxiliary pressurizer spray. REFER TO Appendix 25, "Restore Pressurizer Heater Control."
		<ul style="list-style-type: none"> Adjust RCS cooldown rates.
	ATC/CRS	Verify instrument air is available by performing ALL of the following:
		<ul style="list-style-type: none"> Check BOTH of the following are operating:
		<ul style="list-style-type: none"> TCW pump
		<ul style="list-style-type: none"> CW pump
		<ul style="list-style-type: none"> Check instrument air pressure is greater than 95 psig.
		<ul style="list-style-type: none"> Check IA 909, CNTMT ISOLATION INSTRUMENT AIR valve is open
	ATC/CRS	IF NO RCPs are operating, THEN check natural circulation flow in at least one loop by ALL of the following:
		<ul style="list-style-type: none"> RCS subcooling greater than or equal to 28°F based on representative CET temperature
		<ul style="list-style-type: none"> Loop ΔT less than 58°F
		<ul style="list-style-type: none"> Hot and cold leg temperature constant or lowering
		<ul style="list-style-type: none"> TH and representative CET temperature ΔT is less than 10°F
This scenario is terminated.		

9.9 AXIAL SHAPE CONTROL GUIDELINES

9.9.1 General Precautions and Notes

- 9.9.1.1 Axial Shape Control should be applied at all times when the reactor is above 20% power.
- 9.9.1.2 Maintain Axial Shape Index (ASI) within the following Equilibrium Shape Index (ESI):
 - 9.9.1.2.1 During steady-state operations ± 0.05
 - 9.9.1.2.2 During load transients ± 0.05
 - 9.9.1.2.3 During Xenon Oscillation control ± 0.005
- 9.9.1.3 Axial Shape Control guidelines are not applicable during emergency or off-normal conditions.
- 9.9.1.4 The CEA insertion/withdrawal sequence and insertion limits of Technical Specifications shall be observed.
- 9.9.1.5 Control rods should be manually withdrawn or inserted in a deliberate and carefully controlled manner, while closely monitoring reactor response.
- 9.9.1.6 ASI should be monitored closely for several minutes after CEA motion, to determine the impact of the movement.
- 9.9.1.7 CEA motion should be slow and smooth (less than 3 inches per minute), particularly in the outward direction.
- 9.9.1.8 CEDMCS should be operated in Manual Group with Groups 5, 6 or Group P CEAs being used for control. (Refer to T.S. 3.1.3.6).
- 9.9.1.9 If operating with both CEACs Inoperable, then do not insert Group 6 CEAs below 127.5 inches withdrawn, and maintain Group P CEAs at the full out position.
- 9.9.1.10 Do not insert Group P or Group 5 or 6 CEAs below 75 inches withdrawn.
- 9.9.1.11 During axial shape control, monitor DNBR Margin (PID 107) on the most limiting CPC channel. If margin drops to 0.2 then cease CEA insertion and slowly begin to borate CEAs back out. Reduce power as necessary to maintain at least 0.2 DNBR margin.

NRC Scenario 2
Turnover Sheet
Examinee Handout

NUCLEAR PLANT OPERATOR TURNOVER SHEET AND CHECKLIST
(TYPICAL)

DATE 3/28/08

1. Prior to turnover, review Critical Parameters in allowable limits (Modes 1 and 2):

PRESSURIZER LEVEL	33-56%
PRESSURIZER PRESSURE	2075-2275 psia
STEAM GENERATOR LEVEL	60-70%
STEAM GENERATOR PRESSURE	860-1000 psia
TAVG	544-582°F
REACTOR POWER	≤100% (Mode 2 ≤ 5%)

2. Simulator Specific Information

Reactor Power	<u>62%</u>
EFPD	<u>250</u>
ESI	<u>-0.075</u>
RCS Boron	<u>1117 ppm</u>
BAMT A	<u>5850 ppm</u>
BAMT B	<u>5725 ppm</u>

3. Complete independent Control Board Walkdown.

Technical Specifications and Technical Requirements Manual Actions

<u>T.S.</u>	<u>Equipment/System</u>	<u>Entered</u>	<u>Action</u>	<u>Exited</u>
3.7.1.2d	EFW Pump A	24 hours ago	Restore within 72 hours	
3.7.4	ACCW Pump A	3 hours ago	Cascading 3.8.1.1.b completed 3.8.1.1.d completed next 066 due in 3 hours Restore within 72 hours	
<u>TRM</u>	<u>Equipment/System</u>	<u>Entered</u>	<u>Action</u>	<u>Exited</u>
None				

NRC Scenario 2
Turnover Sheet
Examinee Handout

NUCLEAR PLANT OPERATOR TURNOVER SHEET AND CHECKLIST (Cont'd)

Surveillance Tests in progress:

None

Equipment taken out of service:

EFW Pump A

ACCW Pump A

Equipment returned to service:

Maintenance in progress:

EFW Pump A has been OOS for 24 hours for seal replacement. It is expected to be returned for testing in 12 hours.

ACCW Pump A was taken out of service 3 hours ago for motor PMs. ACCW Pump A is expected to return in 2 hours.

Significant Events/Additional Items/Remarks/Equipment Out of Service:

Plant Safety Index is 9.4 Yellow. Protected Train is B. Subgroup 5 is selected for both RXC events.

Main Feed Pump "A" outboard pump bearing vibration is elevated shortly after being placed in service and the crew was holding power for engineering evaluation.

ASI control is in progress with Reg Group 6 CEAs. . Boron Equalization is in progress.

You are directed to maintain power at 60% while engineering evaluates FWPT A.

NRC Scenario 2
Turnover Sheet
Examinee Handout

6.9 REACTIVITY BRIEF GUIDELINE

(typical)

The Reactivity Brief should be conducted after shift turnover is complete, but before the Shift Meeting. The Control Room staff should be present for the Reactivity Brief. The brief should include, but is not limited to the following:

Previous shift additions of PMU, Boric Acid, and MWs [May be N/A]

PMU	Boric Acid	MW
2000	NA	122
NA	NA	328

Anticipated PMU, Boric Acid, and MW additions this shift [May be N/A]

ASI profile compared to ESI including Xenon:
[Include any actions necessary during shift and actions the previous shift took]
ASI Control using RG 6 in progress.

steady converging diverging

Volume Control Tank Blend Rate: 19 Gallons Boric Acid per 100 gallons PMU

Jobs affecting reactivity this shift:
Hold Power at 60%

Saturday day shift and Saturday night shift:

- Review Reactivity Control Worksheet provided by Reactor Engineering.
- Review Reactivity Management Index, including recent contributing events.

NRC Scenario 2
Turnover Sheet
Examinee Handout

6.10 REACTIVITY ADDITION SHEET

(typical)

Date	Time	Source (circle one)	Amount (gallons / MW)	Comment
3/28/2008	2 hours ago	BAM / <u>PMU</u> / MW	500	Power Escalation
3/28/2008	1.5 hours ago	BAM / PMU / <u>MW</u>	25	Power Escalation
3/28/2008	1 hours ago	BAM / <u>PMU</u> / MW	500	Power Escalation
3/28/2008	.5 hours ago	BAM / PMU / <u>MW</u>	26	Power Escalation
3/28/2008	20 min ago	BAM / <u>PMU</u> / MW	500	Power Escalation
3/28/2008	15 min ago	BAM / PMU / <u>MW</u>	25	Power Escalation
3/28/2008	10 min ago	BAM / <u>PMU</u> / MW	500	Power Escalation
		BAM / PMU / MW		
		BAM / PMU / MW		
		BAM / PMU / MW		
		BAM / PMU / MW		
		BAM / PMU / MW		
		BAM / PMU / MW		
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		BAM / PMU / MW		

EXAM SUBMITTAL REV 1

Facility:	WATERFORD 3	Scenario No.:	3	Op Test No.:	NRC
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> 25% power, MOC, AB buses aligned to "B" side. 				
Turnover:	<ul style="list-style-type: none"> Plant startup is in progress after being off-line for 2 days. 				
Critical Task:	<ul style="list-style-type: none"> Preventing RCS repressurization by actions to stabilize RCS temperature using the non-ESD SG. Isolating the SG with SG Tube Leak. Emergency borate or actuate SIAS due to uncontrolled cooldown. 				
Event No.	Malf. No.	Event Type*	Event Description		
1		R – ATC N – BOP, SRO	Raising power from 25%.		
2	RX14A	I – ATC, SRO	Controlling Pressurizer Pressure channel fails HIGH.		
3	NI01F	I – ATC, SRO TS – SRO	Safety Channel B ENI middle detector fails HIGH.		
4	CC01A	C – BOP, SRO TS – SRO	"A" CCW pump trip.		
5	SG01A	TS - SRO	SGTL ramp from 0 – 15 gpm over 10 minutes on SG #1.		
6	MS13A	M – ALL	ESDE on #1 SG outside containment, upstream of MSIV.		
7	RP08H RP09H	C – BOP, SRO	#2 SG MSIV and #2 SG MFIV fail to auto close on MSIS.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description

NRC Scenario 3

EXAM SUBMITTAL REV 1

Waterford 3 2008 NRC Scenario #3

The crew assumes the shift at 25% power during a plant startup from a short notice outage. The crew is to continue the startup to 100% using OP-010-004, Power Operations.

During the up-power the controlling Pressurizer Pressure channel fails high which will cause heater output to go to zero and the in-service spray valve(s) will open. Operators take action IAW OP-901-120, Pressurizer Pressure Control Malfunction to select the operable channel and reset heaters.

After pressurizer pressure has been restored then there will be a failure of Safety Channel B ENI middle detector. Operators diagnose the failure and bypass appropriate channels IAW Technical Specifications.

When appropriate channels are bypassed there will then be a trip of the "A" CCW pump on overload. Restoration actions will be IAW OP-901-510, Component Cooling Water System Malfunction.

While CCW restoration actions are on-going there will be a steam generator tube leak ramp in from 0-15 gpm over ~10 minutes on the #1 SG. Once identified operator actions are IAW OP-901-202, Steam Generator Tube Leakage or High Activity when primary to secondary leakage is identified.

Once the crew determines the shutdown requirements of the tube leakage then an ESDE will be initiated on the #1 Steam Generator, outside containment but upstream of the MSIV. It will ramp in slowly requiring the operators to manually trip and address the uncontrolled cooldown by either Emergency boration or initiation of SIAS. The ESD will worsen after the crew trips and addresses the uncontrolled cooldown.

Post trip/MSIS the #2 SG MSIV and #2 SG FWIV fail to auto close due to a relay failure requiring manual closure.

EOP flowpath is OP 902-000, SPTA's to OP 902-008, Safety Function Recovery.

"If NRC Lead Examiner asks SRO candidate(s) to determine Emergency Plan classification, the candidate should determine the following: Unusual Event (FU1) Loss of Containment due to CNB3, Primary-to-Secondary leakrate >10 gpm with non-isolable steam release from affected S/G to the environment."

Scenario Event Description

NRC Scenario 3

EXAM SUBMITTAL REV 1

Scenario Notes:

- A. Reset Simulator to IC-93.
- B. Verify the following Scenario Malfunctions are loaded:
 - 1. RX14A; PZR Press channel 100X fail HI set to 100: Event Trigger 2
 - 2. NI01F; Middle detector b safety channel B fail Hi set to 100 Event Trigger 3
 - 3. CC01A; A CCW pump trip set to TRUE Event Trigger 4
 - 4. SG01A; Steam Generator 1 tube leak , set to .6 , 10 min ramp Event Trigger 5
 - 5. MS13A; Main Steam line A break outside ctmt set to 4 with 90 sec ramp Event Trigger 6
 - 6. RP08H; K Relay 313 failed TRUE SETUP
 - 7. RPO9H K relay 313 failed TRUE SETUP
- C. Ensure Protected Train B sign is placed in SM office window.
- D. Ensure Hotwell level below Hi level alarm TKR03 at 36 inches
- E. Verify EOOS is 10 green
- F. Verify marked up copy of OP-10-004 through step 9.1.54 on CRS open on NPO desk
- G. Complete the simulator setup checklist.

Scenario Event Description

NRC Scenario 3

EXAM SUBMITTAL REV 1

EVENT 1 – Power escalation to 100% %

1. On Lead Examiner's cue.

EVENT 2 – Controlling Pressurizer Pressure channel fails high

1. On Lead Examiner's cue, initiate Event Trigger 2.
2. If Work Week Manager or I&C is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

EVENT 3 – Safety Channel B ENI middle detector

1. On Lead Examiner's cue, initiate Event Trigger 3.
2. If Work Week Manager or I&C is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

Event 4 - “A” CCW pump trip.

1. On Lead Examiners cue, initiate Event Trigger 4.
2. If called as RAB watch to investigate CCW A breaker report OC flags all 3 phases.
3. If called as RCA watch to investigate CCW pump A report acrid smell and charring on motor vents but no fire present.

Event 5 – #1 SG tube leak.

1. On Lead Examiners cue initiate Event Trigger 5.
2. If called as Chemistry to Sample SG for activity report samples will be 30 minutes to take sample and analyze.
3. **NOTE: If the CRS indicates a desire to trip the plant in response to the SGTL the Lead examiner will cue event 6.**

Event 6 - ESDE #1 Steam Generator.

1. On Lead Examiners cue initiate Event Trigger 6.
2. if called as outside watch or TGB to look for steam leaks wait 3 minutes and report steam coming from west side MSIV area.
3. After the trip, on the **Lead Examiners cue**, raise the ESD from 4% to 10%.

Event 7 – #2 SG MSIV and #2 SG MFIV fail to auto close on MSIS

1. Verify MS-124B and FW-184 B fail to close. RP08H, RP09H true setup
2. If called to check steam still issuing from west side MSIV area after MSIVs closed report that steam is still issuing from break

Scenario Event Description

NRC Scenario 3

EXAM SUBMITTAL REV 1

Scenario Timeline:

Event	Malfunction	Severity	Ramp HH:MM:SS	Delay	Trigger	Time (Min)
1	Power escalation to 100 %	0	NA	NA	NA	1 min
2	RX14A Pressurizer press channel 100X fails high	100	N/A	NA	2	30 min
3	NI01f Middle detector B2 channel b fail	100	NA	NA	3	45 min
4	CC01A CCW Pump A trip	TRUE	NA	NA	4	55 min
5	SG01A SG 1 tube leak	0.6	00:10:00	NA	5	75 min
6	MS13A MS break outside ctmt upstream MSIV	4	00:01:30	NA	6	85 min
7	RP08H, RP09H K313 Relay failure: MSIS Train A & B fail to close on MSIS	TRUE	N/A	00:01:00	SETUP	95 min

Scenario Event Description

NRC Scenario 3

EXAM SUBMITTAL REV 1

REFERENCES:

Event	Procedure	Description
1	OP-010-004 OP-002-005 OP-005-005 OP-005-005 OP-005-007 OP-903-001 OP-003-031 OP-003-034	Power Operations. Chemical and Volume Control Reheat Steam System Reheat Steam System Main Turbine and Generator Technical Specification Surveillance Logs Condensate Polisher/Backwash Treatment Feed Heater Vents and Drains.
2	OP-901-120 TS 3.2.8.	Pressurizer Pressure Control Malfunction Technical Specifications
3	T.S 3.3.1 or 3.3.2 OP-500-008 OP-009-007	Technical Specifications 4.41, 4.51 Plant Protection System
4	OP-500-011 OP-901-510 TS 3.7.1.3	Annunciator Response procedure Cabinet M B-2, E-2, F-2 Component Cooling Water System Malfunction. Technical Specifications
5	OP-901-202 OP-903-024 OP-901-212 TS 3.4.5.2	SG Tube Leakage or High Activity when primary to secondary leakage Reactor Coolant System Water Inventory Balance Rapid Plant Power Reduction, Technical Specifications
6,7	OP-902-009 App 1 OP-902-000 OP-902-008 OP-902-009 App 32 OP-902-009 HR-2	Diagnostics Standard Post Trip Actions Functional Recovery "Blowdown a SG with Tube Leakage/Rupture RCS and Core Heat Removal

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>41</u>
Event Description:	Raising Power from 25%								
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:		
Indications Available:		
NOTE: Events 2 and 3 should be run during the up-power and event 4 should be run after the reactivity manipulation is satisfied.		
	CRS	Directs activities IAW OP-010-004, Power Operations
	ATC	Commence power ascension by raising RCS Tavg. Maintain RCS Tcold 541°F to 546°F during power increase
		<ul style="list-style-type: none"> Establish a Dilution IAW OP-002-005, Chemical and Volume Control at the rate required for the desired escalation rate as follows:
		<ul style="list-style-type: none"> At SM/CRS discretion, calculate volume of Primary Makeup water to be added on Attachment 11.7, Calculation of Primary Makeup Water Volume for Direct Dilution or VCT Dilute Makeup Mode.
		<ul style="list-style-type: none"> Set Primary Makeup Water Batch Counter to volume of Primary Makeup water desired.
		<ul style="list-style-type: none"> Place Makeup Mode selector switch to DILUTE.
		<ul style="list-style-type: none"> Open VCT Makeup Valve, CVC-510
		<ul style="list-style-type: none"> If manual control of Primary Makeup Water flow is desired, then perform the following:
		<ul style="list-style-type: none"> Verify Primary Makeup Water Flow controller, PMU-IFIC-0210X, in Manual.
		<ul style="list-style-type: none"> Adjust Primary Makeup Water Flow controller, PMU-IFIC-0210X, output to > 5 GPM flow rate.
		<ul style="list-style-type: none"> If automatic control of Primary Makeup Water flow is desired, then perform the following:
		<ul style="list-style-type: none"> Place Primary Makeup Water Flow controller, PMU-IFIC-0210X, in Auto.
		<ul style="list-style-type: none"> Adjust Primary Makeup Water Flow controller, PMU-IFIC-0210X, setpoint potentiometer to > 5 GPM flow rate.

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>8</u>	of	<u>41</u>
Event Description:	Raising Power from 25%								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Verify Primary Makeup Water Control Valve, PMU-144, Intermediate or Open.
		<ul style="list-style-type: none"> Observe Primary Makeup water flow rate for proper indication.
		<ul style="list-style-type: none"> When Primary Makeup Water Batch Counter has counted down to desired value, then verify Primary Makeup Water Control Valve, PMU-144, Closed.
		If continued dilution is required and with the CRS permission, then perform the following:
		<ul style="list-style-type: none"> Reset Primary Makeup Water Batch Counter.
		<ul style="list-style-type: none"> Verify Primary Makeup Water Control Valve, PMU-144, Intermediate or Open.
		<ul style="list-style-type: none"> Observe Primary Makeup water flow rate for proper indication.
		<ul style="list-style-type: none"> When Primary Makeup Water Batch Counter has counted down to desired value, then verify Primary Makeup Water Control Valve, PMU-144, Closed
	BOP	When Reactor Coolant System (RCS) Tavg rises, then match / Tavg and Tref by raising Turbine load in accordance with OP-005-007, Main Turbine and Generator. To change Load/Rate perform the following:
		<ul style="list-style-type: none"> Depress LOAD/RATE MW/MIN pushbutton.
		<ul style="list-style-type: none"> Depress appropriate numerical pushbuttons for desired load rate.
		<ul style="list-style-type: none"> Depress ENTER pushbutton.
NOTE:		Prior to changing Reference Demand, Main Turbine load must not be changing.
		To change Main Turbine load, perform the following:
		<ul style="list-style-type: none"> Depress REF pushbutton.

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>9</u>	of	<u>41</u>
Event Description:	Raising Power from 25%								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Depress appropriate numerical pushbuttons for desired MW load.
		<ul style="list-style-type: none"> Depress ENTER pushbutton.
		<ul style="list-style-type: none"> Depress GO pushbutton.
		<ul style="list-style-type: none"> Verify Turbine load change stops at the desired MW load.
	ATC/CRS	Maintain ASI within its control band in accordance with Attachment 9.4, Axial Shape Control Guidelines. (ATTACHED)
	CRS	Prior to exceeding 30% power, verify Steam Generator / chemistry within limits of CE-002-001, Maintaining Steam Generator Chemistry.
	CRS	Prior to exceeding 30% power, verify Tc is > 536°F and < 549°F / in accordance with OP-903-001, Technical Specification Surveillance Logs, and Technical Specification 3.2.6.
	CRS	Align Blowdown Flash Tank Vent to #4 Heaters by performing the following: <ul style="list-style-type: none"> Open BD Flash Tank to Heater 4, BD-120. Close BD Flash Tank to Condenser, BD-119.
	BOP/CRS	When Generator load exceeds 400 Mwe, then commence / placing MSRs in service in accordance with Moisture Separator Reheater Startup Section of OP-005-005, Reheat Steam System. <ul style="list-style-type: none"> Verify Moisture Separator Reheater Startup Section of OP-005-005 has been completed When Main Turbine reaches 35% load (350 MW - 450 MW), then align MSR A and MSR B by performing following: <ul style="list-style-type: none"> Close the following MSR drain valves: <ul style="list-style-type: none"> MS-3253A MSR A Turbine End Low Power TCV Inlet Drain To MSR Shell

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>10</u>	of	<u>41</u>
Event Description:	Raising Power from 25%								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> MS-3253B MSR A Generator End Low Power TCV Inlet Drain to MSR Shell
		<ul style="list-style-type: none"> MS-3271A MSR A Turbine End Main TCV Inlet Drain To MSR Shell
		<ul style="list-style-type: none"> MS-3271B MSR A Generator End Main TCV Inlet Drain To MSR Shell
		<ul style="list-style-type: none"> MS-3281A MSR B Turbine End Main TCV Inlet Drain To MSR Shell
		<ul style="list-style-type: none"> MS-3281B MSR B Generator End TCV Inlet Drain To MSR Shell
		<ul style="list-style-type: none"> MS-3263A MSR B Turbine End Low Power TCV Inlet Drain To MSR Shell
		<ul style="list-style-type: none"> MS-3263B MSR B Generator End Low Power Inlet Drain to MSR Shell
		<ul style="list-style-type: none"> Open the following MSR Low Power TCV Isolation valves:
		<ul style="list-style-type: none"> MS-3251A MSR A Turbine End Low Power TCV Isolation
		<ul style="list-style-type: none"> MS-3251B MSR A Generator End Low Power TCV Isolation
		<ul style="list-style-type: none"> MS-3261A MSR B Turbine End Low Power TCV Isolation
		<ul style="list-style-type: none"> MS-3261B MSR B Generator End Low Power TCV Isolation
		<ul style="list-style-type: none"> Depress the Ramp pushbutton on Reheater Control Panel and Verify the following valves begin to slowly ramp Open:
		<ul style="list-style-type: none"> MS-3254A MSR A Turbine End Low Power TCV
		<ul style="list-style-type: none"> MS-3254B MSR A Generator End Low Power TCV
		<ul style="list-style-type: none"> MS-3264A MSR B Turbine End Low Power TCV
		<ul style="list-style-type: none"> MS-3264B MSR B Generator End Low Power TCV

EXAM SUBMITTAL REV 1

Op Test No.:	<u> 1 </u>	Scenario #	<u> 3 </u>	Event #	<u> 1 </u>	Page	<u> 11 </u>	of	<u> 41 </u>
Event Description:	Raising Power from 25%								
Time	Position	Applicant's Actions or Behavior							

	CRS	<ul style="list-style-type: none"> When required, then place additional Condensate Polishers in service to maintain system differential pressure in accordance with OP-003-031, Condensate Polisher/Backwash Treatment.
		<ul style="list-style-type: none"> Between 30% and 35% Power, verify IP and HP Feedwater Heaters in service in accordance with OP-003-034, Feed Heater Vents and Drains.
At the Discretion of the Lead Examiner Move to Event 2.		

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>2</u>	Page	<u>12</u>	of	<u>41</u>
Event Description: Controlling Pressurizer Pressure Channel FAILS HIGH									
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:**Indications Available:**

	ATC/CRS	Responds to alarms:
		<ul style="list-style-type: none"> PRESSURIZER PRESS SIGNAL DEVIATION (CABINET H, F-1)
		<ul style="list-style-type: none"> PRESSURIZER PRESSURE HI/LO (CABINET H, E-1)
		Observes indications:
		<ul style="list-style-type: none"> Pressurizer pressure pegged high, as indicated on PRESSURIZER PRESSURE CHANNEL X/Y recorder (RC-IPR-0100)
		<ul style="list-style-type: none"> Pressurizer pressure deviation as indicated on Pressurizer Pressure controller (RC-IPIC-0100)
		<ul style="list-style-type: none"> Abnormal Pressurizer Spray Valve operation (opening) as indicated on Pressurizer Spray Valve controller (RC-IHIC-0100)
		<ul style="list-style-type: none"> Abnormal Pressurizer Backup Heater operation (off) as indicated on BACKUP HEATER BANKS control switch indications
		<ul style="list-style-type: none"> Abnormal Pressurizer Proportional Heater operation as indicated on PROPORTIONAL HEATER CURRENT meter (minimum)
	CRS	Takes actions IAW OP-901-120 Pressurizer Pressure Control Malfunction Subsection E3 initially and then E1:
	ATC	<ul style="list-style-type: none"> Place Pressurizer Spray Controller (RC-IHIC-0100) to MAN and Adjust Pressurizer Spray Controller (RC-IHIC-0100) output to 0%.
		<ul style="list-style-type: none"> Verify control channel instrument failure by checking PRESSURIZER PRESSURE CHANNEL X/Y recorder (RC-IPR-0100).
		<ul style="list-style-type: none"> Transfer Pressurizer pressure control to operable channel (Y) using Pressurizer Pressure Channel Selector control switch.

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>2</u>	Page	<u>13</u>	of	<u>41</u>
Event Description: Controlling Pressurizer Pressure Channel FAILS HIGH									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> IF Pressurizer Pressure control channel is failed high, THEN perform the following:
		<ul style="list-style-type: none"> Transfer Pressurizer Lo Level Heater Cutout selector switch to the Operable Pressurizer Pressure control channel (Y).
		<ul style="list-style-type: none"> Reset Proportional Heater Banks #1 & #2. (Places in "ON")
		<ul style="list-style-type: none"> Verify proper operation of Pressurizer Pressure controller (RC-IPIC-0100) AND Pressurizer Pressure controlling OR being restored to 2250 PSIA Continuous
	ATC/BOP/ CRS	Recognize and announce if Pressurizer Pressure exceeds limits of TS 3.2.8. (2125 psig on low end)
	CRS	Refer to Technical Specification 3.2.8
	CRS/ATC	Place Pressurizer Spray Controller (RC-IHIC-0100) to AUTO.
At the Discretion of the Lead Examiner Move to Event 3.		

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>3</u>	Page	<u>14</u>	of	<u>41</u>
Event Description:		Safety Channel B ENI Middle Detector FAILS HIGH							
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:		
Indications Available:		
	ATC	Recognize and report indications of Failed Channel:
		<ul style="list-style-type: none"> Alarms
		<ul style="list-style-type: none"> RPS CHANNEL TRIP LOCAL PWR DENSITY HI (A-11)
		<ul style="list-style-type: none"> RPS CHANNEL TRIP DNBR LO (A-12)
		<ul style="list-style-type: none"> LOCAL PWR DENSITY HI PRETRIP B/D (C-11)
		<ul style="list-style-type: none"> DNBR LO PRETRIP B/D (C-12)
		<ul style="list-style-type: none"> STARTUP RATE HI (D-14)
		<ul style="list-style-type: none"> RPS CHANNEL B TROUBLE (F-18)
		<ul style="list-style-type: none"> EXCORE/CPC CHNL B POWER DEVIATION (K-12)
		<ul style="list-style-type: none"> Indications:
		<ul style="list-style-type: none"> Trip and Pre-trip lights for PPC channel B Low DNBR and LPD
		<ul style="list-style-type: none"> EN-IJI-001B failed high
		<ul style="list-style-type: none"> CPC sensor failure light
	ATC/CRS	Verify RPS/CPC function bistable respond as expected.
		<ul style="list-style-type: none"> Trip and Pre-trip lights for PPC channel B Low DNBR and LPD
	CRS	Review actions required by Technical Specification Section 3.3.1 (RPS) and TS 3.3.3.5 Remote Shutdown Instrumentation. (No actions with two other channels available)

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>3</u>	Page	<u>15</u>	of	<u>41</u>
Event Description:		Safety Channel B ENI Middle Detector FAILS HIGH							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Enters TS Table 3.3-1 action 2 for CH B High Linear Power, High Log Power, High LPD and Low DNBR: With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour.
	CRS	Direct bistable bypass within 1 hours of failure (for first channel failure).
<p>NOTE: Failure of a second channel will require that channel to be placed in the trip condition. To bypass a second channel will remove both channels from bypass.</p>		
	ATC/BOP	Bypass affected channel in accordance with OP-009-007, Section 6.2 as follows for: 1-Hi Lin Power 2-Hi Log Power 3-Hi LPD 4-Low DNBR (on channel B)
		<ul style="list-style-type: none"> Verify desired Trip Channel is not Bypassed on another PPS Channel
		<ul style="list-style-type: none"> Open key-locked portion of Bypass Control Panel in desired PPS Channel.
		<ul style="list-style-type: none"> Depress Bypass push button for desired Trip Channel.
		<ul style="list-style-type: none"> Verify Bypass push button remains in a Depressed state.
		<ul style="list-style-type: none"> Verify Bypass light Illuminates on BCP and Remote Operating Module for the desired Trip Channel
<p>At the Discretion of the Lead Examiner Move to Event 4.</p>		

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>4</u>	Page	<u>16</u>	of	<u>41</u>
Event Description:		"A" CCW Pump TRIP							
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:		
Indications Available:		
	BOP/CRS	Assess alarms:
		<ul style="list-style-type: none"> Cabinet M, B-2 CCW Pump A Trip/Trouble
		(And depending on conditions the following may alarm)
		<ul style="list-style-type: none"> Cabinet M, E-2 CCW Header A Pressure Lo
		<ul style="list-style-type: none"> Cabinet M, F-2 CCW Header A Flow Lo
		<ul style="list-style-type: none"> Cabinet H, H-3 RCP 1A CCW FLOW LO
		<ul style="list-style-type: none"> Cabinet H, H-5 RCP 1B CCW Flow LO
		<ul style="list-style-type: none"> Cabinet H, H-7 RCP 2A CCW Flow LO
		<ul style="list-style-type: none"> Cabinet H, H-10 RCP 2B CCW Flow LO
	CRS	Directs actions IAW OP-901-510, Component Cooling Water System Malfunction.
	BOP/ATC/CRS	Assess indications:
		<ul style="list-style-type: none"> Amber trip/trouble light on affected CCW Pump control switch
	BOP/CRS	Align CCW Pump AB for Operation as follows:
		<ul style="list-style-type: none"> Place CCW ASSIGNMENT Switch to A position.
		<ul style="list-style-type: none"> Verify Open the following valves:
		<ul style="list-style-type: none"> CC-126A/CC-114A CCW SUCT & DISCH HEADER TIE VALVES AB TO A
		<ul style="list-style-type: none"> CC-127A/CC-115A CCW SUCT & DISCH HEADER TIE VALVES AB TO A
		<ul style="list-style-type: none"> Start CC-0001AB, CCW PUMP AB.
		<ul style="list-style-type: none"> Evaluate AB Electrical Bus alignment for Technical Specification Operability requirements.

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 4 Page 17 of 41

Event Description: "A" CCW Pump TRIP

Time	Position	Applicant's Actions or Behavior
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		<p>Enters TS 3.7.3 Action:</p> <p>With only one component cooling water and associated auxiliary component cooling water train OPERABLE, restore at least two trains to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.</p> <p>Enters TRM 3.7.3 Action:</p> <p>With Component Cooling Water pump A and/or B inoperable, restore the inoperable Component Cooling Water pump(s) to OPERABLE status within 7 days or within the next hour establish an hourly fire watch patrol in accordance with Table 3.7-1.</p> <p>Enters Cascading actions per OP-100-014, Technical Specification and Technical Requirements Compliance. (ATTACHED)</p>
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At the Discretion of the Lead Examiner Move to Event 5.

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>5</u>	Page	<u>18</u>	of	<u>41</u>
Event Description:		SGTL Ramp from 0 – 5 GPM Over 10 Minutes on SG #1							
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:**Indications Available:**

	BOP/CRS	Assess Annunciators:
		<ul style="list-style-type: none"> Cabinet E, C-3 VACUUM PUMPS EXHAUST ACTIVITY OP-500-005 HI/MONITOR TROUBLE
		<ul style="list-style-type: none"> Cabinet L, A-9 RAD MONITORING SYS ACTIVITY HI-HI
		<ul style="list-style-type: none"> Cabinet L, A-10 EFFLUENT RAD MONITORING SYS ACTIVITY HI-HI
	BOP/CRS	Evaluate Indications:
		<ul style="list-style-type: none"> Secondary activity rising greater than or equal to 2 GPD from the average steady state leakage value as indicated by ANY of the following:
		<ul style="list-style-type: none"> Rising activity on MS Line N16 Rad Monitors:
		<ul style="list-style-type: none"> RE5501-1, (Leak Rate 1)
		<ul style="list-style-type: none"> Rising Secondary activity indicated on the following Radiation Monitors
		<ul style="list-style-type: none"> (listed in order of sensitivity): PRM-IRE-0002, Condenser Vacuum Pump
		<ul style="list-style-type: none"> PRM-IRE-0100X, Steam Generator 1 and 2 Blowdown
		<ul style="list-style-type: none"> PRM-IRE-5500A, Main Steam Line 1
	CRS	Directs actions IAW OP-901-202, SG Tube Leakage or High Activity
	CRS	Briefs crew on contingency:
		<ul style="list-style-type: none"> IF Pressurizer level CANNOT be maintained with available Charging Pumps, THEN perform the following:
		Continuous
		<ul style="list-style-type: none"> Manually trip Reactor.

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>5</u>	Page	<u>19</u>	of	<u>41</u>
Event Description:		SGTL Ramp from 0 – 5 GPM Over 10 Minutes on SG #1							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Manually initiate Safety Injection Actuation (SIAS) AND Containment Isolation Actuation (CIAS). GO TO OP-902-000, STANDARD POST TRIP ACTIONS.
	ATC/BOP/CRS	Determine RCS leak rate using ANY of the following:
		<ul style="list-style-type: none"> Calculated Steam Generator leakage displayed on PMC PID C48251 (RE5501 CH1 LEAK RATE) and C48252 (RE5501 CH2 LEAK RATE)
		<ul style="list-style-type: none"> Approximate RCS leak rate by subtracting total of Letdown flow AND RCP CBO flow from Charging Flow
		<ul style="list-style-type: none"> Calculated Charging / Letdown Mismatch displayed on PMC Group Leakrate (PMC PID S13001)
		<ul style="list-style-type: none"> RCS Leak Rate calculation in accordance with OP-903-024, REACTOR COOLANT SYSTEM WATER INVENTORY BALANCE
		<ul style="list-style-type: none"> Calculated steam generator leakage based upon chemistry sample, per CE-003-705, DETERMINATION OF PRIMARY-TO-SECONDARY LEAK RATE.
	CRS	Requests Chemistry sample of Steam Generators to determine leakrate.
	CRS	Determines required actions:
		<ul style="list-style-type: none"> IF Primary to Secondary Leakage in any Steam Generator is greater than 75 GPD (~0.05 GPM) AND the rate of change is rising by greater than 30 GPD/HR (~0.02 GPM/HR), THEN perform the following:
		<ul style="list-style-type: none"> WHEN Plant Power is less than 50%, THEN in accordance with OP-901-212, RAPID PLANT POWER REDUCTION, AND concurrently with this Procedure, be in Mode 3 within 2 hours AND Mode 5 in the following 30 hours.
	CRS	Briefs crew on required actions.

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Op Test No.:	<u> 1 </u>	Scenario #	<u> 3 </u>	Event #	<u> 5 </u>	Page	<u> 20 </u>	of	<u> 41 </u>
Event Description:	SGTL Ramp from 0 – 5 GPM Over 10 Minutes on SG #1								
Time	Position	Applicant's Actions or Behavior							

At the Discretion of the Lead Examiner Move to Event 6 & 7.

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>6 & 7</u>	Page	<u>21</u>	of	<u>41</u>
Event Description:	ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS								
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:**Indications Available:**

	CREW	Recognize ESDE indications:
		<ul style="list-style-type: none"> Power rising
		<ul style="list-style-type: none"> RCS temperature lowering
		And manually trip the plant or automatic trip may occur first. (NOTE the crew may also address the excess cooldown by initiating SIAS and CIAS at this time)
		NOTE: The ESD is made bigger after the operators take actions to trip the plant and address the uncontrolled cooldown.
	CRS	Directs actions IAW OP-902-000, SPTA's
	ATC/CRS	Determine Reactivity Control acceptance criteria are met:
		<ul style="list-style-type: none"> Check reactor power is dropping
		<ul style="list-style-type: none"> Perform the following as necessary to insert CEAs: <ul style="list-style-type: none"> Manually trip the reactor.
		<ul style="list-style-type: none"> Check startup rate is negative.
		<ul style="list-style-type: none"> Check less than TWO CEAs are NOT fully inserted.
	BOP/CRS	Determine that Maintenance of vital Auxiliaries acceptance criteria are met:
		<ul style="list-style-type: none"> Check the Main Turbine is tripped: <ul style="list-style-type: none"> Governor valves closed Throttle valves closed
		<ul style="list-style-type: none"> Check the Main Generator is tripped:

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 22 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> GENERATOR BREAKER A tripped
		<ul style="list-style-type: none"> GENERATOR BREAKER B tripped
		<ul style="list-style-type: none"> EXCITER FIELD BREAKER tripped
		<ul style="list-style-type: none"> Check station loads are energized from offsite electrical power as follows:
		TRAIN A
		<ul style="list-style-type: none"> A1, 6.9 KV non safety bus
		<ul style="list-style-type: none"> A2, 4.16 KV non safety bus
		<ul style="list-style-type: none"> A3, 4.16 KV safety bus
		<ul style="list-style-type: none"> A-DC electrical bus
		<ul style="list-style-type: none"> A or C vital AC Instrument Channel
		TRAIN B
		<ul style="list-style-type: none"> B1, 6.9 KV non safety bus
		<ul style="list-style-type: none"> B2, 4.16 KV non safety bus
		<ul style="list-style-type: none"> B3, 4.16 KV safety bus
		<ul style="list-style-type: none"> B-DC electrical bus
		<ul style="list-style-type: none"> B or D vital AC Instrument Channel
	ATC/CRS	Determine RCS Inventory Control acceptance criteria are met:
		<ul style="list-style-type: none"> Check that BOTH of the following conditions exist:
		<ul style="list-style-type: none"> Pressurizer level is 7% to 60%
		<ul style="list-style-type: none"> Pressurizer level is trending to 33% to 60%
		<ul style="list-style-type: none"> Restore and maintain pressurizer level 33% to 60% by performing ANY of the following:
		<ul style="list-style-type: none"> Manually operate charging pumps and letdown control valves.
		<ul style="list-style-type: none"> Check RCS subcooling is greater than or equal to 28°F.
	ATC/CRS	Determine RCS Pressure Control acceptance criteria are met by checking that BOTH of the following conditions exist:

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>6 & 7</u>	Page	<u>23</u>	of	<u>41</u>
Event Description:	ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS								
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Pressurizer pressure is 1750 psia to 2300 psia
		<ul style="list-style-type: none"> Pressurizer pressure is trending to 2125 psia to 2275 psia
		<ul style="list-style-type: none"> IF pressurizer pressure is less than 1684 psia, THEN verify the following have initiated.
		<ul style="list-style-type: none"> SIAS
		<ul style="list-style-type: none"> CIAS
		<ul style="list-style-type: none"> IF pressurizer pressure is less than 1621 psia, THEN verify no more than two RCPs are operating
		<ul style="list-style-type: none"> IF pressurizer pressure is less than the minimum RCP NPSH of Appendix 2-A, "RCS Pressure and Temperature Limits", THEN stop ALL RCPs.
	ATCCRS	Determine Core Heat Removal acceptance criteria are met:
		<ul style="list-style-type: none"> Check at least one RCP is operating.
		<ul style="list-style-type: none"> Check operating loop ΔT is less than 13°F.
		<ul style="list-style-type: none"> Check RCS subcooling is greater than or equal to 28°F.
	BOP/CRS	Determine RCS Heat Removal acceptance criteria are met:
		<ul style="list-style-type: none"> Check that at least one steam generator has BOTH of the following:
		<ul style="list-style-type: none"> Steam generator level is 5% to 80% NR
		<ul style="list-style-type: none"> Main Feedwater is available to restore level within 50%-70% NR [60-80% NR]
		<ul style="list-style-type: none"> Verify Main Feedwater is restoring level in at least one steam generator within 50% to 70% NR [60% to 80% NR].
		<ul style="list-style-type: none"> Verify Emergency Feedwater is available to restore level in at least one steam generator within 50%-70% NR [60-80% NR].
		<ul style="list-style-type: none"> Check RCS TC is 530°F to 550°F.
		<ul style="list-style-type: none"> IF RCS TC is less than 530°F, THEN perform the following:

EXAM SUBMITTAL REV 1

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>6 & 7</u>	Page	<u>24</u>	of	<u>41</u>
Event Description:		ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> Verify feedwater flow is NOT excessive
		<ul style="list-style-type: none"> Verify Steam Bypass or ADVs are restoring RCS TC 530°F to 550°F
		<ul style="list-style-type: none"> IF RCS TC is less than 382°F, THEN verify no more than two RCPs are operating
CRITICAL TASK to stabilize RCS temp.		<ul style="list-style-type: none"> IF RCS TC is being controlled by an ESD, THEN REFER TO Appendix 13, "Stabilize RCS Temperature" and stabilize RCS temperature using the least affected steam generator. SG 1 (ATTACHED)
CRITICAL TASK to Emergency Borate		
NOTE: When an uncontrolled cooldown is recognized it is an immediate action to initiate emergency boration or SIAS.		
		<ul style="list-style-type: none"> Check steam generator pressure is 885 psia to 1040 psia.
		<ul style="list-style-type: none"> IF steam generator pressure is less than 885 psia, THEN perform ALL of the following:
		<ul style="list-style-type: none"> Verify steam bypass valves are closed.
		<ul style="list-style-type: none"> Verify ADVs are closed.
		<ul style="list-style-type: none"> IF steam generator pressure is less than or equal to 666 psia, THEN verify MSIS is initiated.
NOTE: If MSIS has actuated should recognize #2 SG MSIV and #2 SG MFIV did not close and take actions to manually close.		
		<ul style="list-style-type: none"> Check Feedwater Control in Reactor Trip Override:
		<ul style="list-style-type: none"> MAIN FW REG valves are closed
		<ul style="list-style-type: none"> STARTUP FW REG valves are 13% to 21% open
		<ul style="list-style-type: none"> Operating main feedwater pumps are 3800 rpm to 4000 rpm
		<ul style="list-style-type: none"> Manually operate the Feedwater Control system and restore level in at least one steam generator within 50% to 70% NR [60%-80% NR].

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Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 25 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Reset moisture separator reheaters, and check the temperature control valves closed
	BOP/CRS	Determine Containment Isolation acceptance criteria are met:
		<ul style="list-style-type: none"> Check containment pressure is less than 16.4 psia.
		<ul style="list-style-type: none"> Check NO containment area radiation monitor alarms OR unexplained rise in activity.
		<ul style="list-style-type: none"> Check NO steam plant activity monitor alarms OR unexplained rise in activity
	BOP/CRS	Determine Containment Temperature and Pressure Control acceptance criteria are met:
		<ul style="list-style-type: none"> Check containment temperature is less than or equal to 120°F.
		<ul style="list-style-type: none"> Check containment pressure is less than 16.4 psia.
	CRS	IF ANY safety function acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Appendix 1, "Diagnostic Flowchart.
	CRS	Determines that OP-902-008, Functional Recovery, needs to be implemented.
	CRS	Announce that the Functional Recovery Procedure is in progress using the plant page.
	CRS	Advise the Shift Manager to REFER TO EP-001-001, "Recognition & Classification of Emergency Condition" and implement the Emergency Plan.
	CRS	REFER TO the "Placekeeper" and record the time of the reactor trip.

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 26 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
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	CRS/ATC	IF pressurizer pressure is less than 1621 psia, AND SIAS is actuated, THEN:
		<ul style="list-style-type: none"> Verify no more than two RCPs are operating.
		<ul style="list-style-type: none"> IF pressurizer pressure is less than the minimum RCP NPSH of Appendix 2A-D, "RCS Pressure and Temperature Limits", THEN stop ALL RCPs.
	CRS/BOP	IF RCPs are operating, THEN:
		<ul style="list-style-type: none"> Verify CCW available to RCPs.
		<ul style="list-style-type: none"> IF RCS TC is less than 382°F [384°F], THEN verify no more than two RCPs are operating.
	CRS	Direct Chemistry to sample BOTH steam generators for activity and boron.
	BOP	Place Hydrogen Analyzers in service:
		TRAIN A
		<ul style="list-style-type: none"> Place Train A H2 ANALYZER CNTMT ISOL VALVE keyswitch to "OPEN". (Key 216)
		<ul style="list-style-type: none"> Place H2 ANALYZER A POWER to "ON".
		<ul style="list-style-type: none"> Check H2 ANALYZER A PUMP indicates ON.
		TRAIN B
		<ul style="list-style-type: none"> Place Train B H2 ANALYZER CNTMT ISOL VALVE keyswitch to "OPEN". (Key 217)
		<ul style="list-style-type: none"> Place H2 ANALYZER B POWER to "ON".
		<ul style="list-style-type: none"> Check H2 ANALYZER B PUMP indicates ON.
	CRS	Identify success paths to be used to satisfy each safety function using BOTH of the following:
		<ul style="list-style-type: none"> Resource Assessment Trees
		<ul style="list-style-type: none"> Safety Function Tracking Sheet

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 27 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
	CRS	REFER TO Section 6.0, "Safety Function Status Check", and have the STA perform Safety Function Status Checks.
	CRS	Prioritize Safety Functions based on ALL of the following: <ul style="list-style-type: none"> • Instructions for those Safety Functions which do NOT meet any success path. • Instructions for those Safety Functions for which success path one criteria is NOT met. • Instructions for Safety Functions for which success path one criteria is met.
	CRS	Implement success paths based on Priority. <ul style="list-style-type: none"> • Containment Isolation • Inventory control 2 • Heat Removal 2 • Containment pressure and Temperature Control 2
	CRS	Directs actions of CI-1, Containment Isolation
	CRS/BOP	Verify Containment Isolation <ul style="list-style-type: none"> • IF ANY of the following conditions exist: <ul style="list-style-type: none"> • Containment pressure is greater than 17.1 psia • Pressurizer pressure is less than 1684 psia • Containment area radiation monitors greater than the Hi Alarm setpoint THEN perform BOTH of the following: <ul style="list-style-type: none"> • Verify CIAS is initiated. • Verify that an isolation valve is closed for each containment penetration required to be closed.
	CRS/BOP	IF a SGTR is indicated by ANY of the following:

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 28 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • Steam generator activities
		<ul style="list-style-type: none"> • Main Steam Line radiation levels
		<ul style="list-style-type: none"> • Steam generator blowdown radiation monitor readings
		<ul style="list-style-type: none"> • Steam generator level rise when NOT feeding
		<ul style="list-style-type: none"> • One steam generator level rising faster than the other with feed and steaming rates being essentially the same for both
		<ul style="list-style-type: none"> • Feed flow mismatch between steam generators
		<ul style="list-style-type: none"> • Steam flow verses feed flow mismatch in a steam generator prior to the reactor trip THEN REFER TO Heat Removal success path in use and isolate the most affected steam generator:
		<ul style="list-style-type: none"> • HR-2 steps 16 thru 28
	BOP/CRS	Commence a rapid RCS cooldown to less than 520°F TH using BOTH atmospheric dump valves.
		Note: RCS Th temperature should already be less than 520 degrees ADV # 1 operation should NOT be required.
	ATC/CRS	Depressurize the RCS by performing ALL of the following:
		<ul style="list-style-type: none"> • Maintain pressurizer pressure within ALL of the following criteria:
		<ul style="list-style-type: none"> • Less than 945 psia [915 psia]
		<ul style="list-style-type: none"> • Within 50 psi of the most affected steam generator pressure
		<ul style="list-style-type: none"> • Within Appendix 2A-D, "RCS Pressure and Temperature Limits"
		<ul style="list-style-type: none"> • IF RCPs are operating, greater than the minimum RCP NPSH of Appendix 2AD, "RCS Pressure and Temperature Limits"
		<ul style="list-style-type: none"> • Operate main or auxiliary pressurizer spray.

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 29 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
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		<p>Check for HPSI throttle criteria:</p> <ul style="list-style-type: none"> RCS subcooling is greater than or equal to 28°F Pressurizer level is greater than 7% [23%] and controlled Verify ALL steam generators capable of steaming are being maintained or restored to within the following level: <ul style="list-style-type: none"> 50% to 70% NR [60-80% NR] using MFW or EFW in auto or manual RVLMS indicates level higher than Hot Leg by at least one of the following: <ul style="list-style-type: none"> QSPDS REACTOR VESSEL LEVEL 5 NOT voided VESSEL LEVEL PLENUM greater than or equal to 80%
		<ul style="list-style-type: none"> IF HPSI throttle criteria are met, THEN perform ANY of the following: <ul style="list-style-type: none"> Control charging and letdown flow Throttle HPSI flow
CRITICAL TASK	CRS/BOP	IF RCS TH is less than 520°F, THEN isolate the most affected SG:
		STEAM GENERATOR 1
		<ul style="list-style-type: none"> Place the ADV setpoint to 980psig and verify the controller in AUTO.
		<ul style="list-style-type: none"> Verify the MSIV is closed.
		<ul style="list-style-type: none"> Verify the MFIV is closed.
		<ul style="list-style-type: none"> IF EFAS-1 is NOT initiated, THEN close EFW Isolation Valves: <ul style="list-style-type: none"> EFW 228A, SG 1 PRIMARY EFW 229A, SG 1 BACKUP

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 30 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Place EFW Flow Control Valves in MAN and close: <ul style="list-style-type: none"> EFW 224A, SG 1 PRIMARY EFW 223A, SG 1 BACKUP Close MS 401A, PUMP AB TURB STM SUPPLY SG 1. Close Main Steam Line 1 Drains: <ul style="list-style-type: none"> MS 120A NORMAL MS 119A BYPASS Close Steam Generator Blowdown isolation valves: <ul style="list-style-type: none"> BD 103A STM GEN 1 (OUT) BD 102A STM GEN 1 (IN) Check the main steam safety valves are closed
NOTE: Once the SG is isolated the Lead Examiner may terminate the event at his discretion.		
	CRS	<p>IF isolated steam generator pressure can NOT be maintained less than 1000 psia [960 psia], THEN perform ANY of the following to maintain the isolated steam generator pressure less than 1000 psia [960 psia]:</p> <ul style="list-style-type: none"> Manual operation of the associated ADV. REFER TO Appendix 22, "Local Operation of the Atmospheric Dump Valves", and operate ADVs Locally
	CRS	<p>Verify the most affected steam generator is isolated by considering ALL of the following:</p> <ul style="list-style-type: none"> Steam generator activities Steam plant radiation levels Steam generator levels

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 31 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
	CRS	IF pressurizer pressure is less than steam generator pressure, THEN direct Chemistry to sample the RCS for boron concentration every 30 minutes.
	CRS	IF ALL RCPs have been stopped, THEN open the knife switches for BOTH RCPs in the affected loop.
		<ul style="list-style-type: none"> RCP 1A (Swgr 1A, cubicle 7A)
		<ul style="list-style-type: none"> RCP 1B (Swgr 1B, cubicle 7A)
		<ul style="list-style-type: none"> RCP 2A (Swgr 1A, cubicle 8A)
		<ul style="list-style-type: none"> RCP 2B (Swgr 1B, cubicle 8A)
	CREW	Maintain the isolated steam generator level less than 85% NR by ANY of the following methods:
		<ul style="list-style-type: none"> Lowering pressurizer pressure to less than isolated steam generator pressure.
		<ul style="list-style-type: none"> REFER TO Appendix 31, "Blowdown a SG with Tube Leakage/Rupture" and blowdown the isolated steam generator to the condenser.
		<ul style="list-style-type: none"> Steaming the isolated steam generator to the condenser.
		<ul style="list-style-type: none"> Obtain Emergency Coordinator concurrence and steam the isolated steam generator using the atmosphere dump valve.
	CRS	Direct Health Physics and Chemistry to REFER TO UNT-005-032, "Steam Generator Primary-to-Secondary Leakage", and perform sampling of secondary systems as required. Monitor RAB and Turbine building radiation monitors for unexpected rise in activity.
	CRS	IF isolated steam generator is limiting the RCS cooldown AND at least one RCP is operating, THEN cool and depressurize the isolated steam generator by performing the following:
		<ul style="list-style-type: none"> Verify MFW and EFW are isolated to the most affected steam generator.

EXAM SUBMITTAL REV 1

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 32 of 41

Event Description: ESDE on #1 SG Outside Containment, Upstream of MSIV; #2 SG MSIV and #2 SG MFIV FAIL to AUTO CLOSE on MSIS

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Lower RCS pressure to less than isolated steam generator pressure to allow backflow from the isolated steam generator.
		<ul style="list-style-type: none"> WHEN isolated steam generator level is 33% NR, THEN maintain RCS pressure and isolated steam generator pressure within 50 psi.
		<ul style="list-style-type: none"> Maintain isolated steam generator level 48% [56%] to 85% NR using MFW or EFW.
	CRS	IF isolated steam generator is limiting the RCS cooldown AND the main condenser is available, THEN cool and depressurize the isolated steam generator by ANY of the following methods:
		<ul style="list-style-type: none"> Steam the isolated steam generator to the main condenser using the SBCS.
		<ul style="list-style-type: none"> REFER TO Appendix 32, "Blowdown a SG with Tube Leakage/Rupture", and perform BOTH of the following as necessary.
		<ul style="list-style-type: none"> Blowdown to the main condenser
		<ul style="list-style-type: none"> Feed the isolated steam generator to less than 85% NR using MFW or EFW
		IF the isolated steam generator is limiting the RCS cooldown AND the main condenser is NOT available, THEN obtain Emergency Coordinator concurrence and cool and depressurize the isolated steam generator by ANY of the following methods:
		<ul style="list-style-type: none"> Cool the affected steam generator by losses to ambient.
		<ul style="list-style-type: none"> Steam the isolated steam generator to the atmosphere using the ADVs
Terminate the scenario.		

Safety Function Tracking Sheet

WATERFORD 3 SES		OP-902-008	Revision 015		
FUNCTIONAL RECOVERY		Page 14 of 227			
Safety Function Tracking Sheet					
Safety Function	Success Path		Success Path in Use	SFSC Met	Priority
Reactivity Control	RC-1	CEA Insertion	X	X	4
	RC-2	Boration using CVCS			
	RC-3	Boration using SI			
Maintenance of Vital Auxiliaries (DC)	MVA-DC-1	Battery Chargers/ Station Batteries	X	X	5
Maintenance of Vital Auxiliaries (AC)	MVA-AC-1	Startup Transformer	X	X	6
	MVA-AC-2	Emer Diesel Gen			
RCS Inventory Control	IC-1	CVCS			2
	IC-2	Safety Injection	X	X	
RCS Pressure Control	PC-1	Subcooled	X	X	7
	PC-2	Saturated			
RCS and Core Heat Removal	HR-1	SI NOT operating			3
	HR-2	SI operating	X	X	
Containment Isolation	CI-1	Automatic/Manual	X	0	1
Containment Temperature and Pressure Control	CTPC-1	CFCs	X	X	8
	CPTC-2	Containment Spray			

9.4 AXIAL SHAPE CONTROL GUIDELINES

9.4.1 General Precautions and Notes

- 9.4.1.1 Changes in ASI directly affect the temperature and power of the reactor and the larger the ASI swing is, the greater affect it has. As ASI becomes more negative (moves to the top of the core), temperature and power rise. The opposite affect occurs when ASI becomes more positive (moves to the bottom of the core), temperature and power drop. Thus, if ASI is controlled closer to Equilibrium Shape Index (ESI) and its changes are limited, then the effect it has on Reactor Power and Temperature will be reduced.
- 9.4.1.2 Axial Shape Control should be applied at all times when the reactor is above 20% power.
- 9.4.1.3 Maintain Axial Shape Index (ASI) within the following Equilibrium Shape Index (ESI):
- | | | |
|-----------|----------------------------------|-------------|
| 9.4.1.3.1 | During steady-state operations | ± 0.05 |
| 9.4.1.3.2 | During load transients | ± 0.05 |
| 9.4.1.3.3 | During Xenon Oscillation control | ± 0.005 |
- 9.4.1.4 Axial Shape Control guidelines are not applicable during emergency or off-normal conditions.
- 9.4.1.5 The CEA insertion/withdrawal sequence and insertion limits of Technical Specifications shall be observed.
- 9.4.1.6 Control rods should be manually withdrawn or inserted in a deliberate and carefully controlled manner, while closely monitoring reactor response.
- 9.4.1.7 ASI should be monitored closely for several minutes after CEA motion, to determine the impact of the movement.
- 9.4.1.8 CEA motion should be slow and smooth (less than 3 inches), particularly in the outward direction.
- 9.4.1.9 CEDMCS should be operated in Manual Group with Groups 5, 6 or P being used for control. [T.S. 3.1.3.6].
- 9.4.1.10 If operating with both CEACs Inoperable, then do not insert group 6 CEAs below 127.5 inches withdrawn and maintain group P CEAs at the full out position.
- 9.4.1.11 Do not insert Group 5, 6 or P CEAs below 75 inches withdrawn.

Event 4 .
 OP-100-014, Technical Specification and Technical Requirements Compliance Table 3.7-1

CHW/UHS

Component	Applicable Mode(s)	Affected Systems and Tech Specs	Required Action(s)
Essential Chilled Water Train A(B) in the WET Tower Mode for condensing water ① (Note ① is located on page 7 of 24)	1,2,3,4	ACC - 3.7.3 CHW - 3.7.12 SVS - TRM 3.7.13 AC Sources - 3.8.1.1 UHS - 3.7.4 CCS - 3.6.2.2 CS - 3.6.2.1 CREFS - 3.7.6.1 CR Air Temp. - 3.7.6.3 Charging Pumps - 3.1.2.4 EFW - 3.7.1.2 ECCS - 3.5.2 Charging Pumps - TRM 3.1.2.4 CCW - TRM 3.7.3 CHW - TRM 3.7.12	<ul style="list-style-type: none"> • Declare affected systems Inoperable and enter appropriate cascading Tech Specs • Complete OP-903-066, Electrical Breaker Alignment Check, within 1 hour, <u>and</u> at least every 8 hours thereafter in accordance with TS 3.8.1.1b. • Complete TS 3.8.1.1, Action (d) within 2 hours • <u>If</u> an opposite train component becomes Inoperable, <u>then</u> evaluate Tech Specs for both trains being Inoperable.
Ultimate Heat Sink Train A(B) [UHS]②③④ (Notes ②③④ are located on page 7 of 24)	1,2,3,4	UHS - 3.7.4 CC/ACC - 3.7.3 CHW - 3.7.12 SVS - TRM 3.7.13 AC Sources - 3.8.1.1 CCS - 3.6.2.2 CS - 3.6.2.1 CREFS - 3.7.6.1 CR Air Temp. - 3.7.6.3 Charging Pumps - 3.1.2.4 EFW - 3.7.1.2 ECCS - 3.5.2 Charging Pumps - TRM 3.1.2.4 CCW - TRM 3.7.3 CHW - TRM 3.7.12	<ul style="list-style-type: none"> • Review affected Tech Spec LCO Actions. • Declare affected CC/ACC Train Inoperable and other affected systems and enter cascading TS. • <u>If</u> more than 3 DCT Fans per DCT are Inoperable, <u>then</u> plant operation is <u>prohibited</u> in accordance with TS 3.7.4, Actions a and/or b. • <u>If</u> both trains of UHS are declared Inoperable, <u>then</u> cascade entry into Tech Spec 3.0.3 is not required in accordance with Action (b) of TS 3.7.4 • Complete OP-903-066, Electrical Breaker Alignment Check, within 1 hour, <u>and</u> at least every 8 hours thereafter in accordance with TS 3.8.1.1b.

WATERFORD 3 SES STANDARD APPENDICES		OP-902-009 Revision 301 Page 116 of 195
		Appendix 13 Page 1 of 2
Stabilize RCS Temperature		
INSTRUCTIONS		CONTINGENCY ACTIONS
----- NOTE -----		
Actions to stabilize RCS temperature following an excess steam demand event should be initiated when BOTH of the following parameters are met:		
<ul style="list-style-type: none"> • CET temperatures rise • Pressurizer pressure rise 		

____ 1.1 <u>Place</u> the ADV for the least affected steam generator to manual and fully <u>open</u> the ADV.		
____ 1.2 Manually <u>initiate</u> EFAS for the least affected steam generator.		
____ 1.3 <u>Place</u> the EFW Flow Control Valve to manual and <u>commence</u> feeding the least affected steam generator.		
____ 1.4 IF RCS pressure is greater than or equal to 1500 psia, THEN <u>stabilize</u> RCS pressure at a value not to exceed 1600 psid between the RCS and the lowest SG pressure.	4.1 IF RCS pressure is less than 1500 psia, THEN <u>stabilize</u> RCS pressure at greater than HPSI shutoff head (1500-1600 psia).	

<p>WATERBORNE REACTOR STANDARD APPENDICES</p>	<p>OP-902-009 Revision 301 Page 117 of 199</p>
	<p>Appendix 13 Page 2 of 2</p>
<p>INSTRUCTIONS:</p> <p>___ 1.5 IF HPSI pumps are operating, AND ALL of the following conditions are satisfied:</p> <ul style="list-style-type: none"> ▶ RCS subcooling is greater than or equal to 25°F ▶ Pressurizer level is greater than 75% (25%) and controls ▶ At least one steam generator level is being maintained or resides to within ANY of the following: <ul style="list-style-type: none"> * SCRS-7025 MIR (D3-0014 IN F) using MFW * SCRS-7025 MIR (D3-0014 IN F) using EFW in auto or manual ▶ RVLMS indicates level higher than Hot Leg by at least one of the following: <ul style="list-style-type: none"> * CSFDS level is NOT voided * VESSEL LEVEL FLENUM greater than or equal to 92% <p>THEN <u>limit</u> HPSI flow or <u>stop</u> ONE HPSI pump at a time.</p>	<p>CONTINGENCY ACTIONS</p>
<p>End of Appendix 13</p>	

NRC Scenario 3
Turnover Sheet
Applicant Handout
EXAM SUBMITTAL REV 1

NUCLEAR PLANT OPERATOR TURNOVER SHEET AND CHECKLIST
(TYPICAL)

DATE 3/26/2008

1. Prior to turnover, review Critical Parameters in allowable limits (Modes 1 and 2):

PRESSURIZER LEVEL	33-56%
PRESSURIZER PRESSURE	2075-2275 psia
STEAM GENERATOR LEVEL	60-70%
STEAM GENERATOR PRESSURE	860-1000 psia
TAVG	544-582°F
REACTOR POWER	≤100% (Mode 2 ≤ 5%)

2. Simulator Specific Information

Reactor Power	<u>25%</u>
EFPD	<u>250</u>
ESI	<u>-0.26</u>
RCS Boron	<u>1224 ppm</u>
BAMT A	<u>5850 ppm</u>
BAMT B	<u>5725 ppm</u>

3. Complete independent Control Board Walkdown.

LCO/Action Status:

<u>Equip/Sys</u>	<u>TS</u>	<u>Entered</u>	<u>Action</u>	<u>Exited</u>
None				

<u>Equip/Sys</u>	<u>TRM#</u>	<u>Entered</u>	<u>Action</u>	<u>Exited</u>
None				

NRC Scenario 3
Turnover Sheet
Applicant Handout
EXAM SUBMITTAL REV 1

NUCLEAR PLANT OPERATOR TURNOVER SHEET AND CHECKLIST (Cont'd)

Surveillance Tests in progress:

None

Equipment taken out of service:

None

Equipment returned to service:

None

Maintenance in progress:

None

Technical Specifications and Technical Requirements Manual Actions

<u>T.S.</u>	<u>Equipment/System</u>	<u>Entered</u>	<u>Action</u>	<u>Exited</u>
None				
<u>TRM</u>	<u>Equipment/System</u>	<u>Entered</u>	<u>Action</u>	<u>Exited</u>
None				

Significant Events/Additional Items/Remarks/Equipment Out of Service:

Plant Safety Index is 10 Green. Protected Train is B. AB buses aligned to "B" side. FWPT A in service FWC in Auto

Plant startup is in progress after being off-line for 2 days. Power is currently 25%. Xenon building in after Startup

You are directed to raise power to 100%.

NRC Scenario 3
Turnover Sheet
Applicant Handout
EXAM SUBMITTAL REV 1

6.9 REACTIVITY BRIEF GUIDELINE

(typical)

The Reactivity Brief should be conducted after shift turnover is complete, but before the Shift Meeting. The Control Room staff should be present for the Reactivity Brief. The brief should include, but is not limited to the following:

Previous shift additions of PMU, Boric Acid, and MWs [May be N/A]

	PMU	Boric Acid	MW
Previous shift additions of PMU, Boric Acid, and MWs [May be N/A]	2000	N/A	222
Anticipated PMU, Boric Acid, and MW additions this shift [May be N/A]	4000	NA	400

Anticipated PMU, Boric Acid, and MW additions this shift [May be N/A]

ASI profile compared to ESI including Xenon:
[Include any actions necessary during shift and actions the previous shift took]
ASI Control using RG 6 and Grp P

steady converging diverging

Volume Control Tank Blend Rate: 19 Gallons Boric Acid per 100 gallons PMU

Jobs affecting reactivity this shift:
Raise power to 100%

Saturday day shift and Saturday night shift:

- Review Reactivity Control Worksheet provided by Reactor Engineering.
- Review Reactivity Management Index, including recent contributing events.

Facility:		Waterford 3		Date of Exam:		03/24/2008		Operating Test No.:		W3-TEAM-1							
A P P L I C A N T	E V E N T T Y P E	Scenarios											T O T A L	M I N I M U M (*)			
		1 SPARE			2			3			4 SPARE						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C		B O P	R	I	U
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U2 <input checked="" type="checkbox"/>	RX				0			0						0	1	1	0
	NOR				1			1						2	1	1	1
	I/C				3			4						7	4	4	2
	MAJ				1			1						2	2	2	1
	TS				2			3						5	0	2	2
RO2 <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX					1				0				1	1	1	0
	NOR					0				1				1	1	1	1
	I/C					2				2				4	4	4	2
	MAJ					1				1				2	2	2	1
	TS					0				0				0	0	2	2
RO3 <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX						0		1					1	1	1	0
	NOR						1		0					1	1	1	1
	I/C						3		2					5	4	4	2
	MAJ						1		1					2	2	2	1
	TS						0		0					0	0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Instructions:

- Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility:		Waterford 3		Date of Exam:		03/24/2008		Operating Test No.:		W3-TEAM-2							
A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1 SPARE			2			3			4 SPARE			T O T A L	M I N I M U M (*)		
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	R	I	U	
RO	<input type="checkbox"/>	RX				1			0					1	1	1	0
SRO-I1	<input checked="" type="checkbox"/>	NOR				0			1					1	1	1	1
SRO-U	<input type="checkbox"/>	I/C				1-2 NR			4					5-6 NR			
		MAJ				1			1					2	2	2	1
		TS				0			3					3	0	2	2
RO	<input type="checkbox"/>	RX			.0				1					1	1	1	0
SRO-I2	<input checked="" type="checkbox"/>	NOR			1				0					1	1	1	1
SRO-U	<input type="checkbox"/>	I/C			2-3 NR			2						4-5 NR			
		MAJ			1				1					2	2	2	1
		TS			2				0					2	0	2	2
RO	<input type="checkbox"/>	RX													1	1	0
SRO-I	<input type="checkbox"/>	NOR													1	1	1
SRO-U	<input type="checkbox"/>	I/C													4	4	2
		MAJ													2	2	1
		TS													0	2	2
RO	<input type="checkbox"/>	RX													1	1	0
SRO-I	<input type="checkbox"/>	NOR													1	1	1
SRO-U	<input type="checkbox"/>	I/C													4	4	2
		MAJ													2	2	1
		TS													0	2	2

Instructions:

- Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
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- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility:		Waterford 3		Date of Exam:		03/24/2008		Operating Test No.:		W3-TEAM-3							
A P P L I C A N T	E V E N T T Y P E	Scenarios											T O T A L	M I N I M U M (*)			
		1 SPARE			2			3			4 SPARE						
		C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N			C R E W P O S I T I O N						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C		B O P	R	I	U
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U1 <input checked="" type="checkbox"/>	RX				0			0						0	1	1	0
	NOR				1			1						2	1	1	1
	I/C				3			4						7	4	4	2
	MAJ				1			1						2	2	2	1
	TS				2			3						5	0	2	2
RO1 <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX					1				0				1	1	1	0
	NOR					0				1				1	1	1	1
	I/C					2				2				4	4	4	2
	MAJ					1				1				2	2	2	1
	TS					0				0				0	0	2	2
RO4 <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX						0		1					1	1	1	0
	NOR						1		0					1	1	1	1
	I/C						3		2					5	4	4	2
	MAJ						1		1					2	2	2	1
	TS						0		0					0	0	2	2
RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>	RX														1	1	0
	NOR														1	1	1
	I/C														4	4	2
	MAJ														2	2	1
	TS														0	2	2

Instructions:

- Circle the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must service in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must do one scenario, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position.
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- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: <u>Waterford 3</u> Date of Examination: <u>03/24/2008</u> Operating Test No.: <u>W3-TEAM1</u>																
Competencies	APPLICANTS															
	SRO-U2				RO2				RO3				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		234 56	234 567			345	467			256	236					
Comply With and Use Procedures (1)		123 456	123 456			134 5	146 7			125 6	1236					
Operate Control Boards (2)		N/A	N/A			134 5	146 7			125 6	1236					
Communicate and Interact		123 456	123 456 7			134 5	145 67			125 6	1235 6					
Demonstrate Supervisory Ability (3)		123 456	123 456			N/A	N/A			N/A	N/A					
Comply With and Use Tech. Specs. (3)		34	345			N/A	N/A			N/A	N/A					
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Facility: <u>Waterford 3</u> Date of Examination: <u>03/24/2008</u> Operating Test No.: <u>W3-TEAM2</u>																
Competencies	APPLICANTS															
	SRO-I2				SRO-I2				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		234 56	236			345	234 567									
Comply With and Use Procedures (1)		123 456	123 6			134 5	123 456									
Operate Control Boards (2)		N/A	123 6			134 5	N/A									
Communicate and Interact		123 456	123 56			134 5	123 456 7									
Demonstrate Supervisory Ability (3)		123 456	N/A			N/A	123 456									
Comply With and Use Tech. Specs. (3)		34	N/A			N/A	345									
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

Facility: <u>Waterford 3</u> Date of Examination: <u>03/24/2008</u> Operating Test No.: <u>W3-TEAM3</u>																
Competencies	APPLICANTS															
	SRO-U1				RO1				RO4				RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions		234 56	234 567			345	467			256	236					
Comply With and Use Procedures (1)		123 456	123 456			134 5	146 7			125 6	1236					
Operate Control Boards (2)		N/A	N/A			134 5	146 7			125 6	1236					
Communicate and Interact		123 456	123 456 7			134 5	145 67			125 6	1235 6					
Demonstrate Supervisory Ability (3)		123 456	123 456			N/A	N/A			N/A	N/A					
Comply With and Use Tech. Specs. (3)		34	345			N/A	N/A			N/A	N/A					
Notes: (1) Includes Technical Specification compliance for an RO. (2) Optional for an SRO-U. (3) Only applicable to SROs.																

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.