Facility: Waterford 3 Date of Examination: 11/15/04

Examination Level (circle one): RO / (SRO) Operating Test Number: 1

Administrative Topic (See Note)	Describe activity to be performed:
Conduct of Operations	JPM – Perform Review of a Manually Generated Estimated Critical Position. Candidate must determine the validity of the ECP based on given initial conditions.
Conduct of Operations	JPM – Determine Surveillances Required to be Performed to Recommence Core Alterations Based on Data from Previous Precore Alteration Checklist.
Equipment Control	JPM – Review and Approve an EOS. Applicant must find 4 errors with the provided EOS.
Radiation Control	JPM – Determine Actions/Restrictions Required for a Containment Entry at Power.
Emergency Plan	JPM – Review and Approve a Notification Message Form. The applicant must find four errors in the provided form based on provided initial conditions.

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.

Facility: Waterford 3 Date of Examination: 11/15/04

Examination Level (circle one): RO / SRO Operating Test Number: 1

Administrative Topic (See Note)	Describe activity to be performed:
Conduct of Operations	JPM –Perform a Shutdown Margin Calculation with one dropped CEA.
Conduct of Operations	JPM – Determine Allowable Power Ascension Rate using Fuel Preconditioning Guidelines and Given Initial Conditions.
Equipment Control	JPM – Perform RO review of a manually generated Tagout. The candidate must find 4 major errors associated with the Tagout.
Radiation Control	Not Selected
Emergency Plan	JPM – Activate the Emergency Response Data System (ERDS).

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.

REVIEW AN ESTIMATED CRITICAL CONFIGURATION

Site W3 **Job** SRO **System / Duty Area** RCS **Mode** Surv **Number** 66

Revision 1 07/02/1995

Approval tbrown

Estimated Time 30 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
OP-004-019

NRC KA Number

NUMBER
2-2-12
3.1-001-A4.10

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. A reactor startup will be performed.
2. An ECC has been calculated.
3. The reactor was shutdown at 1200 on 11/14/04 after 200 days at 100% RTP.
4. Estimated time of startup is 1200 on 11/16/04.
5. Current Cycle Burnup is 330 EFPD.
6. The reactor is planned to go critical at 75" on Group P (Papa).
7. Reactor Engineering has provided a Reactivity Bias Factor of -0.32

INITIATING CUE

You are the Admin CRS, review the ECC and find all errors not attributable to errors carried forward.

TERMINATING CUE

The ECC has been reviewed

STANDARD

The ECC has been reviewed for accuracy, Inaccuracies are discovered.

TOOLS

Plant Data Book
OP-004-019, Estimated Critical Configuration

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Unexpected criticality

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-004-019, section 6.1and Attachment 11.1
Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Review logged data on the provided ECC. **CRIT**

CUES:
- **Supply examinee with copy of completed OP-004-019, Attachment 11.1 for review**

STANDARDS: Examinee identifies 3 of the following 4 errors in the ECC.

- HZP Inverse Differential Boron Worth – Step 6.1.2.2 value should be 123-125 ppm/% Δk/k **CRIT**
- CEA Worth for CEA Position – Step 6.1.2.5.1 value should be 0.30-0.31 % Δk/k
- Reactivity Bias Factor – Step 6.1.2.5.2 value should be -0.32 % Δk/k **CRIT**
- Estimated Xenon Worth – Step 6.1.2.6 value should be 0.5-0.6 %?k/k

NOTE: Other values on the ECC will be in error as a result of the above errors these errors do not count

SAT_____**UNSAT**_____

---

3. End of Task

STOP TIME_____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. A reactor startup will be performed.
2. An ECC has been calculated.
3. The reactor was shutdown at 1200 on 11/14/04 after 200 days at 100% RTP.
4. Estimated time of startup is 1200 on 11/16/04.
5. Current Cycle Burnup is 330 EFPD.
6. The reactor is planned to go critical at 75” on Group P (Papa).
7. Reactor Engineering has provided a Reactivity Bias Factor of -0.32

INITIATING CUE

You are the Admin CRS, review the ECC and find all errors not attributable to errors carried forward.

DETERMINE SURVEILLANCES REQUIRED TO BE PERFORMED TO RECOMMENCE CORE ALTERATIONS

Site W3 **Job** SRO **System / Duty Area** RF **Mode** ADMIN **Number** 1

Revision 4 04/03/2000

Approval rfletch 04/05/2000

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
RF-004-001

NRC KA Number

NUMBER
2-2-26
2-1-20

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. The current date and time is 11/16/04 at 1200
2. The reactor was shutdown on 10/27/04 at 0433
3. A Precore Alteration Checklist was last completed on 11/14/04
4. Core Alterations were suspended today 0900 due to a loss of communications
5. The communications circuit has been fixed.
6. The Refueling Crew is scheduled to re-commence core alterations at 11/16/04 at 1800 to install the Upper Guide Structure.
7. OP-903-001, Att. 11.2, Mode 5-6 Tech Spec Logs, was completed at 1200 (all appropriate portions were completed SAT)

INITIATING CUE

The Shift Manager directs you to review the remaining surveillances on the Precore Alterations Checklist and either sign-off the surveillances or determine which surveillances still need to be performed.

TERMINATING CUE

Examinee has determined the surveillances that are required to be performed to meet the Precore Alteration Checklist.

STANDARD

Examinee determines that the following surveillances are required (3 of 4)
OP-903-101 (within 8 hrs of starting core alts)
OP-903-072 (prior to starting core alts)
OP-903-075 (Within 72 hours of starting core alts)
OP-903-001, Att. 11.2
Communications check (within one hour prior to starting core alts)

TOOLS

1. Copy of RF-004-001 Attachment 9.5 partially filled out
2. Handout with completion dates, next due date, late date supplied by Tech Spec Surveillance Coordinator
3. OP-903-001, Att. 11.2, Mode 5-6,Tech Spec Logs with 0000 and 1200 portions filled out.
4. OP-903-001, Att. 11.13, Refuel Tech Spec Addendum Logs filled out

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Potential to move irradiated fuel bundles without required protective barriers in place.

HUMAN INTERFACES

1. SM

SKILLS / KNOWLEDGES

None

Waterford 3 Job Performance Measure

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

Perform the task in accordance with RF-004-001 Attachment 7.5. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Review all of the completion dates for the surveillances listed in Attachment 7.5, Precore Alteration Checklist **CRIT**

CUES:

- **Supply Examinee with a copies of:**
  - Copy of RF-004-001 Attachment 9.5 partially filled out
  - Handout with completion dates, next due date, late date supplied by Tech Spec Surveillance Coordinator
  - OP-903-001, Att. 11.2, Mode 5-6,Tech Spec Logs with 0000 and 1200 portions filled out.
  - OP-903-001, Att. 11.13, Refuel Tech Spec Addendum Logs filled out
- If asked operability status of individual equipment, state verification of surveillances is the only concern at this time.

STANDARDS:

Examinee determines that the following surveillances and checks need to be performed at a minimum

a. Examinee determines that the following surveillances are required (3 of 4 for SAT)

1. OP-903-101 (within 8 hrs of starting core alts)
2. OP-903-072 (prior to starting core alts)
3. OP-903-075 (Within 72 hours of starting core alts)
4. OP-903-001, Att. 11.2
   - Communications check (within one hour prior to starting core alts)

SAT_____**UNSAT**_____

---

2. End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. The current date and time is 11/16/04 at 1200
2. The reactor was shutdown on 10/27/04 at 0433
3. A Precore Alteration Checklist was last completed on 11/14/04
4. Core Alterations were suspended today 0900 due to loss of communications
5. The communications circuit has been fixed.
6. The Refueling Crew is scheduled to re-commence core alterations at 11/16/04 at 1800 to install the Upper Guide Structure.
7. OP-903-001, Att. 11.2, Mode 5-6 Tech Spec Logs, was completed at 1200 (all appropriate portions were completed SAT)

INITIATING CUE

The Shift Manager directs you to review the remaining surveillances on the Precore Alterations Checklist and either sign-off the surveillances or determine which surveillances still need to be performed.

Review and Approve an EOS

Site W3 **Job** SRO **System / Duty Area** PPA **Mode** ADMIN **Number** 1

Revision 3 06/28/03

Approval rfletch2

Estimated Time 15 Minutes

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
OP-100-010

NRC KA Number

NUMBER
2-2-23

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. HPSI pump A tripped on overcurrent.
2. Reactor Power is 100 percent
3. Risk Assessment EOOS has been updated
4. All other Safety Injection components and flowpaths are operable.

INITIATING CUE

You are directed by the Shift Manager to review an EOS for HPSI pump A for accuracy

TERMINATING CUE

EOS checklist reviewed

STANDARD

4 of 5 errors identified on EOS checklist

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

1. TECH SPEC VIOLATION
2. PROCEDURE VIOLATION

HUMAN INTERFACES

SM

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

PROVIDE COMPLETED COPY OF OP-100 -010 ATTACHMENT 7.2 CONTAINING FIVE ERRORS

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-100 -010, Section 5.3. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Review EOS Checklist for errors

CUES:

- None

STANDARDS:

- Examinee recognizes 4 of the following 5 errors **CRIT**
- Examinee recognizes Mode in block 4 is incorrect, correct Mode is Mode 1.
- Examinee recognizes Mode changes allowed in block 5 is incorrect, T.S. 3.0.4 applies.
- Examinee recognizes justification in block 20 and TS/TRM entry guideline has incorrect action being entered, correct action is 3.5.2.b
- Examinee recognizes Attachment 7.1 TS/TRM entry guideline for TS 3.3.2, Engineering Safeguards is not applicable, TS 3.3.2 is instrumentation.
- Examinee recognizes T.S. 3.8.4.1 Overcurrent Protective Device checked incorrect, this is for containment penetrations

SAT___**UNSAT**___

---

2. END OF TASK

STOP TIME_____

Waterford 3 Job Performance Measure

Examinee Copy

INITIAL CONDITIONS

1. HPSI pump A tripped on overcurrent.
2. Reactor Power is 100 percent
3. Risk Assessment EOOS has been updated
4. All other Safety Injection components and flowpaths are operable.

INITIATING CUE

You are directed by the Shift Manager to review an EOS for HPSI pump A for accuracy

DETERMINE ACTIONS/RESTRICTIONS REQUIRED FOR CONTAINMENT ENTRY AT POWER

Site W3 **Job** SRO **System / Duty Area** PPA **Mode** ADMIN **Number** 24

Revision 4 04/03/2000

Approval rletch2

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
HP-001-213

NRC KA Number

NUMBER
2-1-8
2-3-10
3.5-103-K3.02

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. The plant is at 30 percent power and stable.
2. 1.5 gpm unidentified leakage has been confirmed by an RCS Leakrate Calculation.
3. An unplanned containment entry at power is required.
4. The Reactor Containment Building Power Entry/Exit Checklist and RP paperwork will be filled out following the initial containment entry.
5. Air samples have been taken and SCBAs are not required.
6. The following areas are to be inspected during the initial entry:
   - -11', -4', +21', +35' areas outside the D-Rings
   - +46' Walkways greater than 15' from the Refueling Cavity
   - Above the +46' elevation on Main Steam Crossovers
   - Pressurizer Cubicle
   - Regenerative HX Room
   - -11' elev of RCP 1A Pump Bay

INITIATING CUE

As Shift Manager determine stay times for OPS personnel, areas being inspected that should have RP superintendent authorization prior to entry. Identify all Containment areas that are prohibited to be entered under current plant conditions.

TERMINATING CUE

Candidate has reviewed HP-001-213 and determined requested information.

STANDARD

Determines stay times, restricted areas, and prohibited areas have been determined

TOOLS

HP-001-213, Control of Reactor Containment Building Power Entries

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

Personnel Hazards - overexposure, heat stress

HUMAN INTERFACES

RP

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

Perform the task in accordance with HP-001-213. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Using the guidance in HP-001-213, the candidate determines stay times for OPS personnel. **CRIT**

CUES:
- Cues provided by Initial Conditions and procedure

STANDARDS:
- The examinee determines following stay times apply:
  - 45 Minutes total stay time
  - 20 minutes total of 45 minute stay time spent in PZR cubicle and Regenerative Heat Exchanger Room

SAT_____**UNSAT**_____

---

2. Using the guidance in HP-001-213, the candidate determines areas that should have RP superintendent authorization prior to entry. **CRIT**

CUES:
- Cues provided by Initial Conditions and procedure

STANDARDS:
- The examinee determines the following areas require RP Superintendent or designee approval to enter unless mitigating accidents
  - -11 elevation areas outside the D-rings
  - -11 elevation RCP 1A Pump Bay
  - Regenerative Heat Exchanger Room

SAT_____**UNSAT**_____

---

3. Using the guidance in HP-001-213, the candidate determines areas that Operators shall not enter under current plant conditions. **CRIT**

CUES:
- Cues provided by procedure

STANDARDS:
- The Examinee determines that the following areas are forbidden to be entered under current plant conditions
  - Reactor Vessel Annulus
  - Hot and Cold Leg Penetration through D-Ring wall
  - Reactor Cavity

SAT_____**UNSAT**_____

---

2. End of task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. The plant is at 30 percent power and stable.
2. 1.5 gpm unidentified leakage has been confirmed by an RCS Leakrate Calculation.
3. An unplanned containment entry at power is required.
4. The Reactor Containment Building Power Entry/Exit Checklist and RP paperwork will be filled out following the initial containment entry.
5. Air samples have been taken and SCBAs are not required.
6. The following areas are to be inspected during the initial entry:
   - -11', -4', +21', +35' areas outside the D-Rings
   - +46' Walkways greater than 15' from the Refueling Cavity
   - Above the +46' elevation on Main Steam Crossovers
   - Pressurizer Cubicle
   - Regenerative HX Room
   - -11' elev of RCP 1A Pump Bay

INITIATING CUE

As Shift Manager determine stay times for OPS personnel, areas being inspected that should have RP superintendent authorization prior to entry. Identify all Containment areas that are prohibited to be entered under current plant conditions.

REVIEW AND APPROVE NOTIFICATION MESSAGE FORM

Site W3 **Job** SRO **System / Duty Area** EP **Mode** EMERG **Number** 10

Revision 10 09/27/2004

Approval rfletch

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
EP-002-210

NRC KA Number

NUMBER
2-4-30
2-4-40

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. An emergency event has occurred.
2. The reactor was tripped at 1350 on 11/16/04 due to inability to maintain Pzr level with all three charging pumps operating.
3. A Loss of Coolant Accident inside containment is occurring, SIAS, CIAS have occurred with no abnormal alignments.
4. You declared a Site Area Emergency at 1400 11/16/04 under Tab B – B/SAE/I, RCS leakage > available Charging Pump capacity (LOCA or Steam Generator Tube Rupture).
5. No release is occurring at this time.
6. 15 Minute Met Data shows Wind Direction from 220 degrees at 4.5 miles/hr. 33'-199' Delta T is 3.0 ºC.
7. No precipitation is occurring at this time.
8. No Protective Action Recommendations are required.

INITIATING CUE

Review and approve the Notification Message Form

TERMINATING CUE

The Notification Message Form has been reviewed

STANDARD

The candidate finds 4 errors on the Notification Message Form

TOOLS

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

1. Inaccurate conditions given to the parishes to base protective actions for their citizens.

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

Perform the task in accordance with EP-002-210 Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Candidate reviews provided Notification Message Form. **CRIT**

CUES:
- Provided in Initial Conditions

STANDARDS:
- Candidate finds at least 4 errors on form:
  - Emergency Classification is checked off as an Alert vice Site Area Emergency in Step 3.
  - Nothing is filled in for Step 5 0. No protective actions should be checked.
  - Reactor Shutdown is checked off as No in Step 7.
  - Wind Direction is filled in as 120 degrees vice 220 degrees in Step 8A. This results in wrong sectors affected in Step 8B. The correct sectors are B, C, and D. Credit should be given for either the wind direction or the affected sectors but not both.
  - Release is occurring is checked in step 9B.

---

2. End of Task

STOP TIME_____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. An emergency event has occurred.

2. The reactor was tripped at 1350 on 11/16/04 due to inability to maintain Pzr level with all three charging pumps operating.

3. A Loss of Coolant Accident inside containment is occurring, SIAS, CIAS have occurred with no abnormal alignments.

4. You declared a Site Area Emergency at 1400 11/16/04 under Tab B – B/SAE/I, RCS leakage > available Charging Pump capacity (LOCA or Steam Generator Tube Rupture).

5. No release is occurring at this time.

6. 15 Minute Met Data shows Wind Direction from 220 degrees at 4.5 miles/hr. 33'-199' Delta T is 3.0 ºC.

7. No precipitation is occurring at this time.

8. No Protective Action Recommendations are required.

INITIATING CUE

Review and approve the Notification Message Form.

PERFORM A SHUTDOWN MARGIN CALCULATION WITH ONE DROPPED CEA

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

Revision 4 04/03/2000

Approval rfletch 11/27/2002

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
OP-903-090

NRC KA Number

NUMBER
2-2-12
3.1-001-A4.11

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

Plant is Mode 1, 70% power
CEA 1 has dropped and is fully inserted
Core Burnup is 330 EFPD
RCS Tavg is 565?
RCS boron concentration is 560 ppm

INITIATING CUE

The Control Room Supervisor directs you to perform a Shutdown Margin Calculation for one dropped CEA.

TERMINATING CUE

Determine that adequate Shutdown Margin exists for the current power level.

STANDARD

Existing power level determined to meet Shutdown Margin power level

TOOLS

1. Copy of OP-903-090, Shutdown Margin
2. Copy of the Plant Data Book
3. Copy of Tech Specs
4. Calculator

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Unnecessary emergency boration

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-903-090 section 7.2. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Using current Cycle Burnup and 545°F temperature, determine Net Worth - Worst Rod Stuck Out (WRSO) from Figure 1.5.6. **CRIT**

CUES:
- Cues required for this step are contained in the Initial Conditions

STANDARDS:
1. Refer to PDB Figure 1.5.6.2.
2. Use 545°F as Moderator Temperature.
3. Determine Net WRSO CEA Worth = 7.4 to 7.6 %Δk/k.

SAT_____**UNSAT**_____

---

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

CUES:
- Cues required for this step are contained in the Initial Conditions

STANDARDS:
1. Review COLR 3.1.1.1. (Not Critical)
2. Determine required SDM of 5.15 %ΔK/K.

SAT_____**UNSAT**_____

---

3. Subtract step 7.2.1.2 from step 7.2.1.1 to determine Shutdown Margin Allowed Power Defect %ΔK/K. **CRIT**

CUES:
- Cues required for this step are contained in the procedure

STANDARDS:
1. Examinee determines the SDM Allowed Power Defect to be 2.25 to 2.45 %ΔK/K

SAT_____**UNSAT**_____

---

4. Record current Reactor Power on Attachment 10.2. **CRIT**

CUES:
- Cues required for this step are contained in the Initial Conditions

STANDARDS:
- Examinee records 70 percent from Initial Conditions

SAT_____**UNSAT**_____

---

5. Using result from Step 7.2.1.3 and Power Defect vs. Power Level, Figure 1.2.1, Determine Shutdown Margin Allowed Power Level. **CRIT**

CUES:
- Cues required for this step are contained in the procedure

STANDARDS:
1. Refer to PDB Figure 1.2.1.1

   - Using MOC curve, determine allowable power level of 100%

SAT_____**UNSAT**_____

---

6. Verify Shutdown Margin is greater than or equal to that required by the COLR by verifying that current Reactor Power is less than or equal to the Shutdown Margin Allowed Power Level. **CRIT**

CUES: ▪ Cues required for this step are contained in the procedure

STANDARDS: Examinee determines that SDM is met and circles "Yes" on the data sheet.

SAT_____UNSAT_____

---

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

CUES: ▪ Cues required for this step are contained in the procedure

STANDARDS: Examinee determines that this step is not applicable.

SAT_____UNSAT_____

---

8. End of Task

STOP TIME_____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

Plant is Mode 1, 70% power
CEA 1 has dropped and is fully inserted
Core Burnup is 330 EFPD
RCS Tavg is 565?
RCS boron concentration is 560 ppm

INITIATING CUE

The Control Room Supervisor directs you to perform a Shutdown Margin Calculation for one dropped CEA.

DETERMINE ALLOWABLE POWER ASCENSION RATE USING FUEL PRECONDITIONING GUIDELINES

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

Revision 4 04/03/2000

Approval rfletch2

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
OP-010-004

NRC KA Number

NUMBER
2-1.7
2-1-23
3.2-002-A1.06

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. On 11/17/2004 the plant was performing initial power ascension following a 15 day refueling outage.
2. Power was stabilized at 60% at 1600 11/17/2004 to perform startup of the second Main Feedwater Pump.
3. During FWPT B startup, speed control problems were experienced and the decision was made to hold power at 60% while repairing the pump.
4. At 2300 the reactor was manually tripped when FWPT A tripped on overspeed due to a self checking error by maintenance personnel.
5. The plant reached the POAH at 1600 on 11/24/2004.
6. A power ascension to 100% is planned.

INITIATING CUE

The CRS directs you to review the Fuel Preconditioning Guidelines and determine the power ascension rate limits between the POAH and 100%.

TERMINATING CUE

Recommendation given for Power ascension rates.

STANDARD

Power ascension rate recommendation is in accordance with OP-010-004.

TOOLS

OP-010-004, Att.9.6, Fuel Preconditioning Guidelines

SAFETY CONSIDERATIONS

None

PERFORMANCE CONSEQUENCES

1. Possible fuel damage

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

None

INSTRUCTOR NOTES

None

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-010-004, Att. 9.6. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Candidate makes recommendation for power ascension rate limits in accordance with OP-010-004. **CRIT**

CUES:
- None

STANDARDS:
- Candidate determines the following power ascension rate limits:
  - No limits per Fuel Preconditioning Guidelines between POAH and 50% (Not Critical)
  - Between 50% and 60% power ascension rate limit is 30%/hr
  - Between 60%-90% power ascension rate limit is 3%/hr

SAT_____**UNSAT**_____

---

2. End of Task

STOP TIME_____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. On 11/17/2004 the plant was performing initial power ascension following a 15 day refueling outage.
2. Power was stabilized at 60% at 1600 11/17/2004 to perform startup of the second Main Feedwater Pump.
3. During FWPT B startup, speed control problems were experienced and the decision was made to hold power at 60% while repairing the pump.
4. At 2300 the reactor was manually tripped when FWPT A tripped on overspeed due to a self checking error by maintenance personnel.
5. The plant reached the POAH at 1600 on 11/24/2004
6. A power ascension to 100% is planned.

INITIATING CUE

The CRS directs you to review the Fuel Preconditioning Guidelines and determine the power ascension rate limits between the POAH and 100%.

PERFORM A REVIEW OF A TAGOUT

Site W3 **Job** RO **System / Duty Area** PPA **Mode** ADMIN **Number** 9

Revision 0 9/27/2004

Approval rfletch2

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
OP-102
UNT-005-003

NRC KA Number

NUMBER
2-2-13

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. A tagout has been prepared for Emergency Feedwater Pump A and is ready for review

INITIATING CUE

You are directed by the Work Management Center Supervisor to review the tagout for adequacy.

TERMINATING CUE

Tagout has been reviewed

STANDARD

Tagout has been reviewed. Four major errors are identified.

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Damage to equipment or injury to plant personnel

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-102 and UNT-005-003. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Reviews tagout for adequacy on plant operation. **CRIT**

CUES: CRS acknowledges errors in tagout

STANDARDS:

- The following errors are found
  - Tech Spec Impact Attribute answered as None (Not Critical)
  - EFW-1062A valve position is incorrect
  - Power Supply breaker is the incorrect train
  - Placement sequence is incorrect

SAT_____**UNSAT**_____

---

5. End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. A tagout has been prepared for Emergency Feedwater Pump A and is ready for review

INITIATING CUE

You are directed by the Work Management Center Supervisor to review the tagout for adequacy.

ACTIVATE THE EMERGENCY RESPONSE DATA SYSTEM (ERDS)

Site W3 **Job** RO **System / Duty Area** SPD **Mode** EMERG **Number** 3

Revision 4 04/03/2000

Approval rfletch2

Estimated Time 5 Min

Time Critical No **Critical Time** **Alternate Path** No

References

NUMBER
EP-001-020
EP-001-030
EP-001-040

NRC KA Number

NUMBER
2-4-43

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

An Alert has been declared.

INITIATING CUE

The Emergency Coordinator (SM) has instructed you to activate ERDS. Steps prior to actual activation will be performed. Simulate Actuation step and expected indications.

TERMINATING CUE

ERDS is activated

STANDARD

ERDS is activated

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

NONE

HUMAN INTERFACES

EC/SM

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with EP-001-020, Attachment 7.3. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. From the SDS press the ESC key to return to the Main Menu if applicable

CUES:
- SDS terminal Provides cues

STANDARDS:
- Examinee locates Shift Manager SDS Terminal
- Examinee depresses ESC key if Main Menu not displayed
- Examinee verifies Main Menu is displayed

Step critical if Main Menu is not displayed

SAT_____**UNSAT**_____

---

2. From the Main Menu click once on NSSS touch area **CRIT**

CUES:
- SDS terminal provides cues

STANDARDS:
- Examinee selects NSSS area
- NSSS area is displayed

SAT_____**UNSAT**_____

---

3. From the NSSS Menu click once on the ERDS touch area **CRIT**

CUES:
- SDS terminal provides cues

STANDARDS:
- Examinee selects ERDS touch area

SAT_____**UNSAT**_____

---

4. From the ERDS Password Menu, type ERDS, then press ENTER and then press F1 **CRIT**

CUES:
- SDS terminal provides visual cues

Examiner Cue: All steps from this point forward will be simulated and discussed.

STANDARDS:
- Examinee types ERDS in password Menu
- Examinee presses ENTER
- Examinee pressing F1
- Examinee observes ERDS Communication Task is INACTIVE on STATUS menu

SAT_____**UNSAT**_____

---

5. Click once on ACTIVATE under Actions **CRIT**

CUES:
- **All expected messages are displayed**

STANDARDS:
- Examinee simulates clicking on ACTIVATE, under actions
- Examinee discusses the following expected indications
  - MODEM displays Disconnected
  - ERDS COMPUTER displays Terminated
  - COMMUNICATION TASK displays ACTIVE

SAT_____UNSAT_____

---

6. When the NRC ERDS answers the phone call from the Waterford 3 computer, the MODEM communication sequence progress: With NO FAILURE as follows

OK

DIALING

RINGING

ANSWER

CONNECT

CUES:
- **All expected messages are displayed**

STANDARDS:
- Examinee verifies communication sequence with no failure is progressing by verifying expected messages

SAT_____UNSAT_____

---

7. After a successful connection with the NRC ERDS computer, then a CONNECT will be displayed on the MODEM status and the COMMUNICATION TASK will change to LINK REQUESTED

CUES:
- **All expected messages are displayed**

STANDARDS:
- Examinee verifies successful connection with NRC computer by CONNECT displayed on MODEM status and COMMUNICATION TASK displays LINK REQUESTED

SAT_____UNSAT_____

---

8. After the Link Request is accepted, then the ERDS COMPUTER status will change from TERMINATED to ACCEPT and the COMMUNICATION TASK status will change to TRANSMITTING, as shown below:

- MODEM Connect
- ERDS COMPUTER Accepted
- COMMUNICATION TASK Transmitting

CUES:
- **All expected messages are displayed**

STANDARDS: Examinee verifies ERDS COMPUTER status changes from TERMINATED to ACCEPTED and the COMMUNICATION TASK status will change to TRANSMITTING, as shown below:

- MODEM Connect
- ERDS COMPUTER Accepted
- COMMUNICATION TASK Transmitting

SAT_____UNSAT_____

---

9. The ERDS link is now established. Press the ESC key to return to the PMC Main Menu

CUES:
- **Emergency Coordinator acknowledges that ERDS is activated**

STANDARDS:
- Examinee notifies Emergency Coordinator the ERDS is activated

SAT_____UNSAT_____

---

10. End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

An Alert has been declared.

INITIATING CUE

The Emergency Coordinator (SM) has instructed you to activate ERDS. Steps prior to actual activation will be performed. Simulate and discuss Actuation step and expected indications.

Waterford 3 Job Performance Measure

MAKEUP TO THE VCT USING THE AUTO MAKEUP MODE

Site W3 **Job** RO **System / Duty Area** CVC **Mode** NORM **Number** 9

Revision 4 04/03/2000

Approval rfletch 04/05/2000

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** Yes

References

NUMBER
OP-002-005

NRC KA Number

NUMBER
3.2-004-A3.01
3.2-004-A4.04
3.2-004-A4.07

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. The plant is Shutdown
2. RCS boron concentration is 1346 ppm
3. BAMT A concentration is 5850 ppm
4. BAMT Pump A is selected for Makeup

INITIATING CUE

You are directed by the CRS to perform an automatic makeup to the VCT using BAM Tank A

TERMINATING CUE

1. VCT makeup has been restored to manual

STANDARD

1. Automatic makeup to VCT performed and system restored to manual makeup mode

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

1. ABNORMAL VCT LEVEL
2. INADVERTENT BORATION OR DILUTION OF RCS

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-002-005, Section 8.8 and Attachment 11.5. All components operated during the performance of this JPM are located on CP-4. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Inform SM/CRS prior to performing this section.

CUES:
- When operator notifies SM/CRS, perform paraphrased repeatback

STANDARDS:
- The operator informs the CRS that he is commencing alignment for automatic makeup to the VCT.

SAT_____**UNSAT**_____

---

2. At SM/CRS discretion, calculate the boric acid flow rate to be used on att. 11.5, calculation of boric acid flow rate for VCT blended makeup.

CUES:
- **Cue the operator that blend rate has been calculated to be 50 gpm PMU to 15.0 gpm Boric Acid.**
- **Hand the candidate the completed copy of OP-002-005, Att.11.5**

STANDARDS:
- Operator acknowledges given flowrates

SAT_____**UNSAT**_____

---

3. Verify direct boration valve, BAM-143, control switch in CLOSE.

CUES:
- Simulator provides cues

STANDARDS:
- The operator locates the control switch for BAM-143 on CP-4 and verifies it is positioned to CLOSE

SAT_____**UNSAT**_____

---

4. Verify Boric Acid Makeup Pump Selector Switch aligned to desired Boric Acid Makeup Pump.

CUES:
- Simulator provides cues

STANDARDS:
- The operator verifies that the BAM Pump Selector Switch is selected to BAMT A

SAT_____**UNSAT**_____

---

5. Place Boric Acid Flow Controller, BAM-IFIC-0210Y, in AUTO. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- The Operator depresses the auto pushbutton on controller BAM-IFIC-0210Y
- Operator verifies that BAM-IFIC-0210Y red auto light illuminates.

SAT_____**UNSAT**_____

---

6. Set boric acid flow controller, BAM-IFIC-0210Y, setpoint potentiometer to > 3 gpm flow rate. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- The operator rotates the setpoint potentiometer on BAM-IFIC-0210Y to raise the Boric Acid flow setpoint to the value calculated in Att.11.5 of OP-002-005.
- The operator observes BAM-IFR-0210Y green pen and observes setpoint at ~ 15 gpm
- The operator ensures that setpoint is > 3 gpm.

SAT_____UNSAT_____

---

7. Place Primary Makeup Flow Controller PMU-IFIC-0210X in AUTO. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- The Operator depresses the AUTO pushbutton on controller PMU-IFIC-0210X
- Operator verifies that red AUTO light illuminates.

SAT_____UNSAT_____

---

8. Set primary makeup flow controller PMU-IFIC-0210X setpoint potentiometer to > 5 gpm flow rate. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- The Operator rotates the setpoint potentiometer on PMU-IFIC-0210X to raise the PMU flow setpoint to the value used in att.11.5 of OP-002-005.
- The operator observes PMU-IFR-0210X green pen and observes setpoint at ~ 50 gpm
- The operator ensures that setpoint is > 10 gpm.

SAT_____UNSAT_____

---

9. Place makeup MODE SELECTOR SWITCH to AUTO. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- The operator rotates the makeup MODE SELECTOR SWITCH to the AUTO position.
- **If makeup is initiated the Operator verifies the selected BAM A Pump starts, CVC-510 opens, and controllers are controlling flows at respective setpoints or takes manual control and adjusts flow to setpoint value.**

SAT_____UNSAT_____

---

10. While VCT makeup is in the automatic mode, monitor the following for proper indications:

- count rate,
- Reactor Power,
- VCT level and pressure,
- primary makeup water flow rate,
- and boric acid flow rate.

CUES:
- Simulator provides cues

STANDARDS:
- The operator informs the CRS that automatic makeup to the VCT is aligned.
- If VCT Makeup is in progress the Operator monitors listed parameters on CP-4 and CP-2

SAT_____UNSAT_____

---

11. **(ALT)** Check VCT level periodically to verify makeup system is maintaining proper VCT level. **CRIT**

CUES:
- Simulator provides cues; **(ALT)** BAM pump A trips

STANDARDS:
- The operator verifies that the auto makeup system controls VCT level between 37% and 51%.
- **(ALT)** Examinee determines need to secure auto makeup to prevent dilution.

SAT_____UNSAT_____

---

12. **(ALT)** When the Auto Makeup Mode to the VCT is no longer desired, then perform the following: Place MAKEUP MODE SELECTOR SWITCH in MANUAL. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- The operator rotates the MAKEUP MODE SELECTOR SWITCH to the MANUAL position.
- **This step is NOT critical if Examinee places PMU-IFIC-0210X in manual and lowers output to zero. Either action prevents dilution**

SAT_____UNSAT_____

---

13. **(ALT)** Verify CVC-510 CLOSED. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- Examinee rotates switch for CVC-510 to CLOSED position
- Examinee verifies CVC-510 green CLOSED light illuminated**.**
- **This step is NOT critical if examinee places PMU-IFIC-0210X in manual and lowers output to zero. Either action prevents dilution**

SAT_____UNSAT_____

---

14. **(ALT)** Places PMU-IFIC-0210X in MANUAL **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- Examinee depresses manual pushbutton PMU-IFIC-0210X
- Examinee verifies red MAN light illuminated,
- Examinee verifies red AUTO light extinguished
- **This step is NOT critical if Examinee places Makeup Mode Selector Switch in MANUAL and closes CVC-510. Either action prevents dilution**

SAT_____UNSAT_____

---

15. **(ALT)** Adjust PMU-IFIC-0210X setpoint to zero.

CUES:
- Simulator provides cues

STANDARDS:
- Examinee rotates PMU-IFIC-0210X potentiometer to zero
- Examinee verifies PMU-IFIC-0210X setpoint indicates zero.

SAT_____UNSAT_____

---

16. **(ALT)** Verify PMU-144 closed.

CUES:
- Simulator provides cues

STANDARDS:
- Examinee lowers output of PMU-IFIC-0210X to zero.
- Examinee verifies PMU-144 green CLOSED light illuminated,
- Examinee verifies PMU-144 red OPEN light extinguished.

SAT_____UNSAT_____

---

17. **(ALT)** Place boric acid flow controller BAM-IFIC-0210Y in manual.

CUES:
- Simulator provides cues

STANDARDS:
- Examinee depresses BAM-IFIC-0210Y MANUAL pushbutton
- Examinee verifies red MAN light illuminated,
- Examinee verifies red AUTO light extinguished.

SAT_____UNSAT_____

---

18. **(ALT)** Adjust BAM-IFIC-0210Y setpoint potentiometer to zero.

CUES:
- Simulator provides cues

STANDARDS:
- Examinee rotates BAM-IFIC-0210Y potentiometer to zero
- Examinee verifies BAM-IFIC-0210Y setpoint indicates zero.

SAT_____UNSAT_____

---

19. **(ALT)** Verify boric acid makeup control valve BAM-141 CLOSED.

CUES:
- Simulator provides cues
- **(NOTE; Notify Operator that another Operator will align to flush MU line)**

STANDARDS:
- Examinee lowers output of BAM-IFIC-0210Y to zero.
- Examinee verifies PMU-144 green CLOSED light illuminated,
- Examinee verifies PMU-144 red OPEN light extinguished.

SAT_____UNSAT_____

---

20. End of task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. The plant is Shutdown
2. RCS boron concentration is 1346 ppm
3. BAMT A concentration is 5850 ppm
4. BAMT Pump A is selected for Makeup

INITIATING CUE

You are directed by the CRS to perform an automatic makeup to the VCT using BAM Tank A

Waterford 3 Job Performance Measure

Perform PNPO Immediate Actions on CR Evacuation

Site W3 **Job** RO **System / Duty Area** PPO **Mode** OFFNORM **Number** 4

Revision 4 04/03/2000

Approval rfletch 04/05/2000

Estimated Time 5 Min

Time Critical No **Critical Time** **Alternate Path** YES

References

NUMBER
OP-901-502

NRC KA Number

NUMBER
4.2-A68-AK3.12
4.2-A68-AA1.14
2.4.49

Evaluation Methods

METHOD
SIMULATE

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. A fire has occurred in Control Room Panel CP-7
2. Control Room Evacuation has been ordered

INITIATING CUE

Perform IMMEDIATE OPERATOR ACTIONS as Primary NPO for Control Room Evacuation per OP-901-502

TERMINATING CUE

1. IMMEDIATE OPERATOR ACTIONS are taken
2. Exiting Control Room for + 21 RAB

STANDARD

1. All IMMEDIATE OPERATOR ACTIONS for PNPO are taken within 15 minutes

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

1. Reactor not tripped-potential for Fuel Damage

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-901-502 Section D. 1.1-1.5. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Trip the Reactor. **CRIT**

CUES:
- **Simulator provides Cues**

STANDARDS:
- Examinee depresses REACTOR TRIP pushbuttons on CP-2

SAT_____**UNSAT**_____

---

2. Verify ALL CEAs fully inserted. **CRIT**

CUES:
- **Simulator provides Cues**

STANDARDS:
- The examinee verifies ALL CEAs fully inserted by verifying at least one of the following: All Rod Bottom lights LIT, All CEA lower Electrical Limit lights green, CEAC CRT shows all CEAs inserted on CP-2

SAT_____**UNSAT**_____

---

3. Verify Spray Valves selector switch in BOTH.

CUES:
- **Simulator provides Cues**

STANDARDS:
- The examinee verifies Spray Valves Selector switch in BOTH on CP-2

SAT_____**UNSAT**_____

---

4. **(ALT)** Trip ALL Reactor Coolant Pumps. **CRIT**

CUES:
- **Simulator provides Cues**

STANDARDS:
- The examinee rotates control switch for one Oil Lift Pump for each RCP to START, verifies red START light lit, green TRIP light out. **(NOTE: Performance of this step is NOT Critical)**
- The examinee places control switches for 1A, 1B, 2A and 2B Reactor Coolant Pumps to TRIP. Verifies green STOP lights lit red START lights out.

SAT_____**UNSAT**_____

---

5. **(ALT)** Simultaneously secure Charging AND Letdown by performing the following: Close CVC-101, Letdown Stop Valve. **CRIT**

CUES:
- **Simulator provides Cues**

STANDARDS:
- The examinee rotates control switch for CVC-101, Letdown Stop Valve to CLOSE, verifies green CLOSED light lit and red OPEN light off on CP-4.

SAT_____**UNSAT**_____

---

6. **(ALT)** Simultaneously secure Charging AND Letdown by performing the following: Close CVC-103, Letdown Inside Containment Isolation. **CRIT**

CUES:
- **Simulator provides Cues**

STANDARDS:
- The examinee rotates control switch for CVC-103, Letdown Inside Containment Isolation to CLOSE, verifies green CLOSED light lit and red OPEN light off on CP-4

SAT_____UNSAT_____

---

7. **(ALT)** Simultaneously secure Charging AND Letdown by performing the following: Place ALL Charging Pumps in OFF. **CRIT**

CUES:
- **Simulator provides Cues**

STANDARDS:
- The examinee places control switches for all Charging Pumps to OFF, verifies green OFF light lit and red START light off on CP-4

SAT_____UNSAT_____

---

8. Obtain Operations Security Key Ring AND proceed to LCP-43.

CUES:
- **Security Keys obtained**

STANDARDS:
- Examinee locates Security Keys from Shift Managers office and states he/she will enter the LCP-43 ROOM on +21 RAB.
- **(NOTE; JPM may be terminated when examinee has located keys and states he/she will go to LCP-43)**

SAT_____UNSAT_____

---

9. End of Task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. A fire has occurred in Control Room Panel CP-7
2. Control Room Evacuation has been ordered

INITIATING CUE

Perform IMMEDIATE OPERATOR ACTIONS as Primary NPO for Control Room Evacuation per OP-901-502

Waterford 3 Job Performance Measure

Perform Anticipated Transient System Check

Site W3 **Job** RO **System / Duty Area** ATS **Mode** SURV **Number** 1

Revision 0 06/17/2003

Approval rfletch 06/17/2003

Estimated Time 15 Minutes

Time Critical No **Critical Time** **Alternate Path** NO

References

NUMBER
OP-904-017

NRC KA Number

NUMBER
3.7-012-A4.04
3.7 012-A2.03

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. The plant is in Mode 3 shutdown for refueling
2. Both CEA MG SETS are operating
3. I&C is standing by at Aux Panel 4
4. DRTS and DEFAS aligned per OP-004-021

INITIATING CUE

You are directed by the CRS to perform a DIVERSE REACTOR TRIP ACTUATION TEST per OP-904-017, Section 7.3

TERMINATING CUE

1. Proper indication documented on OP-904-017, Attachment 10.3

STANDARD

1. DIVERSE REACTOR TRIP ACTUATION successfully completed

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

1. DIVERSE REACTOR TRIP ACTUATION SYTEM INOPERABILITY

HUMAN INTERFACES

1. CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Copy of OP-904-017, Attachment 10.3 with SM/CRS signoff completed given to examinee.

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-904-017, Section 7.3. ALL Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Verify MG SET LOAD CONTACTOR indications

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee verifies MG SET A LOAD CONTACTOR computer point D55842 indicates closed
- Examinee verifies MG SET B LOAD CONTACTOR computer point D55843 indicates closed

SAT_____ **UNSAT**_____

---

2. If DRTS select switch is not in ENABLE, then perform the following:
- Verify annunciator Diverse Reactor Trip Active/ Trouble K-4, Cabinet M clear
- Verify annunciator Diverse Reactor Trip L-4, Cabinet M clear
- Place Diverse Reactor Trip System Select Switch in ENABLE

Verify Diverse Reactor Trip System Select Switch ENABLE Red light illuminated

CUES:
- Simulator will provide the required cues

STANDARDS:
- Candidate verifies annunciator DIVERSE REACTOR TRIP ACTIVE/ TROUBLE K-4, Cabinet M clear
- Candidate verifies annunciator DIVERSE REACTOR TRIP L-4, Cabinet M clear
- Examinee verifies DIVERSE REACTOR TRIP SYSTEM SELECT SWITCH in ENABLE
- Examinee verifies DIVERSE REACTOR TRIP red ENABLE light illuminated on CP-2

SAT_____ **UNSAT**_____

---

3. Depress and release DRT 1 of 2 pushbutton **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee depresses and releases DRT 1 of 2 pushbutton on CP-2

SAT_____ **UNSAT**_____

---

4. Verify :

- DIVERSE REACTOR TRIP ACTIVE/ TROUBLE (K-4, cabinet M) in alarm
- DRT white ACTIVE lights illuminated
- AUX PANEL 4 terminal DH99 to DH108 voltage indicate approximately 120VAC
- MG SET A and B load contactors closed

CUES:
- **PMI informs examinee that voltage between Aux Panel 4 terminals DH99 and DH108 indicates 120VAC**

STANDARDS:
- Examinee verifies DIVERSE REACTOR TRIP ACTIVE/ TROUBLE (K-4, cabinet M) in alarm
- Examinee verifies DRT white ACTIVE lights illuminated
- Examinee calls PMI for AUX PANEL 4 terminal DH99-DH108 voltage readings
- Examinee verifies MG SET A LOAD CONTACTOR computer point D55842 indicates closed
- Examinee verifies MG SET B LOAD CONTACTOR computer point D55843 indicates closed

SAT_____ UNSAT_____

---

5. Document proper indications on attachment 10.3

CUES:
- None

STANDARDS:
- Examinee initials steps for attachment 10.3 step 7.3.4.2

SAT_____ UNSAT_____

---

6. Place DRTS switch to DISABLE **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee places DRTS switch on CP-2 to DISABLE

SAT_____ UNSAT_____

---

7. Verify:

- DIVERSE REACTOR TRIP ACTIVE/ TROUBLE annunciator (K-4, cabinet M) clear
- DIVERSE REACTOR TRIP (L-4, cabinet M) annunciator clear
- DRT ACTIVE white lights extinguished
- DRT DISABLE green light illuminated

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee verifies DIVERSE REACTOR TRIP ACTIVE/ TROUBLE annunciator K-4, cabinet M on CP-8 clear
- Examinee verifies DIVERSE REACTOR TRIP annunciator L-4, cabinet M on CP-8 clear
- Examinee verifies DRT ACTIVE white lights on CP-2 extinguished
- Examinee verifies DRT DISABLE green light on CP-2 illuminated

SAT_____ UNSAT_____

---

8. Document proper indications on attachment 10.3

CUES:
- None

STANDARDS:
- Examinee initials steps for attachment 10.3 step 7.3.5.2

SAT_____ UNSAT_____

---

9. Place DIVERSE REACTOR TRIP SYSTEM SELECT SWITCH in ENABLE on CP-2 **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee places DIVERSE REACTOR TRIP SYSTEM SELECT SWITCH in ENABLE
- Examinee verifies red ENABLE light illuminated on CP-2

SAT_____ UNSAT_____

---

10. Depress and release DRT 2 of 2 pushbutton **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee depresses and releases DRT 2 of 2 pushbutton

SAT_____ UNSAT_____

---

11. Verify:
- DIVERSE REACTOR TRIP ACTIVE/ TROUBLE (K-4, CABINET M) in alarm,
- DRT white active lights illuminated,
- Aux panel 4 terminal DH101 to DH108 voltage indicate approximately 120VAC,
- MG SET A and B load contactors closed

CUES:
- **PMI informs examinee that voltages between Aux Panel 4 terminals DH101 and DH108 indicates 120VAC**

STANDARDS:
- Examinee verifies DIVERSE REACTOR TRIP ACTIVE/ TROUBLE (K-4, cabinet M) on CP-8 in alarm
- Examinee verifies DRT white ACTIVE lights on CP-2 illuminated
- Examinee calls PMI for AUX PANEL 4 terminal DH101-DH108 voltage readings
- Examinee verifies MG SET A LOAD CONTACTOR computer point D55842 indicates closed
- Examinee verifies MG SET B LOAD CONTACTOR computer point D55843 indicates closed

SAT_____ UNSAT_____

---

12. Document proper indications on attachment 10.3

CUES:
- None

STANDARDS:
- Examinee initials steps for attachment 10.3 step 7.3.7.2

SAT_____ UNSAT_____

---

13. Place DRT SWITCH to DISABLE **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee places DRTS SWITCH to DISABLE on CP-2

SAT_____ UNSAT_____

---

14. Verify:
- (K-4, cabinet M) DIVERSE REACTOR TRIP ACTIVE/ TROUBLE annunciator clear
- (L-4, cabinet M) DIVERSE REACTOR TRIP annunciator clear
- DRT active white lights extinguished

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee verifies DIVERSE REACTOR TRIP ACTIVE/ TROUBLE annunciator (K-4, cabinet M) on CP-8 clear
- Examinee verifies DIVERSE REACTOR TRIP annunciator (L-4, cabinet M) on CP-8 clear
- Examinee verifies DRT ACTIVE white lights on CP-2 extinguished

SAT_____ UNSAT_____

Document proper indications on attachment 10.3

15.

CUES:
- None

STANDARDS:
- Examinee initials steps for attachment 10.3 step 7.3.8.2

SAT_____ UNSAT_____

---

16. Place DIVERSE REACTOR TRIP SYSTEM SELECT SWITCH in ENABLE on CP-2 **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee places DIVERSE REACTOR TRIP SYSTEM SELECT SWITCH to enable
- Examinee verifies red ENABLE light illuminated on CP-2

SAT_____ UNSAT_____

17. Simultaneously depress BOTH DRT pushbuttons THEN release BOTH pushbuttons **CRIT**

CUES:
- Simulator will provide the required cues

STANDARDS:
- Examinee depresses both DRT pushbuttons on CP-2
- Examinee releases both DRT pushbuttons.
- Examinee verifies MG SET A LOAD CONTACTOR computer point D55842 indicates NT CLOSED
- Examinee verifies MG SET B LOAD CONTACTOR computer point D55843 indicates NT CLOSED

SAT_____ UNSAT_____

---

18. Document proper indications on attachment 10.3

CUES:
- None

STANDARDS:
- Examinee initials steps for attachment 10.3 step 7.3.10.2

SAT_____ UNSAT_____

---

19. Document final status of DRTS on attachment 10.3

CUES:
- **CRS informs examinee to place DRTS switch to DISABLE and CEA MG sets will remain running unloaded for electrical testing.**

STANDARDS:
- Examinee places DRTS switch to DISABLE on CP-2
- Examinee circles disabled status,
- Examinee checks SAT for all acceptance criteria
- Examinee signs performed by on step 7.3.12

SAT_____ UNSAT_____

---

20. END OF TASK.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee Copy

INITIAL CONDITIONS

1. The plant is in Mode 3 shutdown for refueling
2. Both CEA MG SETS are operating
3. I&C is standing by at Aux Panel 4
4. DRTS and DEFAS aligned per OP-004-021

INITIATING CUE

You are directed by the CRS to perform a DIVERSE REACTOR TRIP ACTUATION TEST per OP-904-017, Section 7.3

Waterford 3 Job Performance Measure

Re-energize A3S from A2 with EDG A loaded

Site W3 **Job** RO **System / Duty Area** ED **Mode** EMERG **Number** 29

Revision 4 04/03/2000

Approval rfletch 04/05/2000

Estimated Time 10 Min

Time Critical No **Critical Time** **Alternate Path** YES

References

NUMBER
OP-901-310 Step 11

NRC KA Number

NUMBER
4.2-A56-AK3.02
4.2-A56-AA2.14
3.6-064-A4.07

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. A loss of the A3 Bus occurred
2. Emergency Diesel Generator A is currently carrying the loads on the A3 bus
3. The cause of the loss of bus has been corrected
4. The A2 bus is energized
5. A2 Bus UV Lockout 86A2HR is reset

INITIATING CUE

The CRS directs you to restore bus A3 to a normal lineup from offsite power in accordance with OP-901-310, Loss of Train A Safety Bus, Step 11

TERMINATING CUE

1. A3 Bus is powered from the offsite source

STANDARD

1. A3 Safety Bus is energized from offsite power

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

1. Loss of power to Safety Bus.

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-901-310, step 11. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Verify BUS A3S to A2 TIE BKR open.

CUES: **After Examinee simulates action then state**

- **BUS A3S to A2 TIE BKR green OPEN light lit and red CLOSED light out CP-1**

STANDARDS:
- Examinee verifies that BUS A3S to A2 TIE BKR green OPEN light lit and red CLOSED light out on CP-1.

SAT_____**UNSAT**_____

---

2. Close BUS A2 TO A3S TIE BKR. **CRIT**

CUES: **After Examinee simulates action then state**

- **BUS A2 TO A3S TIE BKR CLOSED, red CLOSED light lit, green OPEN light out .**

STANDARDS:
- Examinee simulates taking control switch for BUS A2 TO A3S TIE BKR to CLOSE on CP-1, verifies red CLOSED light lit, green OPEN light out on CP-1.

SAT_____**UNSAT**_____

---

3. Place SYNCHRONIZER keyswitch in "BUS TIE" **CRIT**

CUES: **After Examinee simulates action then state**

- **Key 208 inserted into EDG A SYNCHRONIZER keyswitch, keyswitch rotated to "BUS TIE" on CP-1.**

STANDARDS:
- Examinee simulates obtaining key 208 from key locker inserts into EDG A SYNCHRONIZER keyswitch and rotates to "BUS TIE" on CP-1.

SAT_____**UNSAT**_____

---

4. Adjust EDG A voltage to equal system voltage.

CUES: **After Examinee simulates action then state**

- **EDG A and System voltage are both reading 4160 volts.**
- **Sycncroscope is rotating slowly counterclockwise**

STANDARDS:
- Examinee locates EDG A and System voltage on CP-1 and verifies voltages are approximately equal or adjusts EDG A voltage to match System voltage on CP-1.

SAT_____**UNSAT**_____

5. Adjust engine speed until Synchroscope rotates slowly clockwise.

CUES: **After Examinee takes action to adjust EDG speed, then state the following:**

- **EDG A UNAVAILABLE" Annunciator, G-1, Cab D in alarm on CP-1**
- **RAB watch reports EDG A tripped on overspeed**
- **The CRS directs you to reenergize A3 Bus using step 7 of OP-901-310**

STANDARDS:

- Examinee adjusts EDG A speed until Synchroscope rotates slowly clockwise on CP-1
- Examinee goes to step 7 of OP-901-310

SAT_____UNSAT_____

---

6. If BUS A3 loss was due to a fault on A2 BUS, then verify 74/HR is reset at the following breakers by depressing associated lockout relay reset pushbuttons on 4KVEBKR3A-11 and 4KVEBKR2A-8.

CUES: **After Examinee attempts to communicate with the Turbine Building Watch & RAB Watch then state:**

- **74/HR relays are reset, the A3 bus was not lost due to a fault on the A2 bus.**

STANDARDS:

- Examinee simulates contacting watchstanders or determines that 74/HR relays were reset prior to the EDG tripping.

SAT_____UNSAT_____

---

7. Reset 86A2/HR hand reset lockout relay on switchgear 2A cubicle 2.

CUES: **After Examinee attempts to communicate with the Turbine Building Watch then state:**

- **86A2/HR relay is reset**

STANDARDS:

- Examinee simulates contacting watchstander or determines that 86A2/HR relay was reset prior to the EDG tripping.

SAT_____UNSAT_____

---

8. Verify Bus A3S to A2 TIE BKR open.

CUES: **After Examinee simulates action then state:**

- **BUS A3S TO A2 TIE BKR green OPEN light lit, red CLOSED light out on CP-1**

STANDARDS:

- Examinee verifies green OPEN light lit, red CLOSED light out on CP-1 for BUS A3S to A2 TIE BKR on CP-1 or states that the breaker was open as part of the initial conditions.

SAT_____UNSAT_____

---

9. Close Bus A2 to A3s Tie Bkr.

CUES: **After Examinee simulates action then state:**

- **BUS A2 TO A3S TIE BKR red CLOSED light lit, green OPEN light out on CP-1**

STANDARDS: ▪ Examinee simulates closing the Bus A2 to A3S TIE BKR on CP-1 and verifies red CLOSED light lit, green OPEN light out on CP-1 for BUS A2 to A3S TIE BKR on CP-1 or states that the breaker was closed prior to the EDG Tripping.

SAT_____UNSAT_____

---

10. Close BUS A3S TO A2 TIE BKR. **CRIT**

CUES: **After Examinee simulates action then state:**

- **BUS A3S TO A2 TIE BKR green OPEN light lit, red CLOSED light out on CP-1**

STANDARDS: ▪ Examinee simulates C/S to CLOSE for BUS A3S to A2 TIE BKR on CP-1 and verifies red CLOSED light lit, green OPEN light out on CP-1 for BUS A3S to A2 TIE BKR on CP-1.

SAT_____UNSAT_____

---

11. End of task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. A loss of the A3 Bus occurred
2. Emergency Diesel Generator A is currently carrying the loads on the A3 bus
3. The cause of the loss of bus has been corrected
4. The A2 bus is energized
5. A2 Bus UV Lockout 86A2HR is reset

INITIATING CUE

The CRS directs you to restore bus A3 to a normal lineup from offsite power in accordance with OP-901-310, Loss of Train A Safety Bus, Step 11

Waterford 3 Job Performance Measure

RETURN EFW SYSTEM TO NORMAL FOLLOWING AN EFAS ACTUATION

Site W3 **Job** RO **System / Duty Area** EFW **Mode** NORM **Number** 6

Revision 5 08/23/2004

Approval rfletch 04/05/2000

Estimated Time 10 Min

Time Critical No **Critical Time** **Alternate Path** NO

References

NUMBER
OP-009-003

NRC KA Number

NUMBER
2-1-20
3.4-061-A3.01
3.4-061-A3.04

Evaluation Methods

METHOD
PERFORM
SIMULATE

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. A reactor trip occurred
2. Emergency Feedwater Actuation 1 and 2 actuated.
3. EFAS -1 was manually actuated
4. All S/G Level Lo trips are clear at PPS Remote Operating Module
5. Steam Generator levels are between 60 and 70% NR and being Maintained using Main Feedwater
6. Chemistry has been informed of the EFW actuation.

INITIATING CUE

You are directed by SM/CRS to return the EFW system to normal alignment in accordance with OP-009-003, section 8.1

TERMINATING CUE

The EFW system is lined up for automatic operation

STANDARD

The EFW system has been aligned for automatic operation

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Equipment Damage

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-009-003, section 8.1. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Notify Chemistry prior to using the Emergency Feedwater System to raise or maintain Steam Generator levels in non-emergency situations.

CUES:
- **CUE: If Examinee notifies Chemistry again, acknowledge Chemistry informed**

STANDARDS:
- Examinee notifies Chemistry prior to using the Emergency Feedwater System to raise or maintain Steam Generator levels

SAT_____**UNSAT**_____

---

2. Verify both Steam Generator levels in normal operating band (60% to 70% Narrow Range).

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee verifies both Steam Generator levels in normal operating band (60% to 70% Narrow Range) on CP-8 and/or CP-1.

SAT_____**UNSAT**_____

---

3. Verify EFAS-1 and EFAS-2 manual initiation switches on CP-7 and CP-8 are in NORM. **CRIT**

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee places all 4 EFAS-1 manual initiation switches in NORM on CP-7 and CP-8
- Examine verifies all 4 EFAS manual initiation switches are in NORM on CP-7 and CP-8.

SAT_____**UNSAT**_____

---

4. Reset actuated Emergency Feedwater Actuation Signal (EFAS) relay(s) on CP-33 as follows: Verify Steam Generator 1 level >27.4% Narrow Range. Depress both EFAS-1 Lockout Reset pushbuttons. **CRIT**

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee Verifies Steam Generator 1 Level >27.4% Narrow Range
- Examinee depresses both EFAS-1 lockout relays on CP-33

SAT_____**UNSAT**_____

---

5. Reset actuated Emergency Feedwater Actuation Signal (EFAS) relay(s) on CP-33 as follows: Verify Steam Generator 2 level >27.4% Narrow Range. Depress both EFAS-2 Lockout Reset pushbuttons **CRIT**

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee Verifies Steam Generator 2 Level >27.4% Narrow Range
- Examinee depresses both EFAS-2 lockout relays on CP-33

SAT_____**UNSAT**_____

---

6. At SM/CRS discretion Stop Emergency Feedwater Pumps A and B by placing the following control switches on CP-8 momentarily to OFF, then to neutral: **CRIT**

- Emergency Feedwater Pump A
- Emergency Feedwater Pump B

CUES:
- **CUE: CRS directs EFW Pump A and B be secured.**
- Simulator will provide pump status cues

STANDARDS:
- Examinee places EFW Pump A Control Switch on CP-8 to OFF and returns to Normal (Mid-position), verifies green OFF light lit, red START light out.
- Examinee places EFW Pump B Control Switch on CP-8 to OFF and returns to Normal (Mid-position), verifies green OFF light lit, red START light out.

SAT_____UNSAT_____

---

7. If EFW Pump AB is operating, then secure by Closing the following valves: **CRIT**

- MS-401A, EFW Pump AB Turbine Steam Supply Valve from S/G 1
- MS-401B, EFW Pump AB Turbine Steam Supply Valve from S/G 2

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee places control switch for MS-401A, EFW Pump AB Turbine Steam Supply Valve from S/G 1 to CLOSE, verifies green CLOSED light lit, red OPEN light out
- Examinee places control switch for MS-401B, EFW Pump AB Turbine Steam Supply Valve from S/G 2 to CLOSE, verifies green CLOSED light lit, red OPEN light out

SAT_____UNSAT_____

8. At CP-8 place the following controllers in Automatic: **CRIT**

- EFW-223A Emergency Feedwater Header A To SG1 Backup Flow Control Valve
- EFW-224A Emergency Feedwater Header A To SG1 Primary Flow Control Valve
- EFW-223B Emergency Feedwater Header A To SG2 Backup Flow Control Valve
- EFW-224B Emergency Feedwater Header A To SG2 Primary Flow Control Valve

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee depresses AUTO pushbutton for EFW-223A Emergency Feedwater Header A To SG1 Backup Flow Control Valve, verifies AUTO light lit , MAN light out on CP-8
- Examinee verifies EFW-224A Emergency Feedwater Header A To SG1 Primary Flow Control Valve AUTO light lit , MAN light out on CP-8
- Examinee depresses AUTO pushbutton for EFW-223B Emergency Feedwater Header A To SG2 Backup Flow Control Valve, verifies AUTO light lit , MAN light out on CP-8
- Examinee verifies EFW-224B Emergency Feedwater Header A To SG2 Primary Flow Control Valve AUTO light lit , MAN light out on CP-8

SAT_____UNSAT_____

---

9. Close the following Emergency Feedwater Isolation Valves: **CRIT**

- EFW-228A Emergency Feedwater To SG1 Primary Isolation
- EFW-229A Emergency Feedwater To SG1 Backup Isolation
- EFW-228B Emergency Feedwater To SG2 Primary Isolation
- EFW-229B Emergency Feedwater To SG2 Backup Isolation

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee places control switch for EFW-228A Emergency Feedwater To SG1 Primary Isolation to CLOSE, verifies green CLOSED light lit, red OPEN light out on CP-8
- Examinee places control switch for EFW-229A Emergency Feedwater To SG1 Backup Isolation to CLOSE, verifies green CLOSED light lit, red OPEN light out on CP-8
- Examinee places control switch for EFW-228B Emergency Feedwater To SG2 Primary Isolation to CLOSE, verifies green CLOSED light lit, red OPEN light out on CP-8
- Examinee places control switch for EFW-229B Emergency Feedwater To SG2 Backup Isolation to CLOSE, verifies green CLOSED light lit, red OPEN light out on CP-8

SAT_____UNSAT_____

10. Verify the following Annunciators on CP-8 have Cleared:

- Emerg Feedwater Pump A Trip/Trouble (E-1, Cabinet M)
- Emerg Feedwater Pump A Unavailable (D-1, Cabinet M)
- Emerg Feedwater Pump A Unavailable (A10, Cabinet M)
- Emerg Feedwater Pump B Trip/Trouble (E-11, Cabinet N)
- Emerg Feedwater Pump B Unavailable (D-1, Cabinet N)

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee verifies Emerg Feedwater Pump A Trip/Trouble (E-1, Cabinet M) clear on CP-8
- Examinee verifies Emerg Feedwater Pump A Unavailable (D-1, Cabinet M) clear on CP-8
- Examinee verifies Emerg Feedwater Pump A Unavailable (A10, Cabinet M) clear on CP-8
- Examinee verifies Emerg Feedwater Pump B Trip/Trouble (E-11, Cabinet N) clear on CP-8
- Examinee verifies Emerg Feedwater Pump B Unavailable (D-1, Cabinet N) clear on CP-8

SAT_____UNSAT_____

---

11. Inform CRS EFW is returned to Normal

CUES:
- **CUE: CRS acknowledges EFW is returned to Normal**

STANDARDS:
- Examinee Informs CRS that EFW is returned to Normal

SAT_____UNSAT_____

---

12. End of task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee Copy

INITIAL CONDITIONS

1. A reactor trip occurred
2. Emergency Feedwater Actuation 1 and 2 actuated.
3. EFAS -1 was manually actuated
4. All S/G Level Lo trips are clear at PPS Remote Operating Module
5. Steam Generator levels are between 60 and 70% NR and being Maintained using Main Feedwater
6. Chemistry has been informed of the EFW actuation.

INITIATING CUE

You are directed by SM/CRS to return the EFW system to normal alignment in accordance with OP-009-003, section 8.1

Waterford 3 Job Performance Measure

PERFORM ACTIONS ON A RECIRCULATION ACTUATION (LEAK ON SUCTION LINE)

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

Revision 8 08/20/2004

Approval rfletch

Estimated Time 10 Min

Time Critical NO **Critical Time** **Alternate Path** YES

References

NUMBER
OP-902-002
OP-902-009

NRC KA Number

NUMBER
2-1-20
4.1-E11- EA1.11

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. The reactor has tripped
2. A Loss of Coolant Accident inside containment is in progress
3. OP-902-002, Loss of Coolant Accident is being implemented
4. RWSP level is 10% and a Recirculation Actuation Signal (RAS) has occurred

INITIATING CUE

The CRS directs you to perform the required actions to the Safety Injection System following a RAS

TERMINATING CUE

1. All Safety Injection Pump Recirc Valves are closed
2. Both ESF Pump Suction Valves from the RWSP are closed
3. SI-602B is overridden closed.

STANDARD

SI Recirc Isolations have been shut

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Release of Radioactivity through the RWSP Vent

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-902-002 and OP-902-009. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Verify that BOTH LPSI Pumps are stopped.

CUES: **After Examinee demonstrates each action, then state:**

- **LPSI Pump A stopped**
- **LPSI Pump B stopped**

STANDARDS:

- Examinee verifies LPSI Pump A stopped, green OFF light lit, red START light out on CP-8
- Examinee verifies LPSI Pump B stopped, green OFF light lit, red START light out on CP-8

SAT_____**UNSAT**_____

---

2. Verify that ESF PUMPS SUCTION SI valves are open.

- SI 602A
- SI 602B

CUES: **After Examinee demonstrates each action, then state:**

- **SI 602A is OPEN**
- **SI 602B is OPEN**

STANDARDS:

- Examinee verifies SI 602A, green CLOSED light out, red OPEN light lit on CP-8
- Examinee verifies SI 602B, green CLOSED light out, red OPEN light lit on CP-8

SAT_____**UNSAT**_____

---

3. Close the SI PUMPS RECIRC ISOL VALVES within two minutes of receipt of RAS: **CRIT**

- SI 120A
- SI 120B
- SI 121A
- SI 121B

CUES: **After Examinee demonstrates each action, then state:**

- **SI 120A is CLOSED**
- **SI 120B is CLOSED**
- **SI 121A is CLOSED**
- **SI 121B is CLOSED**

STANDARDS:

- Examinee takes control switch for SI 120A to CLOSE verifies green CLOSED light lit red OPEN light out
- Examinee takes control switch for SI 120B to CLOSE verifies green CLOSED light lit red OPEN light out
- Examinee takes control switch for SI 121A to CLOSE verifies green CLOSED light lit red OPEN light out
- Examinee takes control switch for SI 121B to CLOSE verifies green CLOSED light lit red OPEN light out

SAT_____UNSAT_____

---

4. Close the ESF PUMPS SUCTION RWSP: **CRIT**

- SI 106A
- SI 106B

CUES: **After Examinee demonstrates each action, then state:**

- **SI 106A is CLOSED**
- **SI 106B is CLOSED**

ESSENTIAL to provide these cues:

- **(ALT) A repair team reports a large leak between SI-602B and SI-604B**
- **(ALT) CRS orders you to secure HPSI Pump B and Containment Spray Pump B and implement OP-902-009, Attachment 30-B.**
- **(ALT) RAB Operator reports that he is at Aux Panel 1 and is ready to assist with override of SI-602B.**

STANDARDS:

- Examinee simulates taking control switch for SI 106A to CLOSE verifies green CLOSED light lit red OPEN light out on CP-8
- Examinee simulates taking control switch for SI 106B to CLOSE verifies green CLOSED light lit red OPEN light out on CP-8

SAT_____UNSAT_____

5. **(ALT)** Place keyswitch for SI-602B, ESF PUMP SUCTION SI PUMP, located on side of Auxiliary Panel 1, to OVERRIDE **CRIT**

CUES: **After Examinee orders NAO to perform action, then state:**

- **NAO reports SI-602B keyswitch on Auxiliary Panel 1 in OVERRIDE**

STANDARDS:

- Examinee orders NAO to place SI-602B keyswitch in OVERRIDE on Auxiliary Panel 1

SAT_____UNSAT_____

---

6. **(ALT)** Close SI-602B, ESF PUMP SUCTION SI PUMP, by placing on CP-8 to CLOSE **CRIT**

CUES: **After Examinee demonstrates each action, then state:**

- **SI-602B is CLOSED**
- **(ALT) The other NPO has secured all charging pumps and closed CVC-209.**

STANDARDS:

- Examinee rotates control switch for SI-602B to CLOSE, verifies green CLOSE light lit, red OPEN light out

SAT_____UNSAT_____

---

7. End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. The reactor has tripped
2. A Loss of Coolant Accident inside containment is in progress
3. OP-902-002, Loss of Coolant Accident is being implemented
4. RWSP level is 10% and a Recirculation Actuation Signal (RAS) has occurred

INITIATING CUE

The CRS directs you to perform the required actions to the Safety Injection System following a RAS

Waterford 3 Job Performance Measure

PLACE SDC TRAIN A IN SERVICE (SDC SUCTION VALVE CLOSES)

Site W3 **Job** RO **System / Duty Area** SDC **Mode** NORM **Number** 5

Revision 2 09/13/1995

Approval tbrown 11/28/1995

Estimated Time 30 Min

Time Critical No **Critical Time** **Alternate Path** YES

References

NUMBER
OP-009-005
OP-901-131

NRC KA Number

NUMBER
3.4-005-A4.01
3.4-005-A4.01

Evaluation Methods

PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. Shutdown Cooling Entry Conditions are met
2. LTOPS are aligned for service
3. Shutdown Cooling train A aligned for standby condition
4. RCS boron concentration is 2050 ppm
5. Protected train is on the same side as SDC train to placed in service.
6. Sufficient Dry Cooling Tower Fans are running to accept increased heat load on CCW System.
7. All SDC instrumentation is operable
8. RCA watch is standing by LPSI Pump A and the pump is ready for a start.

INITIATING CUE

You are directed by the CRS to place Shutdown Cooling train A in service

TERMINATING CUE

The selected Shutdown Cooling train is secured, LPSI Pump A is in OFF

STANDARD

The selected Shutdown Cooling train is secured, LPSI Pump A is in OFF

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Equipment Damage

HUMAN INTERFACES

1. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-009-005, section 6.1 and OP-901-131, D.1.
Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Place Shutdown HX A CCW Flow Control, CC-963A, control switch to Open. **CRIT**

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee rotates Shutdown HX A CCW Flow Control, CC-963A, control switch to Open, verifies green CLOSED light out, red OPEN light lit

SAT_____**UNSAT**_____

---

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

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee obtains key, unlocks and opens RC Loop 2 SDC Suction Outside Containment Isol, SI-407A on CP-8

SAT_____**UNSAT**_____

---

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

CUES:
- **Radiation Protection Department acknowledges that Shutdown Cooling Train A is being placed in service**

STANDARDS:
- Examinee notifies Radiation Protection Department that Shutdown Cooling Train A is being placed in service

SAT_____**UNSAT**_____

---

4. Start LPSI Pump A. **CRIT**

CUES:
- If Examinee calls RCA watch to standby LPSI Pump A then state:
  - **LPSI Pump A is ready for start, RCA watch is standing by**
- Simulator will provide cues

STANDARDS:
- Examinee rotates Control Switch for LPSI Pump A to START, verifies green OFF light out and red START light lit, amps, flow, and pressure on CP-8

SAT_____**UNSAT**_____

5. Raise Shutdown Cooling flow to 4100 GPM **CRIT**

CUES:
- Simulator will provide cues

STANDARDS:
- Examinee manually adjusts LPSI Header Flow controller 2A/2B, SI-IFIC-0307, output until Shutdown Cooling Header A Flow, reads 4100 gpm, as on RC Loop 2 SHDN Line Flow Indicator, SI-IFI-1307-A1 on CP-8.
- **(ALT) Simulator Booth Operator will insert malfunction to close SI 405A while Examinee is raising SDC flow.**

SAT_____UNSAT_____

---

6. **(ALT)** Secure LPSI Pump A **CRIT**

CUES:
-

STANDARDS:
- Examinee recognizes SI-405A has closed and rotates control switch for LPSI Pump A to OFF, verifies green OFF light lit, red START light out, amps, flow and pressure dropping on CP-8
- (NOTE: Immediate Operator Action per OP-901-131, Shutdown Cooling Malfunction)

SAT_____UNSAT_____

---

7. End of task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. Shutdown Cooling Entry Conditions are met
2. LTOPS are aligned for service
3. Shutdown Cooling train A aligned for standby condition
4. RCS boron concentration is 2050 ppm
5. Protected train is on the same side as SDC train to placed in service.
6. Sufficient Dry Cooling Tower Fans are running to accept increased heat load on CCW System.
7. All SDC instrumentation is operable
8. RCA watch is standing by LPSI Pump A and the pump is ready for a start.

INITIATING CUE

You are directed by the CRS to place Shutdown Cooling train A in service

Waterford 3 Job Performance Measure

ALIGN CARS FOR CONTAINMENT PRESSURE CONTROL

Site W3 **Job** RO **System / Duty Area** CAR **Mode** NORM **Number** 10

Revision 1 04/18/1995

Approval tbrown 09/06/1995

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** NO

References

NUMBER
OP-008-002

NRC KA Number

NUMBER
3.5-028-A4.01

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. Containment Purge Isolation Radiation Monitors are operable with alarm setpoints set as required
2. No power changes are in progress.
3. The RAB Operator is standing by to assist with the task.
4. Computer Points for CARS valves are unreliable

INITIATING CUE

The SM/CRS directs you to align CARS train B for Containment Pressure Control

TERMINATING CUE

1. CARS train B has been aligned for Containment Pressure Control
2. Task may be terminated prior to filling out attachment 11.4

STANDARD

The CAR system has been aligned for Containment Pressure Control.

TOOLS

Copy of Att.11.4 OP-008-002 with selected steps filled in.

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Unmonitored Release

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-008-002, section 6.2. Critical steps are denoted by **CRIT**.

START TIME_____
CUE: AFTER GIVING STUDENT PROCEDURE, INFORM STUDENT STEP 6.2.1 IS COMPLETE.

1. Verify CAR System Exhaust Header B Inlet, CAR-201B, Closed by indication on CP-18

CUES:
- Simulator provides cues

STANDARDS:
- Examinee verifies CAR System Exhaust Header B Inlet, CAR-201B, Closed by indication on CP-18.

SAT_____**UNSAT**_____

---

2. Verify CAR System Exhaust Header B Downstream Isolation, CAR-203B, Locked Closed.

CUES:
- **NAO reports CAR-203B, Locked Closed**

STANDARDS:
- Examinee directs NAO to verify CAR System Exhaust Header B Downstream Isolation, CAR-203B, Locked Closed

SAT_____**UNSAT**_____

---

3. Unlock and Open CAR Containment Exhaust to Plant Stack, CAR-2020B. **CRIT**

CUES:
- **NAO reports CAR-2020B, open**

STANDARDS:
- Examinee directs NAO to Unlock and Open CAR Containment Exhaust to Plant Stack, CAR-2020B

SAT_____**UNSAT**_____

---

4. Open CAR System Exhaust Header B Upstream Isolation, CAR-202B. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- Examinee rotates Control Switch for CAR System Exhaust Header B Upstream Isolation, CAR-202B to OPEN, verifies green CLOSE light out, red OPEN light lit

SAT_____**UNSAT**_____

---

5. Open CAR Exhaust Header B Inlet Isolation Valve, CAR-200B. **CRIT**

CUES:
- Simulator provides cues

STANDARDS:
- Examinee rotates Control Switch for CAR Exhaust Header B Inlet Isolation Valve, CAR-200B to OPEN, verifies green CLOSE light out, red OPEN light lit

SAT_____**UNSAT**_____

---

6. Record system start date and time on Attachment 11.4, Containment Pressure Control Data.
NOTE Task may be terminated prior to filling out Attachment 11.4

CUES:
- **System start date and time filled in on Attachment 11.4**

STANDARDS:
- Examinee records System start date and time on Attachment 11.4, Containment Pressure Control Data.
-

SAT_____UNSAT_____

---

7. End of Task

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. Containment Purge Isolation Radiation Monitors are operable with alarm setpoints set as required
2. No power changes are in progress.
3. The RAB Operator is standing by to assist with the task.
4. Computer Points for CARS valves are unreliable

INITIATING CUE

The SM/CRS directs you to align CARS train B for Containment Pressure Control

Waterford 3 Job Performance Measure

PLACE GAS DECAY TANK A ON DECAY

Site W3 **Job** NAO **System / Duty Area** GWM **Mode** NORM **Number** 4

Revision 0 8/25/2004

Approval rfletch

Estimated Time 15 Min

Time Critical No **Critical Time** **Alternate Path** NO

References

NUMBER
OP-007-003

NRC KA Number

NUMBER
3.9-071-A4.05

Evaluation Methods

METHOD
PERFORM

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. Gas Decay Tank B has been placed in service per Subsection 6.2 of OP-007-003
2. Gas Decay Tank A is still in service

INITIATING CUE

You are ordered by the CRS to place Gas Decay Tank A on decay in accordance with Section 6.3 of OP-007-003, Gaseous Waste Management

TERMINATING CUE

Gas Decay Tank A is lined up for decay

STANDARD

Gas Decay Tank A is placed on decay

TOOLS

Copy of Att. 11.8, OP-007-003 with step 1 filled in

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Unmonitored release of radioactivity

HUMAN INTERFACES

PNPO

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-007-003, Subsection 6.3. Critical steps are denoted by **CRIT**.

START TIME_____

---

1. Place CHARGE/OFF/RELEASE control switch for Gas Decay Tank (GDT) to be placed on decay to the OFF position. **CRIT**

CUES:
- **Control switch for Gas Decay Tank A is in OFF**

STANDARDS:
- Examinee **(simulates)** rotates control switch for Gas Decay Tank A to OFF on LCP-42 in the -4' RAB inside CAA.

SAT_____**UNSAT**_____

---

2. Verify Gas Decay Tank A(B)(C) Inlet Isolation, GWM-206A(B)(C), Closed for GDT being placed on decay.

CUES:
- **GWM-206A is closed**

STANDARDS:
- Examinee **(simulates)** verifies Gas Decay Tank A Inlet Isolation, GWM-206A closed On LCP-42 by verifying green light on and red light off on LCP-42.

SAT_____**UNSAT**_____

---

3. Close Gas Decay Tank A(B)(C) Inlet Manual Isolation, GWM-2055A(B)(C), for GDT being placed on decay. **CRIT**

CUES:
- **GWM-2055A is closed**

STANDARDS: Examinee should locate a ladder rack or mention that he will need to get a ladder to operate GWM-2055A

- Examinee locates GWM-2055A in -35' RAB GDT Room A and **(simulates)** turns Gas Decay Tank A Inlet Manual Isolation, GWM-2055A in the clockwise direction.

SAT_____**UNSAT**_____

---

4. Contact Chemistry to transfer the Gas Analyzer sample point to the Gas Decay Tank (GDT) being placed in service.

CUES:
- **Chemistry states that Gas Analyzer sample point was transferred to Gas Decay Tank B when the Gas Decay Tank was placed in service.**

STANDARDS:
- Examinee notifies Chemistry to transfer the Gas Analyzer sample point to the Gas Decay Tank B

SAT_____**UNSAT**_____

---

5. Complete Attachment 11.8, Gas Decay Tank Sample Verification.

CUES:
- **A copy of Attachment 11.8 has been given to Chemistry**

STANDARDS:
- Examinee circles GDT A removed from service and initials and dates step

SAT_____**UNSAT**_____

---

6. End of task.
STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. Gas Decay Tank B has been placed in service per Subsection 6.2 of OP-007-003
2. Gas Decay Tank A is still in service

INITIATING CUE

You are ordered by the CRS to place Gas Decay Tank A on decay in accordance with Section 6.3 of OP-007-003, Gaseous Waste Management

Waterford 3 Job Performance Measure

LINE UP POTABLE WATER TO INSTRUMENT AIR COMPRESSORS DURING CONTROL ROOM EVACUATION (NO FIRE)

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

Revision 4 04/03/2000

Approval rfletch 04/05/2000

Estimated Time 20 Min

Time Critical No **Critical Time** **Alternate Path** NO

References

NUMBER
OP-901-502

NRC KA Number

NUMBER
3.8-078-A3.01
3.8-078-K1.04

Evaluation Methods

METHOD
PERFORM
SIMULATE

Trainee		**Evaluator**	
Observer		**Date**	
Satisfactory		**Unsatisfactory**	

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. A Control Room Evacuation is in progress
2. The Turbine Cooling Water system is not available

INITIATING CUE

You are directed by the Shift Manager to align Potable Water to Instrument Air Compressor A

TERMINATING CUE

Instrument Air Compressor A started with Potable Water aligned for cooling

STANDARD

Instrument Air Compressor A is running with Potable Water cooling

TOOLS

NONE

SAFETY CONSIDERATIONS

NONE

PERFORMANCE CONSEQUENCES

Extended loss of instrument air

HUMAN INTERFACES

SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with OP-901-502, E1, step 18. Critical steps are denoted by **CRIT**. IA Air Compressor A and associated valves are located in the Turbine Building +15' level, southeast corner.

START TIME_____

---

1. Place IA Compressor A Control Switch to PULL TO LOCK.

CUES: ▪ **Control Switch for IA Compressor A to PULL TO LOCK.** **CRIT**

STANDARDS: ▪ Examinee places Control Switch for IA Compressor A to PULL TO LOCK on IA compressor A Control Panel +15 TB

SAT_____**UNSAT**_____

---

2. Close TCW to IA Compressor A (B), TC-230A(B). **CRIT**

CUES: ▪ **TC-230A is closed**

STANDARDS: ▪ Examinee **(simulates)** attempts to turn TCW to IA Compressor A, TC-230A in the clockwise direction at IA Compressor A+15 TB .

SAT_____**UNSAT**_____

---

3. Close IA Compressor A(B) TCW Outlet, TC-326A(B). **CRIT**

CUES: ▪ **TC-326A is closed**

STANDARDS: ▪ Examinee **(simulates)** attempts to turn IA Compressor A TCW Outlet, TC-326A in the clockwise direction at IA Compressor A+15 TB.

SAT_____**UNSAT**_____

---

4. Open Potable Water to IA Compressor A(B), PW-9017A(B). **CRIT**

CUES: ▪ **PW-9017A. is open**

STANDARDS: ▪ Examinee **(simulates)** attempts to turn Potable Water to IA Compressor A, PW-9017A in the counterclockwise direction at IA Compressor A+15 TB.

SAT_____**UNSAT**_____

---

5. Open Potable Water to IA Compressor A(B) HX Inlet, TC-231A(B). **CRIT**

CUES: ▪ **TC-231A is open**

STANDARDS: ▪ Examinee **(simulates)** attempts to turn Potable Water to IA Compressor A HX Inlet, TC-231A in the Counterclockwise direction at IA Compressor A+15 TB.

SAT_____**UNSAT**_____

---

6. Open IA Compressor A(B) Potable Water Outlet, TC-325A(B). **CRIT**

CUES:
- **TC-325A is open**

STANDARDS:
- Examinee **(simulates)** attempts to turn IA Compressor A Potable Water Outlet, TC-325A in the Counterclockwise direction at IA Compressor A+15 TB.

SAT_____UNSAT_____

---

7. Verify Potable Water flow through IA Compressor A(B) HX by observing flow to respective drain.

CUES:
- **Water is flowing from IA Compressor HX drain**

STANDARDS:
- Examinee verifies Potable Water flowing from IA Compressor HX drain at IA Compressor A+15 TB

SAT_____UNSAT_____

---

8. Place IA Compressor A(B) Control Switch to AUTO AND start IF desired. **CRIT**

CUES:
- **RO at LCP-43 orders IA Compressor placed in AUTO**
- **IA Compressor A is running**

STANDARDS:
- Examinee notifies Operators at LCP-43 that Potable Water is aligned to IA Compressor
- Examinee rotates IA Compressor A Control Switch to AUTO

SAT_____UNSAT_____

---

9. End of task.

STOP TIME _____

Waterford 3 Job Performance Measure

Examinee copy

INITIAL CONDITIONS

1. A Control Room Evacuation is in progress
2. The Turbine Cooling Water system is not available

INITIATING CUE

You are directed by the Shift Manager to align Potable Water to Instrument Air Compressor A

Waterford 3 Job Performance Measure

RETURNING A, B, OR AB BATTERY CHARGERS TO SERVICE

Site W3 **Job** NAO **System / Duty Area** DC **Mode** NORM **Number** 7

Revision 6 8/3/00

Approval

Estimated Time 15 Minutes

Time Critical No **Critical Time** **Alternate Path** Yes

References

NUMBER
OP-006-003 8.1

NRC KA Number

NUMBER		
2-1-20	4.3	4.2
3.6-063-A4.02	2.8*	2.9
3.6-063-K1.03	2.9	3.5

Evaluation Methods

METHOD
PERFORM
SIMULATE

Trainee **Evaluator**

Observer **Date**

Satisfactory ☐ **Unsatisfactory** ☐

Waterford 3 Job Performance Measure

INITIAL CONDITIONS

1. Maintenance has been completed on BATTERY CHARGER DC-EBC-1A
2. The remote power supply breakers for BATTERY CHARGER DC-EBC-1A were left open after maintenance.

INITIATING CUE

The NPO directs you to place BATTERY CHARGER DC-EBC-1A in service.

TERMINATING CUE

1 The battery charger is in service and operating normally.
2. **Faulted:** the battery charger is deenergized and the SM/CRS is Informed.

STANDARD

1. Battery charger DC-EBC-1A has been returned to service.
2. **Faulted**: the operator re-opens the AC and DC isolation breakers and Informs the SM/CRS.

TOOLS

NONE

SAFETY CONSIDERATIONS

Energized Electrical Equipment

PERFORMANCE CONSEQUENCES

1 Equipment damage
2. Personnel injury
3. Loss of vital instrumentation

HUMAN INTERFACES

1 NPO
2. SM/CRS

SKILLS / KNOWLEDGES

NONE

INSTRUCTOR NOTES

Waterford 3 Job Performance Measure

Perform the task in accordance with referenced procedure OP-006-003, section 8.1. All components are located in the RAB + 21' MSL, A Switchgear Room along the North wall.

NOTE: This JPM requires opening battery charger doors. Permission is required from the On-shift Shift Manager to open these doors (Ext. 3104).

START TIME _____ Critical steps are denoted by **CRIT**.

---

1. Verify Battery Charger AC isolation breakers for applicable Battery Charger OPEN.

CUES:
- When the operator locates the applicable breaker at the selected Battery Charger **cue the operator that the breaker is OPEN**. (breakers are located inside front panel of the selected Battery Charger)

STANDARDS:
- The Operator locates the 1A Battery Charger (DC-EBC-1A) in the RAB Switchgear Room A.
- The Operator checks that the AC Isolation Breaker of the 1A Battery Charger is OPEN. (DC-EBKR-1161-A1)

SAT____ **UNSAT**_____

---

2. Verify Battery Charger Isolation (DC) Breakers for applicable Battery Charger OPEN.

CUES:
- When the operator locates the applicable breaker at the selected Battery Charger **cue the operator that the breaker is OPEN**. (breakers are located inside front panel of the selected Battery Charger)

STANDARDS:
- The Operator checks that the DC Isolation Breaker of the 1A Battery Charger is Open (DC-EBKR-1A2)

SAT____ **UNSAT**_____

---

3. Verify remote AC Input Supply Breakers for applicable battery charger are closed. **CRIT**

CUES:
- When the operator locates the applicable breaker and demonstrates action to close the breaker, then **cue the operator that the applicable breaker is closed**.

STANDARDS:
- The Operator locates the applicable 480vac Motor Control Center and **(simulates)** closes the correct breaker. (DC-EBKR-311A-14D) (EAST END OF MCC 311A, second row in, second breaker from top)

SAT____ **UNSAT**_____

4. Verify remote DC Input Supply Breakers for applicable battery charger are closed. **CRIT**

CUES:
- When the operator locates the applicable breaker and demonstrates action to close the breaker, then **cue the operator that the applicable breaker is closed**.

STANDARDS:
- The Operator locates the applicable DC distribution panel DC-EPDPA DC and **(simulates)** closes the correct breaker. (DC-EBKR-A-34) (PDP A-DC, right hand section, third breaker from bottom on right facing panel)

SAT____ UNSAT_____

---

5. Set EQUALIZE/FLOAT switch (inside cabinet) to float position.

CUES:
- When the operator locates the EQUALIZE/FLOAT switch inside The Battery Charger cabinet, **cue the operator that the Switch is in FLOAT**.

STANDARDS:
- The Operator locates the EQUALIZE/FLOAT switch.
- The Operator verifies the switch is in the FLOAT position.

SAT____ UNSAT_____

---

6. Place load sharing switch to Off.

CUES:
- When the Operator locates the LOAD SHARING switch on the front panel of the Battery Charger, then **cue the operator That the switch is in OFF.**

STANDARDS:
- The Operator locates the LOAD SHARING switch.
- The Operator verifies the switch is in the OFF position.

SAT____ UNSAT_____

7. Close Battery Charger Isolation (DC) Breaker and check the following: **CRIT**

- DC voltmeter equals battery potential
- NO CHARGE lamp Illuminates
- PHASE FAIL lamp illuminates

CUES:

- When the Operator demonstrates the action to close the DC breaker, then **cue the Operator that the Battery Charger Isolation (DC) breaker is CLOSED**.
- When the Operator locates the DC voltmeter, then **cue the Operator that the voltmeter indication equals battery Potential (~135 vdc).**
- When the Operator locates the NO CHARGE lamp on the Front panel of the Battery Charger, then **cue the Operator That the NO CHARGE lamp is illuminated**.
- When the Operator locates the PHASE FAIL lamp, then **cue The Operator that the PHASE FAIL lamp is ON.**

STANDARDS:

- The Operator locates and **(simulates)** closes the Battery Charger Isolation (DC) breaker.
- The Operator verifies indication of DC voltage and lamp status.

SAT____ UNSAT_____

8. When 25 seconds have elapsed, then close Battery Charger AC isolation Breaker and check the following: **CRIT**

- DC voltmeter remains at battery potential
- NO CHARGE lamp extinguishes
- PHASE FAIL lamp extinguishes

CUES:

- When the Operator locates the Battery charger AC isolation Breaker and demonstrates the action to close it, then **cue the operator that the Battery Charger AC isolation breaker is CLOSED.**
- **(Alternate path):** when the operator locates the DC voltmeter, then **cue the operator that the voltmeter read 148 vdc for a short period and then dropped down to battery potential (~135 vdc).**
- **(Alternate path):** when the operator locates the NO CHARGE lamp, then **cue the operator that the NO CHARGE lamp extinguished for a short period and then illuminated.**
- **(Alternate path):** when the operator locates the PHASE FAIL lamp, then **cue the operator that the PHASE FAIL lamp is extinguished.**
- **(Alternate path):** when the operator locates the HI-V SHUTDOWN lamp, **cue the operator that the HI-V SHUTDOWN lamp is illuminated.**

STANDARDS:

- The operator locates and **(simulates)** closes the battery charger ac Isolation breaker after waiting at least 25 seconds since closing the DC isolation breaker.
- The operator verifies DC voltmeter indication and indicator Status.

SAT____ UNSAT_____

9. (**ALTERNATE PATH**): IF HI-V SHUTDOWN lamp illuminates and output voltage is < 144 vdc, then depress the HIGH VOLTAGE RESET pushbutton located on HV SHUTDOWN CARD inside cabinet. **CRIT**

CUES:
- When the operator locates and resets the HIGH VOLTAGE RESET pushbutton, then **cue the operator that the HI-V SHUTDOWN lamp extinguished for a short period and then reilluminated**.

STANDARDS:
- Examinee Depresses HIGH VOLTAGE RESET pushbutton,
- Examinee identifies that HI-V SHUTDOWN lamp is illuminated

SAT____ UNSAT_____

---

10. (**ALTERNATE PATH**): IF output voltage ≥ 144 VDC or HI-V SHUTDOWN lamp remains illuminated then perform the following: **CRIT**

- Open Battery Charger AC Isolation breaker
- Open Battery Charger DC Isolation breaker

CUES:
- **BATTERY CHARGER AC ISOLATION BREAKER is OPEN**
- **BATTERY CHARGER ISOLATION (DC) BREAKER is OPEN.**

STANDARDS:
- The operator **(simulates)** opens the BATTERY CHARGER AC ISOLATION BREAKER.
- The operator **(simulates)** opens the BATTERY CHARGER ISOLATION (DC) BREAKER.
- The operator notifies SM/CRS of condition.

SAT____ UNSAT_____

---

11. End of Task

STOP TIME_____

Waterford 3 Job Performance Measure

Examinee Copy

INITIAL CONDITIONS

1. Maintenance has been completed on BATTERY CHARGER DC-EBC-1A
2. The remote power supply breakers for BATTERY CHARGER DC-EBC-1A were left open after maintenance.

INITIATING CUE

The NPO directs you to place BATTERY CHARGER DC-EBC-1A in service.

Facility: Waterford 3 Date of Examination: 11/15/04
Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: 1

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. Makeup to the VCT Using the Auto Makeup Mode (Selected Boric Acid Makeup Pump Trips)	D, S, L, A	1
b. PNPO Immediate Operator Actions on CR Evacuation	D, S, A	3
c. Perform Anticipated Transient System Check (DRTS)	D, S, L	7
d. Re-energize A3S From A2 with EDG A Loaded (EDG Trips on Overspeed during Paralleling Operations)	M, C, A	6
e. Return EFW System to Normal After EFAS Actuation	D, S, L	4 (S)
f. Perform Actions on a Recirculation Actuation (Leak on Suction Line)	M, C, L, A	2
g. Place SDC Train A in Service (SDC Suction Valve Closes)	M, S, L, A	4 (P)
h. Align CARS for Containment Pressure Control	D, S	5
Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U		
i. Place a Gas Decay Tank on Decay	N, R	9
j. Line up Potable Water to Instrument Air Compressors during Control Room Evacuation (No Fire)	D, L	8
k. Startup A Safety Related Battery Charger (High Voltage Shutdown)	D, A	6

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: Waterford III Date of Examination: 11/15/04
Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: 1

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. Makeup to the VCT Using the Auto Makeup Mode (Selected Boric Acid Makeup Pump Trips)	D, S, L, A	1
b. PNPO Immediate Operator Actions on CR Evacuation	D, S, A	3
c. Perform Anticipated Transient System Check (DRTS)	D, S, L	7
d. Re-energize A3S From A2 with EDG A Loaded (EDG Trips on Overspeed during Paralleling Operations)	M, C, A	6
e. Return EFW System to Normal After EFAS Actuation	D, S, L	4 (S)
f. Perform Actions on a Recirculation Actuation (Leak on Suction Line)	M, C, L, A	2
g. Place SDC Train A in Service (SDC Suction Valve Closes)	M, S, L, A	4 (P)
h.		
Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U		
i. Place a Gas Decay Tank on Decay	N, R	9
j. Line up Potable Water to Instrument Air Compressors during Control Room Evacuation (No Fire)	D, L	8
k. Startup A Safety Related Battery Charger (High Voltage Shutdown)	D, A	6

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: Waterford 3 Date of Examination: 11/15/04
Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No.: 1

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. Makeup to the VCT Using the Auto Makeup Mode (Selected Boric Acid Makeup Pump Trips)	D, S, L, A	1
b. PNPO Immediate Operator Actions on CR Evacuation	D, S, A	3
c.		
d.		
e. Return EFW System to Normal After EFAS Actuation	D, S, L	4 (S)
f.		
g.		
h.		
Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i. Place a Gas Decay Tank on Decay	N, R	9
j. Line up Potable Water to Instrument Air Compressors during Control Room Evacuation (No Fire)	D, L	8
k.		

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Simulator Scenario
Waterford 3 Nuclear Plant
Simulator Scenario Number: E-NRC04-1

Author: Arthur Vest
Approval: Arvel J. Hall
Revision Number: 0
Estimated Time: 60 Minutes
Initial Conditions: 100%, EOC (IC-20)

Scenario Description:

The plant is at 100% reactor power. A step change of RCP 1A ARRD temperature from 175 ºF to 195 ºF occurred two days ago. Charging Pump AB has been OOS for 24 hours to replace the internal check valves. CS pump A has been OOS for 74 hrs to replace the pump impeller.

After the crew takes the shift, the in-service PZR pressure control (PPC) channel fails low. The crew should implement OP-901-120, PZR Pressure Control Malfunction, Subsection E0 and E1.

After transferring to the non-faulted PPC Channel, a SG1 Narrow Range control channel instrument fails low causing the controllers for Feedwater Control System (FWCS) 1 to shift to manual. The crew should implement OP-901-201, Steam Generator Level Control Malfunction, and control S/G 1 level manually. The Main and Startup Feed Regulating Valves must be placed in a Reactor Trip Override (RTO) condition manually post-trip.

After the crew addresses OP-901-201, RCP 1A Anti Reverse Rotation Device (ARRD) temperature starts to rise. The crew should implement OP-901-130, RCP Malfunction, Subsections E0 and E6. The RCP ARRD failure requires the crew to perform a plant shutdown in accordance with OP-010-005.

After the crew satisfies the reactivity manipulation, CEAs 1 and 2 drop into the core. The PNPO (RO) should manually trip the reactor per OP-901-102, CEA or CEDMCS Malfunction. Tripping the reactor requires implementation of OP-902-000, Standard Post Trip Actions.

The Main Turbine fails to automatically trip on the reactor trip requiring the SNPO (BOP) to manually trip the Main Turbine. Failure to trip the turbine manually in a timely manner will result in a Main Steam Isolation signal (MSIS). The crew should diagnose to OP-902-001, Reactor Trip Recovery procedure.

After the crew enters OP-902-001, a Feedwater Line Break occurs on S/G 1. The crew should re-diagnose and implement OP-902-004, Excess Steam Demand Recovery Procedure.

The scenario may be terminated when the crew has taken action to stabilize RCS temperature and pressure or at the discretion of the lead examiner.

Scenario Notes:

1. Reset Simulator to IC-20.
2. Verify Scenario Malfunctions, Remotes, and Overrides are loaded
    a. Remotes and Overrides are as follows:
        1. CS Pump A Bkr – CSR11 Rackout
        2. Charging Pump A/B Breaker – CVR22 Rackout
        3. CS117A, Shutdown HX A Outlet Valve – CSR04 0%
        4. CS118A, SDC HX A Outlet Isol To RWSP – CSR05 0%
        5. CS101A, CS Pump A Suct Isol Vlv - CSR07 Closed
        6. CS111A, CS Pump A Disc Isol Vlv – CSR15 Closed
        7. H_K08, CEA Disabled – On ET3
    b. Malfunctions
        1. RC33A, RCP 1A ARRD Temperature – LOAD - 195°F
        2. RP03, REACTOR TRIP WITH NO AUTO TURBINE TRIP – LOAD - TRUE
        3. Malfunctions per Scenario Time Line

(Continued Next Page)

3. Danger Tag and place in OFF:
    a. CS Pump A C/S on CP-8
    b. Chg Pump A/B C/S on CP-4
4. Ensure Protected Train B sign is placed in SM office window.
5. Place B/U Charging Pump Selector Switch in A-B.
6. Ensure Large PTID computer point for RCP 1A ARRD Temp on CRT.
7. Ensure Containment Sump Isolation Valves, SP-105 and 106 are open on CP-8
8. Ensure CW Pumps B and D are running.
9. Complete the simulator setup checklist.

EVENT 1 – Pressurizer Pressure Control Channel RC-IPT-0100X Fails Low

1. On Lead Examiner's cue initiate Event Trigger 1.
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 2 – Steam Generator 1 Narrow Range Level Transmitter SG-ILT-1105 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 – RCP 1A Anti Reverse Rotation Device (ARRD) temperature rise

1. On Lead Examiner's cue modify RC33A to 215? ramp 1 min.
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.
3. If System Engineer Duty Plant Manager is called inform Control Room you are monitoring RCP AARD and you recommend following the triggers and guidance in the procedure.
4. If System Engineer Duty Plant Manager is called and asked for guidance, tell the caller to follow the guidance in the procedure steps.
5. If the Turbine Building is contacted to control Condensate Polisher Differential Pressure during the down power inform the caller that you will removes polisher vessels from service as necessary to control DP.

Event 4 & 5- Two CEAs drop/Turbine Fails to Trip Automatically

1. On Lead Examiners cue initiate Event Trigger 3
2. Delete malfunction RC33 to prevent RCP 1A from turning backward if the crew secures it.
3. If RAB sent to CEDMCS Alley, report the CEA disconnects for CEA 1 and 2 are open, no other indications of problems are readily apparent.
4. If WWM or I&C called inform the caller, a team will be sent to CEDMCS Alley.

Event 6- Feedwater Line Break inside Containment

1. On Lead Examiners cue initiate Event Trigger 4
2. If asked to verify no safeties lifting, then inform the caller that no safeties are lifting.

Scenario Timeline:

Event	Malfunction	Time (Min)	Severity	Ramp HH:MM:SS	TUA	TRA	Trigger
1	RX14A	1	0	NA	NA	NA	1
	Pressurizer Pressure Control Channel RC-IPT-0100X Fails Low						
2	SG05A	10	100	00:06:00	NA	NA	2
	Steam Generator 1 Narrow Range Level Transmitter SG-ILT-1105 Fails High						
3	RC33A	20	195-215ºF	00:01:00	NA	NA	NA
	RCP 1A ARRD Temperature Exceeds Plant Shutdown Criteria						
4	RD02A01	45	TRUE	NA	NA	NA	3
	CEA 1 Drops						
5	RD02A02	45	TRUE	NA	NA	NA	3
	CEA 2 Drops						
6	FW38A	55	100%	00:02:00	NA	NA	4
	Feedwater Line Break Inside Containment - Steam Generator 1						

OP Test 1, Scenario 1, Event 1- Pressurizer Pressure Control Channel X Fails Low

Event Description:

The in-service PZR pressure control (PPC) channel fails low. The crew should implement OP-901-120, PZR Pressure Control Malfunction, Subsection E0 and E1.

Event Objectives:

1. Diagnose a failed PPCS Channel in accordance with OP-901-120, Pressurizer Pressure Control Malfunction, Subsection E0.
2. Stabilize pressurizer pressure on alternate control channel in accordance with OP-901-120, Pressurizer Pressure Control Malfunction, Subsection E1.
3. Restore pressurizer heaters to normal alignment.

Event Critical Tasks:

1 None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO	Reports annunciators and indications to CRS. - Pressurizer Pressure HI/LO annunciator (CP-2, Cabinet H, E1) - Pressurizer Pressure Signal Deviation annunciator (CP-2, Cabinet H, F1) - All pressurizer backup heaters energized (CP-2). - Actual RCS pressure and trend. (CP-2 & CP-7)
	CRS	Enters OP-901-120, Pressurizer Pressure Control Malfunction.
	CRS	Uses OP-901-120, Subsection E0 to diagnose to Subsection E1
	PNPO/CRS	Transfer Pressurizer Pressure Control Channel Selector Switch to Y on CP-2
	PNPO/CRS	Verify proper operation of Pressurizer Pressure controller, RC-IPIC-0100 (CP-2), and Pressurizer Pressure being restored to 2250 psia - Monitors Pressurizer Pressure (CP-2, CP-7) to determine that RCS pressure is returning to or being controlled at setpoint (CP-2) - Verify all Backup Heater Banks in AUTO de-energize (CP-2) - Reset Proportional Heater Banks 1 and 2 if actual RCS pressure exceeded 2270 psia (CP-2). The Pressurizer Press Hi/Lo annunciator must be clear for this to be done.

Time:	Position:	Applicant's Actions or Behavior:
	CRS	Refers to RCS Pressure Technical Specification 3.2.8. - Enters Tech Spec if RCS Pressure is determined to have been outside of 2025 and 2275 psia.
	Termination	

OP Test 1, Scenario 1, Event 2 - SG NR Range Level Transmitter SG-ILT-1105 Fails High

Event Description:

S/G 1 Narrow Range control channel instrument fails high causing FWCS 1 controllers to shift to manual. The crew should implement OP-901-201 and control S/G 1 level manually. The crew should place the Startup and Main Feed Reg valves in the RTO position after the Trip.

Event Objectives:

1. Verify feedwater control systems respond to level deviation.
2. Restore and maintain steam generator levels in accordance with OP-901-201, Steam Generator Level Control System Malfunction.

Event Critical Tasks:

1 None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	SNPO	Reports alarms and indications ▪ SG 1 FW Contl Lvl Dev/Pwr Lost on CP-1 Cabinet F, U14 ▪ SG 1 Lvl Hi/Lo on CP-1 Cabinet F, T15 (May be delayed) ▪ SG 1 NR levels are ~ 68% and steady or slowly lowering (CP-1, CP-8) ▪ SG 1 & 2 NR levels are ~ 68% and steady (CP-1, CP-8) ▪ SG-ILR-1105 is rising or has failed high on CP-1 recorder ▪ FWCS 1 controllers in MANUAL for FWPT A, Main Feed Reg Valve 1, and Startup Feed Reg Valve 1 on CP-1 (after 7% deviation between channels)
	CRS	Determines need to enter OP-901-201, Feedwater Control System Malfunction
	CRS	If Reactor Trip occurs, go to OP-902-000, Standard Post Trip Actions.
	SNPO/CRS	Determine any FWCS controllers that are behaving erratically. Place any erratic controllers in manual and control S/G level. ▪ Determines that no FWCS controllers on CP-1 are operating erratically ▪ CRS should give a range to control SG 1 level between 50-70% NR
	SNPO/CRS	Verify both SGFP discharge pressures are matched (CP-1) and greater than S/G pressure (CP-1). ▪ Determines step is met

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Stop Turbine load changes except to match Tave and Tref. ▪ Determines no load changes in progress
	SNPO/CRS	Restore S/G level to 50 - 70% NR by: ▪ Uses FWPT A speed controller (CP-1) in manual to adjust speed or Main Feed Reg Valve 1 controller (CP-1) in MANUAL
	SNPO/CRS	Determine if control channel has failed by checking all of the control channel indications on CP-1. ▪ Determines SG-ILR-1105 has failed high
	SNPO/CRS	If control channel has been determined to have deviated by >7%, verify applicable controllers have shifted to manual. ▪ Verifies FWPT A Speed Controller on CP-1 in MANUAL ▪ Verifies Main Feed Reg Valve 1 Controller in MANUAL ▪ Verifies Startup Feed Reg Valve 1 Controller in MANUAL
	CRS	Determine and correct the cause of the malfunction. ▪ Notifies I&C or Work Week Manager of instrument failure
	TERM	At lead Examiners cue, modify RC33A to 215? with 1 min ramp

OP Test 1, Scenario 1, Event 3 - RCP 1A Anti Reverse Rotation Device (ARRD) temperature rise

Event Description:

RCP 1A Anti Reverse Rotation Device (ARRD) temperature starts to rise from 195ºF to 215ºF. The crew should implement OP-901-130, RCP Malfunction, Subsections E0 and E6. The RCP ARRD failure requires the crew to perform a plant shutdown in accordance with OP-010-005, Plant Shutdown.

Event Objectives:

1. Perform operator actions according to offnormal operating procedure OP-901-130 section E6 RCP anti reverse rotation device (ARRD) Temperature High.
2. Determine need to perform a controlled plant shutdown in accordance with OP-010-005, Plant Shutdown

Event Critical Tasks:

1 None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	CREW	Notify Duty Plant Manager and System Engineer that RCP ARRD temperature is greater than or equal to 203?
	CRS	CRS enters OP-901-130, Subsection E6
	SNPO	If RCP ARRD temperature is greater than or equal to 203? and less than or equal to 210? then lower RCP ARRD temperature by either of the following: ▪ Start Dry Cooling Tower fans (CP-33) ▪ Start ACCW pumps and (associated Wet Cooling Tower Fans) lower ACC-126 A and B controller setpoints (CP-33) NOTE: CCW Temperature should be changed at a rate of less than or equal to 10? in one hour to prevent degradation of the RCP seals NOTE: CCW Temperature of < 75? could lead to Essential Chiller trips on evaporator low refrigerant pressure

Time:	Position:	Applicant's Actions or Behavior:
	PNPO	If RCP ARRD temperature is > 210? and less than or equal to 225? then perform the following: ▪ Start a RCP oil lift pump for RCP 1A on CP-2 to lower ARRD temperature to <210? ▪ When ARRD temperature stabilizes below 210? or 5 minutes of lift oil pump operation has elapsed then secure the RCP 0il lift pump NOTE Do not allow the RCP Oil Lift Pump to exceed five minutes of continuous operation
	CREW	If unable to stabilize ARRD temperature below 210? then commence a controlled Plant Shutdown in accordance with OP-010-005, Plant Shutdown CRS Determines need to perform a controlled shutdown in accordance with OP-010-005.
	CRS/PNPO	Notifies Load Dispatcher prior to power reduction and announces power reduction over plant paging system.
	PNPO	Maintain Tcold 541-558°F during downpower estimate boron addition using Thumbrule or OP-002-005 (~1200 gals) borate to reduce power at rate specified by CRS Performs Direct Boration lineup in accordance with OP-002-005
	PNPO	Perform Boron Equalization per Att. 9.12. ▪ Energizes all Pzr Backup Heaters on CP-2 ▪ Reduce Spray Valve Controller Setpoint by rotating potentiometer on Spray Valve Controller on CP-2 until Spray Valves open ▪ Verifies PLCS maintains RCS pressure at ~ 2250 psia
	PNPO/CRS	Maintains ASI using group 5, 6 or Group P control rods in accordance with Attachment 9.9, Axial Shape Control Guidelines. ▪ CRS provides direction on ASI Control - Preferred groups and CEA insertion limits per TS 3.1.3.6
	SNPO	Reduces Generator load as required when Tave starts to drop to match reference temperature and Tave ▪ SNPO lowers load reference and sets load rate per CRS or PNPO instructions and depresses GO pushbutton on DEH Control Panel on CP-1
	PNPO/SNPO	Verify the value of C24648 [BSCAL SMOOTHING VAL. APPLD (DUMOUT17)], changes to 1. Verify MSBSCAL out of service
	TERMINATION	When Reactivity Manipulation complete at discretion of Lead Examiner initiate event 4

OP Test 1, Scenario 1, Event 4 / 5 - CEA 1 and 2 Drops/Manual Reactor Trip/Main Turbine Fails to Trip Automatically

Event Description:

After the reactivity manipulation is satisfied, CEAs 1 and 2 drop into the core which will require a manual reactor trip. The Main Turbine fails to trip on the reactor trip requiring the SNPO to manually trip the Main Turbine. The Crew should implement OP-902-000, Standard Post Trip Actions.

Event Objectives:

1. Carry out all operator actions, including necessary contingency actions in accordance with OP-902-000, Standard Post Trip Actions, in the event of a reactor trip.
2. Properly diagnose event in progress and transition to appropriate EOP recovery procedure.

Event Critical Tasks:

Establish Reactivity Control	The task is identified by at least one member of the crew. The PNPO manually trips the Reactor within one minute of recognizing two CEAs dropped.

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO	Recognize and report indications of Dropped CEA ▪ CEA 1 and 2 Amber Rod Bottom Lights on CEA Rod Bottom Light Mimic on CP-2 ▪ CEA 1 and 2 Green Lower Electrical Limit Light illuminated on CEDMCS Control Panel on CP-2 ▪ CEAC CRT on CP-2 indicates CEA 1 and 2 inserted in core
	PNPO	Manually Trip the Reactor using Manual Trip Pushbuttons on CP-2 **NOTE: CRITICAL TASK**
	Crew	Enters OP-901-000, Standard Post Trip Actions

	PNPO/CRS	Verify Reactivity Control
		▪ Check reactor power dropping on CP-2 or CP-7
		▪ Check startup rate is negative on CP-2 or CP-7
		▪ Check less than 2 CEAS not fully inserted using
		  ▪ CEAC CRT on CP-2
		  ▪ CEDMCS LEL Lights illuminated on CP-2
		  ▪ CEA Rod Bottom Lights illuminated on CP-2

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Verify Maintenance Of Vital Auxiliaries by: ▪ Checking the main turbine tripped by verifying all valves indicate green at Turbine Mimic on CP-1 ▪ **Manually Trip the main Turbine**: o **Depress TURBINE TRIP and THINK Pushbuttons** ▪ Check the generator tripped by verifying green indication on both Generator Output Breakers and Exciter Field Breaker on CP-1 ▪ Check train A and B station loads are energized from offsite power by: ▪ Voltage available to A1, A2, A3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1 ▪ Voltage available to B1, B2, B3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1 ▪ A and B DC bus indicators on CP-1 read > 105 volts ▪ Vital AC Instrument Bus Indicators on CP-7 read ~ 120 volts
	PNPO/CRS	Verify RCS Inventory Control by: ▪ Checking PZR level 7% to 60% and trending to 33% to 60% on CP-2 ▪ Checks Subcooling Margin greater than or equal to 28 deg. on CP-2
	PNPO/CRS	Verify RCS Pressure Control by: ▪ Checks PZR pressure between 1750 psia and 2300 psia (CP-2, CP-7, PMC or QSPDS) and trending to between 2025 and 2275 psia or ▪ If PZR pressure is less than 1684 psia, the operator verifies that SIAS and CIAS (CP-7) initiate or performs manual initiation (CP-7 or CP-8) ▪ If PZR pressure is less than 1621 psia, the operator verifies no more than two RCPs are operating ▪ Starts a lift oil pump for RCPs to be secured at CP-2 ▪ Secures a RCP in Loop 1 and Loop 2 at CP-2 ▪ If PZR pressure is less than minimum RCP NPSH of App. 2A (curve located on CP-6) the operator secures all RCPS. ▪ Starts a lift oil pump for RCPs to be secured on CP-2 ▪ Secures all RCPs at CP-2
	PNPO/CRS	Verify Core Heat Removal by: ▪ Checking at least one RCP operating on CP-2, ▪ Operating loop delta-T less than 13 deg. F, and ▪ RCS Subcooling (CP-2) greater than or equal to 28 deg. F. (may be N/A for LOCA event)

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Check RCS Heat Removal by: ▪ Checking at least one S/G is both 15-80% NR (CP-1 or CP-8) and Main Feedwater is available to restore level or ▪ Verify EFW is available to restore level in at least one S/G. ▪ EFAS-1 or EFAS-2 actuation occurred if < 27.4% NR (PPS ROM lights extinguished CP-7) ▪ EFW pumps operating (CP-8) if EFAS-1 or 2 actuated
	PNPO/SNPO/C	Check RCS Tc (CP-2 or CP-7) is 535-555 deg. F or ▪ If Tc is > 555 deg. 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 535-555 deg. F. ▪ If Tc is < 535 deg. F then verify feed flow (MFW-CP-1 or EFW-CP-8) is not excessive and verify SBCS or ADVs are restoring RCS Tc 535-555 deg. F ▪ If Tc is < 500 deg. F verify no more than 2 RCPs operating on CP-2
	SNPO/CRS	Check S/G pressure 925-1050 psia (CP-1 or CP-7) or ▪ If S/G press < 925 psia verify steam bypass valves and ADVs are closed. ▪ If S/G press less than or equal to 764 psia verify MSIS is initiated. ▪ if S/G press > 1050 psia verify SBCs or ADVs are restoring S/G press to < 1050 psia
	SNPO/CRS	Check FWCS in Reactor Trip Override (CP-1)by ▪ Checking Main Feed Reg Valves are closed, ▪ Startup Feed Reg Valves are 13-21% open, and ▪ Operating Feed Pumps are 3800 to 4000 rpm or ▪ Manually operate feedwater system to restore level in at least one S/G to 50-70% NR.(N/A if MSIS is initiated) ▪ **SNPO must manually place SG 1 FWCS Valves to the RTO Position due to the controllers being in manual**
	SNPO/CRS	Reset Moisture Separator Reheaters ▪ Check the Temp Control Valves closed (Reheat Control Panel CP-1) (N/A if MSIS is initiated)

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/CRS	Verify Containment Isolation by ▪ Checking Containment pressure (CP-7 or CP-8) < 16.4 psia, ▪ Check that no Containment Area rad monitors (RMS CRT/CP-14/PMC) are in alarm or show an unexplained rise in activity, and ▪ Check that no steam plant rad monitors (RMS CRT/CP-14/PMC) alarm or show an unexplained rise in activity. ▪ If Containment pressure is greater than or equal to 17.1 psia verify CIAS, SIAS, and MSIS (CP-7) initiate or manually initiate each actuation (CP-7 or CP-8).
	SNPO/PNPO/C	Verify Containment Temperature And Pressure Control And Containment Combustible Gas Control by ▪ Verifying Containment Temperature (CP-18 or QSPDS) less than or equal to 120 deg. F and Containment pressure is < 16.4 psia or ▪ Verify at least 3 Containment Fan Coolers (CP-18) operating. ▪ If Containment press is greater or equal to 17.1 psia verify all CFCs are operating in emergency mode. o Verifies 4 CFCs operating in slow speed ▪ If Containment pressure is greater than or equal to 17.7 verify CSAS is initiated, all available CS pumps are delivering > 1750 gpm, and secure all RCPs.
	CRS	Determines whether all Safety Function Acceptance Criteria were met and no contingencies were taken: ▪ If answer is Yes CRS goes to OP-902-001, Reactor Trip Recovery ▪ **If answer is NO then CRS performs diagnostics flowchart OP-902-009, Appendix 1**
	TERM	Crew diagnoses a Reactor Trip Event and transitions to OP-902-001

OP Test 1, Scenario 1, Event 6 – Feedwater Break inside Containment

Event Description:

After the crew has transitioned to OP-902-001, a Feedwater Break occurs on S/G 1 inside containment. The scenario may be terminated after the crew takes action to secure feeding SG 1 with EFW and take action to stabilize RCS temperature and pressure.

Event Objectives:

1 Verify the existence/location of an excess steam demand.

2 Ensure the reactor is maintained in a shutdown condition.

3 Ensure the conditions for pressurized thermal shock are minimized.

4 Mitigate the consequences of an excess steam demand by properly utilizing OP-902-004, Excess Steam Demand Recovery Procedure.

Event Critical Tasks

1	Establish RCS Temperature Control	The task is identified by at least one member of the crew. The SNPO takes action to stabilize RCS temperature within the limits of the PT curve following blowdown of the affected SG.
2	Establish RCS Pressure Control	The task is identified by at least one member of the crew. The PNPO takes action to stabilize RCS pressure within the limits of the PT curve following blowdown of the affected SG. The pressure differential across the SG tubes will be < 1600 psid.
3	Stop All RCPs	The task is identified by at least one member of the crew. The PNPO takes action to stop all RCPs within 3 minutes of a loss of CCW flow or loss of subcooled margin.

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO	Reports RCS Pressure, Temperature and Pressurizer level lowering
	CRS	Re-diagnoses event and enters OP-901-004, Excess Steam Demand
	CRS	Confirm diagnosis ▪ CRS directs STA to perform safety function status check list ▪ CRS notifies Chemistry to sample both S/Gs for activity
	CREW	Announce the event using plant page
	CRS	Directs SM to Refer to Emergency Plan
	CRS	Implements Placekeeper and records time of Reactor Trip

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/CRS	If PZR pressure < 1684 psia verify SIAS initiated, ▪ SIAS lights off on PPS ROM on CP-7 ▪ SIAS Initiation Alarms on CP-2
	PNPO/SNPO/CRS	If SIAS initiated, ▪ LPSI and HPSI pumps started, ▪ Injection flow is acceptable per OP-902-009, Appendix 2 ▪ available charging pumps (2) are running
	PNPO/SNPO/CRS	Verify MSIS actuation ▪ MSIS lights off on PPS ROM on CP-7 ▪ MSIS Initiation Alarms on CP-2 ▪ Both Main Steam Isolation Valves indicate closed on CP-8 ▪ Both Main Feed Isolation Valves indicate closed on CP-8
	PNPO/CRS	If Pzr press < 1621 psia and SIAS is actuated verify no more than 2 RCPs (CP-2) operating. If PZR PRESS does not meet Appendix 2A secure all RCPs.
	PNPO/SNPO/CRS	Verify RCP operating limits ▪ Verify CCW available to RCPs (CP-2/CP-8) or secure affected RCPs if not restored within 3 minutes. ▪ **If a CSAS is initiated, then Stop ALL RCPs** ▪ if Tc >500 deg. F, verify no more than 2 RCPs operating. **Note: Critical Task**
	SNPO	Protect Main Condenser Only applicable if Loss of Offsite Power has occurred
	SNPO/CRS	Verify proper CCW operation ▪ Verify a CCW Pump (CP-8) is running for Train A and B
	PNPO/SNPO/CRS	Determine most affected SG ▪ Determines SG 1 is most affected SG ▪ SG with lowest pressure (CP-8) ▪ SG with Lowering or 0% WR level (CP-8) ▪ SG with lowest RCS temperatures (CP-2/CP-7)

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Isolate SG 1: ▪ Verify MSIV 1 Closed on CP-8 ▪ Verify MFIV 1 Closed on CP-8 ▪ Verify ADV 1 is Closed by taking controller on CP-8 to MANUAL and verifying 0% output ▪ Verify EFW-228A SG 1 Primary isolation valve closed on CP-8 ▪ Verify EFW-229A SG 1 Backup isolation valve closed on CP-8 ▪ Close MS-401A on CP-8 ▪ Verify MS-120A and MS-119A Main Steam Line 1 Drains are closed on CP-8 ▪ Verify SG 1 Blowdown Isolation Valves BD-102A and BD-103A are closed on CP-8 ▪ Notifies NAO to verify locally safeties not lifting on SG 1
	PNPO/SNPO/CRS	Verify correct SG isolated ▪ Isolated SG with lowest pressure (CP-8) ▪ Isolated SG with Lowering or 0% WR level (CP-8) ▪ Isolated SG with lowest RCS temperatures (CP-2/CP-7)
	PNPO/SNPO/CRS	Stabilize RCS temperature and pressure using SG 2 when RCS Pressure (CP-2/CP-7/QSPDS/PMC) starts to rise or CET Temperatures (CP-7/QSPDS/PMC) start to rise ▪ **SNPO depresses MANUAL pushbutton on ADV 2 controller on CP-8 and raises output to open ADV 2** ▪ **SNPO manually initiates EFAS 2 by all EFAS 2 actuation switches on CP-7 and CP-8 to ACTUATE** ▪ **SNPO depresses MANUAL pushbutton on Primary or Backup EFW Flow Controller for SG 2 on CP-8 and raise output to initiate EFW Flow to SG-2** ▪ **PNPO uses Normal (CP-2) and/or Auxiliary Spray (CP-4) to stabilize RCS pressure (CP-2/CP-7/QSPDS/PMC) between 1500 and 1600 psia** ▪ SNPO throttles or stops HPSI flow if throttle criteria of Appendix 13 are met and CRS concurs **NOTE: These Steps are Critical** **These actions may be accomplished with App. 13, OP-902-009 or Step 15 OP-902-004**
	TERMINATION	The scenario may be terminated when actions to stabilize RCS temperature and pressure have been addressed.

Simulator Scenario
Waterford 3 Nuclear Plant
Simulator Scenario Number: E-NRC04-2

Author: Arthur Vest
Approval: Arvel J. Hall
Revision Number: 0
Estimated Time: 60 Minutes
Initial Conditions: 100%, EOC (IC-30)

Scenario Description:

The plant is at 100% reactor power. A step change of RCP 1A ARRD temperature from 175 ºF to 195 ºF occurred two days ago. Charging Pump AB has been OOS for 24 hours to replace the internal check valves. CS pump A has been OOS for 74 hrs to replace the pump impeller.

After the crew takes the shift, SUT A fails requiring operability evaluation of AC offsite circuits. The crew should enter 3.8.1.1.a and 3.8.1.1.d, perform OP-903-066 within one hour and verify all required Train B components and EFW Pump AB operable.

After the crew has evaluated Tech Specs the in-service letdown flow control valve fails closed. The Crew should implement OP-901-112 and place the alternate flow control valve in service.

After the crew implements OP-901-112, Containment Fan Cooler A trips. The crew should start the idle Containment Fan Cooler IAW OP-008-003, Containment Cooling System Subsection 6.1 and evaluate TS 3.6.2.2, 3.6.1.5, and 3.4.5.1.

After the crew places the idle Containment Fan Cooler in service RCP 2A shaft seizure occurs. This results in generating automatic trip signals and a loss of the offsite power source to Train A Busses. The reactor fails to trip automatically or by manual push buttons, however Diverse Reactor Trip Pushbuttons work.

On the trip EDG A output breaker fails to close automatically. The BOP should manually close the EDG A output breaker. Startup Feed Reg Valve 1 fails closed on the trip requiring BOP to take manual control of Main Feed Reg Valve 1 to restore S/G 1 level. Charging Pump A fails to auto start post trip, requiring the RO to manually start Charging Pump A. The Crew should implement OP-902-000, Standard Post Trip Actions. During the verification of Standard Post Trip Actions a Main steam line Break outside containment occurs on S/G 2. The Crew should diagnose to OP-902-004 Excess Steam Demand Recovery.

After the Crew diagnoses to OP-902-004 and S/G dryout occurs, a Steam Generator Tube Rupture occurs in S/G 2. The Crew should implement OP-902-008.

The scenario may be terminated when the crew has taken action to Stabilize RCS temperature and pressure or at the discretion of the lead examiner.

Scenario Notes:

1. Reset Simulator to IC-30.
2. Verify Scenario Malfunctions, Remotes, and Overrides are loaded
    a. Remotes and Overrides are as follows:
        1. CS Pump A Bkr – CSR11 Rackout
        2. Charging Pump A/B Breaker – CVR22 Rackout
        3. CS117A -Shutdown HX A Outlet Valve – CSR04 0%
        4. CS118A, SDC HX A Outlet Isol To RWSP – CSR05 0%
        5. CS101A, CS Pump A Suct Isol Vlv - CSR07 Closed
        6. CS111A, CS Pump A Disc Isol Vlv – CSR15 Closed
    b. Malfunctions
        1. RC33A, RCP 1A ARRD Temperature – LOAD - 195°F
        2. RP01A-D, RPS AUTO TRIP FAILURE – LOAD – TRUE
        3. RP02A-D, RPS MANUAL PUSHBUTTON – LOAD – TRUE
        4. Malfunctions per Scenario Time Line

(Continued next page)

3. Danger Tag and place to OFF:
    a. CS Pump A C/S on CP-8 control switch to OFF
    b. Chg Pump A/B C/S on CP-4
4. Ensure Protected Train B sign is placed in SM office window.
5. Place B/U Charging Pump Selector Switch in A-B.
6. Place Large PTID for RCP 1A ARRD Temp on CRT
7. Ensure CW Pumps B and D are running.
8. Ensure SP-105 and SP-106, Containment Sump Isolations are open
9. Complete the simulator setup checklist.

EVENT 1 - Startup Transformer A Failure

1. On Lead Examiner's cue initiate Event Trigger 1.
2. If TB watch sent to investigate SUT A alarms report flags on SUT A Differential Current, Transformer Ground, and SUT Sudden Pressure relays.
3. If TB watch sent to the Transformer report that there is evidence that the transformer relief lifted, but is not lifting at this time.
4. If Outside watch dispatched to investigate Switching Station Trouble alarm report that you will investigate.
5. If Work Week Manager or Electrical Maintenance is contacted, inform the caller that a team will be sent to the SUT.

EVENT 2 - In-service Letdown flow Control Valve Fails Closed

1. On Lead Examiner's cue initiate Event Trigger 2.
2. When called as RAB Place the Alternate flow Control Valve in service using the following remotes:
    a. CVR02, CVC-111B LTDN FCV INLET ISOL - 100% @ 1 minute ramp
    b. CVR01, CVC-111A LTDN FCV INLET ISOL - 0% @ 1 minute ramp

EVENT 3- Containment Fan Cooler A Failure

1. On Lead Examiner's cue initiate Event Trigger 3
2. If called as RAB to investigate Brkr 317A inform that CFC A breaker is in trip free condition.
3. If WWM called inform the caller work package will be assembled and team sent to Control room

EVENT 4 - RCP 2A Shaft Seizure/Reactor Trip required

1. On Lead Examiner's cue initiate Event Trigger 4.
2. If the TB watch is sent to verify MSR TCVs, report that all MSR TCVs are closed.

EVENT 5- Main Steam Line 2 Break Outside Containment

1. On Lead Examiner's cue initiate Event Trigger 5
2. If called to verify Safeties not lifting on SG 2, report that no safeties are lifting but a steam plume is still issuing from the west MSIV area.

EVENT 6- Steam Generator Tube Rupture in SG 2 Concurrent with MSLB on SG 2 Outside Containment

1. On Lead Examiner's cue initiate Event Trigger 6
2. If called as Chem to sample SG for activity and boron inform sample will be taken

Scenario Timeline:

Event	Malfunction	Time (Min)	Severity	Ramp HH:MM:SS	TUA	TRA	Trigger	
	CV02A	LOAD	TRUE	NA	NA	NA	SETUP	
	CHARGING PUMP A FAIL TO START							
1	EG12A1	LOAD	TRUE	NA	NA	NA	SETUP	
	EDG A OUTPUT BREAKER FAILS TO CLOSE							
2	ED02C	1 MIN	TRUE				1	T3811
	SUT A TRANSFORMER FAILURE							
3	CV30A2	10 MIN	TRUE				2	A112,e2
	LETDOWN FLOW REGULATOR VALVE A FAILS CLOSED							
4	CH01A	20 MIN	TRUE				3	AR002,
	CONTAINMENT FAN COOLER FAILS OFF							
5	RC03C	25 MIN	TRUE				4	E000
	RCP 2B SHAFT SEIZURE							
5	FW20A2	25	TRUE	NA	NA	NA	4	A201,e5
	STARTUP FEED REG VALVE FAILS CLOSED - STEAM GENERATOR 1							
5	MS13B	35	25%	NA	NA	NA	5	E004
	MAIN STEAM BREAK OUTSIDE CONTAINMENT SG 2							
6	SG01B	45	10%	NA	NA	NA	6	E008,E0 SGTR
	STEAM GENERATOR TUBE RUPTURE S/G 2							

OP Test 1, Scenario 2, Event 1 - Startup Transformer A Failure

Event Description:

After the crew takes the shift, SUT A fails requiring operability evaluation of AC offsite circuits. The crew should enter 3.8.1.1.a and 3.8.1.1.d, perform OP-903-066 within one hour and verify all required Train B components and EFW Pump AB operable.

Event Objectives:

1. Evaluate the effects of the transformer failure on plant operations.
2. Evaluate Technical Specifications to determine and implement required actions.

Event Critical Tasks:

None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	SNPO	Identify Startup Transformer A failure by verifying annunciator response procedures and breaker indications on CP-1. - SUT A to Bus A2 Feeder Breaker Open - SUT A to Bus A1 Feeder Breaker Open - SUT A Motor Operated Disconnect Open - Generator Output Breaker A Open - PMC alarms for SUT A Differential Current, Sudden Pressure, and Ground - Switching Station Trouble Annunciator - S/U XFMR A 86 Trip/Trouble
	CRS	Review Technical Specification 3.8.1.1 and determine the following: - 3.8.1.1.a applies - OP-903-066 must be performed within one hour
	SNPO	Perform OP-903-066, Electrical Breaker Alignment Check.
	CRS	Notify Electrical Maintenance or Work Week Manager of failure.
	Termination	Termination point for event

OP Test 1, Scenario 2, Event 2 - In-service Letdown flow Control Valve Fails Closed

Event Description:

When the crew evaluates Tech Specs, the in-service Letdown flow Control Valve fails closed. The crew should implement OP-901-112, Charging or Letdown Malfunction and place the Alternate Letdown flow Control Valve in service and restore Letdown to automatic operation.

Event Objectives:

1. Adjust letdown flow in manual, in the event of a letdown malfunction.
2. Locate and isolate leaks and/or faulted letdown system components in accordance with OP-901-112, Charging or Letdown Malfunction.
3. Place available standby components in service.

Event Critical Tasks:

None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO	Reports alarms and indications to CRS. - Letdown HX Outlet Pressure Lo annunciator on CP-4 - Letdown Flow Hi/Lo Annunciator on CP-4 - Flow output on Letdown Flow Controller RC-IHIC-0110 on CP-4 rising - Letdown Flow indicator on CP-4 indicates 0 gpm - In-service Letdown flow Control Valve CVC-113A shows closed (green) on CP-4 with output of the Letdown Back Pressure controller at 100%
	CRS	Determines need to implement OP-901-112, Charging Or Letdown Malfunction
	CRS	Determines need to implement Subsection E2, Letdown Malfunction.
	PNPO/CRS	Operate Charging Pumps (CP-4) as necessary to maintain Pressurizer Level IAW Attachment 1. - Determines minimum level for operation is between 43-47% - If level falls below minimum level o Trip the reactor o Manually initiate SIAS o Go to OP-902-000, Standard Post Trip Actions
	PNPO/CRS	Determine no letdown leak exists.

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/CRS	If the in service Letdown Flow Control valve (CVC 113A) OR (CVC 113B) is NOT controlling, THEN place standby Letdown Flow Control valve in service as follows: ▪ IF restoring Letdown, THEN verify at least one charging pump in operation. ▪ IF necessary to maintain Letdown Backpressure, THEN Letdown Backpressure Controller (CVC-IPIC-0201) may be controlled in MAN. ▪ Place Letdown Flow Control Valve Selector switch to BOTH. ▪ Has local operator verify open standby Letdown Flow Cntrl Vlv A(B) Outlet Isolation (CVC 114A) OR (CVC 114B). ▪ Has local operator slowly open standby Letdown Flow Control Valve Inlet Isolation (CVC 111A) OR (CVC 111B). ▪ Has local operator slowly close in service Letdown Flow Control Valve Inlet Isolation (CVC 111A) OR (CVC 111B). ▪ Has local operator close in service Letdown Flow Cntrl Vlv A (B) Outlet Isolation (CVC 114A) OR (CVC 114B). ▪ Position Letdown Flow Control Valve Selector switch to select operable flow control valve placed in service. ▪ IF letdown is still in service and Letdown Flow Control valve operates properly, THEN place Letdown Flow Controller (RC-IHIC-0110) in AUTO.
	PNPO/CRS	If Letdown has been secured and all malfunctions found and corrected, restore Charging and Letdown in accordance with OP-002-005, Chemical and Volume Control.
	Termination	This event may be terminated after The Alternate Letdown Flow Control Valve is placed in service or at the Lead Examiner's discretion.

OP Test 1, Scenario 2, Event 3 - Containment Fan Cooler A Failure

Event Description:

After the crew implements OP-901-110 Containment Fan Cooler A trips. The crew should start the idle Containment Fan Cooler IAW OP-008-003, Containment Cooling System Subsection 6.1 and evaluate TS 3.6.2.2, 3.6.1.5, and 3.4.5.1.

Event Objectives:

1. Recognize failure of Containment Fan Cooler
2. Take action to start the standby Containment Fan Cooler.
3. Recognize and implement appropriate Technical Specification LCOs and action statements.

Event Critical Tasks:

None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	SNPO	Report Annunciators and indications to CRS ▪ Trn A Cntmt Cooler Power Lost on CP-33 ▪ CFC A/C Power Lost alarm on PMC ▪ No lights illuminated on Containment Fan Cooler A C/S on CP-18
	CREW	Refer to the appropriate Annunciator Response Procedure ▪ OP-500-002, Control Room Cabinet B
	SNPO	Start the Standby Containment Fan Cooler (CFC C) ▪ Refers to OP-008-003, Containment Cooling, Section 6.4 ▪ Momentarily place Containment Fan Cooler C/S on CP-18 to Start/Fast ▪ Verify CC-807A and CC-823A indicate open (red) on CP-18 ▪ Check Containment Fan Cooler C differential pressure indicates between 5.0 and 8.0 INWC on CCS-IDPR-5154A on CP-18. ▪ Check CCW flow is greater than or equal to 625 gpm on CC-IFI-7570A on CP-18.
	CRS	Send an NAO to CFC A Breaker at MCC 317A to investigate fault
	CRS	Notify Maintenance of failure and request assistance
	CRS	Refer to TS. 3.4.5.1, 3.6.1.5, and 3.6.2.2. ▪ Determines requirements of 3.4.5.1, 3.6.1.5, and 3.6.2.2 are met
	TERM	Event may be terminated after Tech Specs evaluated or at Lead Examiner's discretion

OP Test 1, Scenario 2, Event 4 - RCP 2A Shaft Seizure/Reactor Trip/Loss of Power to Train A Buses/Emergency Boration

Event Description:

After the crew places the idle Containment Fan Cooler in service, RCP 2A shaft seizure occurs, resulting in an automatic reactor trip signal. The Reactor fails to trip automatically or by manual pushbuttons. The Crew should trip the Reactor using DRTS pushbuttons. The trip results in loss of the offsite power source to Train A busses. The Crew should implement OP-902-000 Standard Post Trip actions.

Event Objectives:

1. Carry out all operator actions, including necessary contingency actions in accordance with OP-902-000, Standard Post Trip Actions, in the event of a reactor trip.
2. Properly diagnose event in progress and transition to appropriate EOP recovery procedure.

Event Critical Tasks:

1	Establish Reactivity Control	The task is identified by at least one member of the crew. The PNPO trips the reactor using the Diverse Reactor Trip System (DRTS) pushbuttons within one minute of automatic trips on PPS ROMs (CP-7)

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	Crew	Crew notes DNBR Lo, LPD Hi and RCS Flow Lo automatic trip signals on PPS ROMs (CP-7) and identifies need to trip Reactor and go to OP-902-000, Standard Post Trip Actions.
	PNPO/CRS	Verify Reactivity Control ▪ Check reactor power dropping on CP-2 or CP-7 o **Trips reactor by depressing both DRTS Pushbuttons on CP-2** ▪ Check startup rate is negative on CP-2 or CP-7 ▪ Check less than 2 CEAS not fully inserted using ▪ CEAC CRT on CP-2 ▪ CEDMCS LEL Lights illuminated on CP-2 ▪ CEA Rod Bottom Lights illuminated on CP-2 **NOTE: CRITICAL TASK**

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Verify Maintenance Of Vital Auxiliaries by: ▪ Checking the main turbine tripped by verifying all valves indicate green at Turbine Mimic on CP-1 ▪ Check the generator tripped by verifying green indication on both Generator Output Breakers and Exciter Field Breaker on CP-1 ▪ Check train A and B station loads are energized from offsite power by: ▪ Voltage available to A1, A2, A3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1 ▪ **Verify EDG A starts and output breaker closes. EDG A output breaker must be closed manually** ▪ Voltage available to B1, B2, B3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1 ▪ A and B DC bus indicators on CP-1 read > 105 volts ▪ Vital AC Instrument Bus Indicators on CP-7 read ~ 120 volts
	PNPO/CRS	Verify RCS Inventory Control by: ▪ Checking PZR level 7% to 60% and trending to 33% to 60% on CP-2 ▪ **PNPO notes that Charging Pump A did not start on level deviation and manually starts the Charging Pump** ▪ Checks Subcooling Margin greater than or equal to 28 deg. on CP-2
	PNPO/CRS	Verify RCS Pressure Control by: ▪ Checks PZR pressure between 1750 psia and 2300 psia (CP-2, CP-7, PMC or QSPDS) and trending to between 2025 and 2275 psia
	PNPO/CRS	Verify Core Heat Removal by: ▪ Checking at least one RCP operating on CP-2, ▪ Operating loop delta-T less than 13 deg. F (CP-2, CP-7, QSPDS) and ▪ RCS Subcooling (CP-2) greater than or equal to 28 deg. F.
	SNPO/CRS	Check RCS Heat Removal by: ▪ Checking at least one S/G is both 15-80% NR (CP-1 or CP-8) and Main Feedwater is available to restore level or ▪ Verify EFW is available to restore level in at least one S/G. o EFAS-1 or EFAS-2 actuation occurred if < 27.4% NR (PPS ROM lights extinguished CP-7) o EFW pumps operating (CP-8) if EFAS-1 or 2 actuated
	PNPO/CRS	Check RCS Tc (CP-2 or CP-7) is 535-555 deg. F

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Check S/G pressure 925-1050 psia (CP-1 or CP-7)
	SNPO/CRS	Check FWCS in Reactor Trip Override (CP-1) by ▪ Checking Main Feed Reg Valves are closed, ▪ Startup Feed Reg Valves are 13-21% open, and ▪ **SNPO notes Startup Feed Reg Valve A is failed closed reports the failure to the CRS and takes action to feed SG 1 using Main Feed Reg Valve A** ▪ Operating Feed Pumps are 3800 to 4000 rpm (minimum speed)
	SNPO/CRS	Reset Moisture Separator Reheaters ▪ Checks the Temp Control Valves closed (Reheat Control Panel CP-1)
	PNPO/CRS	Verify Containment Isolation by ▪ Checking Containment pressure (CP-7 or CP-8) < 16.4 psia, ▪ Check that no Containment. Area rad monitors are in alarm or show an unexplained rise in activity, and ▪ Check that no steam plant rad monitors alarm or show an unexplained rise in activity.
	SNPO/PNPO/CRS	Verify Containment Temperature And Pressure Control And Containment Combustible Gas Control by ▪ Verifying Containment Temperature (CP-18 or QSPDS) less than or equal to 120 deg. F ▪ Verify Containment pressure is < 16.4 psia (CP-7 or CP-8)
	CRS	Determines whether all Safety Function Acceptance Criteria were met and no contingencies were taken: ▪ If answer is Yes CRS goes to OP-902-001, Reactor Trip Recovery ▪ If answer is NO then CRS performs diagnostics flowchart OP-902-009, Appendix 1
	Termination	Crew diagnoses a Excess Steam Demand Event and transitions to OP-902-004

OP Test 1, Scenario 2, Event 5 - Unisolable MSLB Outside Containment
Event Description:

During the verification of Standard Post Trip Actions a Main steam line Break outside containment occurs on S/G 2. The event may be terminated after the crew takes action to secure feeding SG 1 with EFW and take action to stabilize RCS temperature and pressure.

Event Objectives:

1 Verify the existence/location of an excess steam demand.

2 Ensure the reactor is maintained in a shutdown condition.

3 Ensure the conditions for pressurized thermal shock are minimized.

4 Mitigate the consequences of an excess steam demand by properly utilizing OP-902-004, Excess Steam Demand Recovery Procedure.

Event Critical Tasks

1	Establish RCS Temperature Control	The task is identified by at least one member of the crew. The SNPO takes action to stabilize RCS temperature within the limits of the PT curve following blowdown of the affected SG.

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	CRS	Crew enters OP-902-004 Confirm diagnosis ▪ CRS directs STA to perform safety function status check list ▪ CRS notifies Chemistry to sample both S/Gs for activity
	CREW	Announce the event using plant page
	CRS	Directs SM to Refer to Emergency Plan
	CRS	Implements Placekeeper and records time of Reactor Trip
	PNPO/CRS	If PZR pressure < 1684 psia verify SIAS initiated, ▪ SIAS lights off on PPS ROM on CP-7 ▪ SIAS Initiation Alarms on CP-2
	PNPO/SNPO/CRS	If SIAS initiated, ▪ LPSI and HPSI pumps started, ▪ Injection flow is acceptable per OP-902-009, Appendix 2 ▪ available charging pumps (2) are running

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO/CRS	Verify MSIS actuation ▪ MSIS lights off on PPS ROM on CP-7 ▪ MSIS Initiation Alarms on CP-2 ▪ Both Main Steam Isolation Valves indicate closed on CP-8 ▪ Both Main Feed Isolation Valves indicate closed on CP-8
	PNPO/CRS	If Pzr press < 1621 psia and SIAS is actuated verify no more than 2 RCPs (CP-2) operating. If PZR PRESS does not meet Appendix 2A, Pressure/Temperature Limit Curve, secure all RCPs.
	PNPO/SNPO/CRS	Verify RCP operating limits ▪ Verify CCW available to RCPs (CP-2/CP-8) or secure affected RCPs if not restored within 3 minutes. ▪ if Tc >500 deg. F, verify no more than 2 RCPs operating.
	SNPO/CRS	Verify proper CCW operation ▪ Verify a CCW Pump (CP-8) is running for Train A and B
	PNPO/SNPO/CRS	Determine most affected SG ▪ Determines SG 2 is most affected SG ▪ SG with lowest pressure (CP-8) ▪ SG with Lowering or 0% WR level (CP-8) ▪ SG with lowest RCS temperatures (CP-2/CP-7)
	SNPO/CRS	Isolate SG 2: ▪ Verify MSIV 2 Closed on CP-8 ▪ Verify MFIV 2 Closed on CP-8 ▪ Verify ADV 2 is Closed by taking controller on CP-8 to MANUAL and verifying 0% output ▪ Verify EFW-228B SG 2 Primary isolation valve closed on CP-8 ▪ Verify EFW-229B SG 2 Backup isolation valve closed on CP-8 ▪ Places SG 2 EFW Primary and Backup flow controllers in MANUAL and verify 0% output on CP-8 ▪ Close MS-401B on CP-8 ▪ Verify MS-120B and MS-119B Main Steam Line 1 Drains are closed on CP-8 ▪ Verify SG 2 Blowdown Isolation Valves BD-102B and BD-103B are closed on CP-8 ▪ Notifies NAO to verify locally safeties not lifting on SG 2

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO/CRS	Verify correct SG isolated ▪ Isolated SG with lowest pressure (CP-8) ▪ Isolated SG with Lowering or 0% WR level (CP-8) ▪ Isolated SG with lowest RCS temperatures (CP-2/CP-7)
	PNPO/SNPO/CRS	Stabilize RCS temperature and pressure using SG 1 when RCS Pressure (CP-2/CP-7/QSPDS/PMC) starts to rise or CET Temperatures (CP-7/QSPDS/PMC) start to rise ▪ **SNPO depresses MANUAL pushbutton on ADV 1 controller on CP-8 and raises output to 100%** ▪ **SNPO manually initiates EFAS 1 by all EFAS 1 actuation switches on CP-7 and CP-8 to ACTUATE** ▪ **SNPO depresses MANUAL pushbutton on Primary or Backup EFW Flow Controller for SG 1 on CP-8 and raise output to initiate EFW Flow to SG-2** ▪ PNPO takes action to stabilize RCS pressure between 1500-1600 psia using Auxiliary Spray Valves on CP-4 **NOTE: These Steps are Critical**
	TERMINATION	After the SNPO takes action to stabilize RCS Temperature initiate event 6.

OP Test 1, Scenario 2, Event Number 6 – Steam Generator Tube Rupture in SG 2 Concurrent with MSLB on SG 2 Outside Containment

Event Description:

After the Crew diagnoses to OP-902-004 an S/G Dryout occurs a SGTR occurs in S/G 2 requiring the Crew to implement OP-902-008. The scenario may be terminated after the crew performs steps to isolate SG and commence depressurization

Event Objectives:

1. Recognize entry criteria for the functional recovery procedure and take preliminary actions as required by OP-902-008.
2. Determine the safety function status and prioritize Safety Functions.
3. Respond to the identified safety functions in jeopardy by selecting the proper success paths and implementing them.
4. Respond to the containment isolation safety function not met by selecting the proper success path and implementing it.

Event Critical Tasks

	None	

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	CREW	Crew Identifies indication of Main Steam Line 2 HI Rad levels, rising S/G levels, lowering Pressurizer level, lowering RCS pressure
	CRS	CRS diagnoses to and enters OP-902-008
	CREW	Announce event using plant page
	CRS	Directs SM to Refer to Emergency Plan
	CRS	Implements Placekeeper and records time of Reactor Trip
	PNPO/CRS	If Pzr press < 1621 psia and SIAS is actuated verify no more than 2 RCPs (CP-2) operating. If PZR PRESS does not meet Appendix 2A secure all RCPs.
	PNPO/CRS	Verify RCP operating limits ▪ Stop all if CSAS/loss CCW ▪ < 500 degrees, stop 2 RCPs
	CRS	Direct chemistry to sample both SGs for activity and boron
	SNPO/CRS	Place Hydrogen Analyzers A and B in service (CP-33) ▪ Open Hydrogen Analyzer Containment Isolation Valves ▪ Start Hydrogen Analyzer sample Pumps

Time:	Position:	Applicant's Actions or Behavior:
	CRS	Identify Success Paths Using Resource Assessment Trees and Safety Function Tracking Sheet
	CRS	Direct STA to perform Safety Function Status Checklist and independently prioritize safety functions
	CRS	Prioritize success paths ▪ Determines that CI-1 is first path to be implemented
	TERM	

Simulator Scenario
Waterford 3 Nuclear Plant
Simulator Scenario Number: E-NRC04-3

Author: Arthur Vest
Approval: Arvel J. Hall
Revision Number: 0
Estimated Time: 60 Minutes
Initial Conditions: 100%, BOC (IC-10)

Scenario Description:

The plant is at 100% reactor power. A step change of RCP 1A ARRD temperature from 175 ºF to 195 ºF occurred two days ago. Charging Pump AB has been OOS for 24 hours to replace the internal check valves. CS pump A has been OOS for 74 hrs to replace the pump impeller.

After the crew takes the shift, the PPS Channel B S/G 1 narrow range level instrument fails high. The Crew should evaluate Tech Spec 3.3.1 and 3.3.2 and take required actions to bypass the S/G Level High, S/G level low and S/G Delta-P trips for S/G1 in PPS Channel B within 1 hour.

After the crew bypasses the affected PPS bistables, CEA 20 drops into the core. The crew should implement OP-901-102 CEDMCS or CEA Malfunction, Subsection E0 and E1 and OP-901-501, PMC or COLSS Inoperable.

Within 15 minutes of the dropped CEA, the crew must begin a power reduction to less than 70% IAW OP-901-212, Rapid Plant Power Reduction.

After the crew satisfies the reactivity manipulation, the in-service PZR pressure control channel fails high and Spray Valve B fails open. The crew should refer to OP-901-120, Pressurizer Pressure Control Malfunction and implement Subsections E0, E1 and E3. The Crew should manually trip the reactor and secure RCP 1B.

The Crew should implement OP-902-000, Standard Post Trip Actions in conjunction with OP-901-120. After the crew secures RCP 1B the Spray Valve recloses. The crew should diagnose to OP-902-001, Reactor Trip Recovery.

After the crew enters OP-902-001 a small break LOCA occurs. The crew should transition to OP-902-002, Loss of Coolant Accident Recovery. HPSI pump A will trip on overcurrent when SIAS actuates, HPSI Pump B fails to auto start requiring the BOP to perform a manual start

The scenario may be terminated when the crew has taken action to stabilize RCS temperature and pressure or at the discretion of the lead examiner.

Scenario Notes:

1. Reset Simulator to IC-10.
2. Verify Scenario Malfunctions, Remotes, and Overrides are loaded
    a. Remotes and Overrides are as follows:
        1. CS Pump A Bkr – CSR11 Rackout
        2. Charging Pump A/B Breaker – CVR22 Rackout
        3. CS117A -Shutdown HX A Outlet Valve – CSR04 0%
        4. CS118A, SDC HX A Outlet Isol To RWSP – CSR05 0%
        5. CS101A, CS Pump A Suct Isol Vlv - CSR07 Closed
        6. CS111A, CS Pump A Disc Isol Vlv – CSR15 Closed
        7. H_K08, CEA Disabled – On on ET2
    b. Malfunctions
        1. RC33A, RCP 1A ARRD Temperature – LOAD - 195°F
        2. Malfunctions per Scenario Time Line
3. Danger Tag and place to OFF:
    a. CS Pump A C/S on CP-8
    b. Chg Pump A/B C/S on CP-4

(Continued Next Page)

4. Ensure Protected Train B sign is placed in SM office window.
5. Place B/U Charging Pump Selector Switch in A-B.
6. Ensure CW Pumps B and D are running.
7. Ensure Large PTID computer point for RCP 1A ARRD Temp on CRT.
8. Ensure Containment Sump Isolation Valves, SP-105 and 106 are open on CP-8
9. Complete the simulator setup checklist.

EVENT 1 - SG 1 NR Level Transmitter SG-ILT-1113B Fails High

1. On Lead Examiner's cue initiate Event Trigger 1.
2. If WWM called inform the caller work package will be assembled and team sent to Control room

EVENT 2 - CEA 20 Drops

1. On Lead Examiner's cue initiate Event Trigger 2.
2. If RAB sent to CEDMCS Alley, report the CEA disconnect for CEA 20 is open, no other indications of problem are readily apparent.
3. If WWM or I&C called inform the caller, a team will be sent to CEDMCS Alley.

EVENT 3- Rapid Power Reduction

1. If contacted as the Turbine Building operator to remove Polisher Vessels from report that you will monitor DP and remove vessels as necessary

EVENT 4 - Pressurizer Pressure Control Channel X Fails High/Pressurizer Spray Valve RC-301B Fails Open

1. On Lead Examiner's cue initiate Event Trigger 4.
2. On Lead Examiner's cue or after RCP tripped delete RC14B1 to close Spray valve.
3. If WWM called inform the caller work package will be assembled and team sent to Control Room.

EVENT 5 - Small Break LOCA/HPSI Pump A trips on overcurrent/ HPSI Pump B fails to auto start

1. On Lead Examiner's cue initiate Event Trigger 5.
2. If WWM called inform the caller work package will be assembled and team sent to Control Room.
3. If called as RAB to check HPSI Pump A breaker report OC flags on all phases.
4. If called as RCA to check HPSI Pump A report indication of overheating on motor vents but no fire at this time.

Scenario Timeline:

Event	Malfunction	Time (Min)	Severity	Ramp HH:MM:SS	TUA	TRA	Trigger	
	SI01A		TRUE				SETUP	
	HPSI PUMP A TRIP							
	SI02B		TRUE				SETUP	
	HPSI PUMP B FAIL TO START							
1	SG10B	1	100 %				1	T331
	FAIL SG1 NR LVL XMTR SG-ILT-1113B - SG 1 NR LEVEL TRANSMITTER SG-ILT-1113B FAILS HIGH							
2	RD02A20	10	TRUE				2	A102,e1
	DROPPED CEA – CEA 20 DROPS							
3	NA	25						A212
	RAPID POWER REDUCTION							
4	RX14A	30	100%				4	A120,e1
	PRESSURIZER PRESSURE CONTROL INSTRUMENT FAILURE HIGH							
5	RC14B1	30	TRUE				4	A120,e3
	PZR SPRAY VALVE FAILS OPEN/CLOSED							
6	RC23D	45	.5%				5	E002
	RCS COLD LEG RUPTURE (DBL-END 30" BREAK @100%)							

OP Test 1, Scenario 3, Event 1 - SG 1 NR Level Transmitter SG-ILT-1113B Fails High

Event Description:

After the crew takes the shift, PPS channel B S/G 1 narrow range level instrument fails high. The crew should evaluate TS 3.3.1, 3.3.2, 3.3.3.5, and 3.3.3.6 and bypass S/G level high, low, and DP Bistables for S/G 1 in PPS channel B within 1 hour.

Event Objectives:

1. Recognize failed instrument and verify RPS/CPC bistable functions as expected.
2. Bypass affected bistable channel.

Event Critical Tasks:

None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO	Recognize and report indications of failed channel ▪ Channel B SG 1 NR Level Indication pegged high on CP-8 ▪ RPS Channel B Trouble Annunciator on CP-2 ▪ RPS Channel Trip SG 1 Level Hi annunciator on CP-2 ▪ SG 1 Level Hi Pretrip B/D annunciator on CP-2 ▪ Pretrip and Trip Lights illuminated for SG 1 Level Hi on Channel B PPS ROM on CP-7
	PNPO/CRS	Verify RPS/CPC function bistable respond as expected ▪ Pretrip and Trip Lights illuminated for SG 1 Level Hi on Channel B PPS ROM on CP-7 ▪ No trips or pretrips on SG 1 Level Hi on other 3 channels of PPS ROMs on CP-7
	CRS	Review and/or implement actions required by technical specification section 3.3.1 (RPS), 3.3.3.5 (Remote Shutdown), and 3.3.3.6 (Accident Monitoring) - Enters TS 3.3.1 Action 2 - Enters TS 3.3.2 Action 13 - Determines that following trip bistables in PPS Channel B must be bypassed within 1 hour of time of failure: o SG 1 Level Hi, o SG 1 Level Lo, o SG 1 Delta P Hi - CRS reviews OP-903-013 and TS 3.3.3.5 and determines that minimum requirements are met - CRS reviews OP-903-013 and TS 3.3.3.6 and determines that minimum requirements are met

Time:	Position:	Applicant's Actions or Behavior:
	CRS	Directs SNPO to bypass the following PPS Channel B trip bistables within 1 hour of failure: - SG 1 Level Hi, - SG 1 Level Lo, - SG 1 Delta P Hi
	SNPO	Bypasses affected bistable in PPS Channel B as follows: - Obtains Key 222 from Key locker on side of SNPO Desk - Unlocks and opens front access door at CP-10 Channel B - Unlocks and opens the Bistable Control Panel door in PPS Channel B - Depresses the bistable bypass pushbuttons for the following trip bistables in PPS Channel B and verifies associated bypass lights illuminate on CP-10: o SG 1 Level Hi, o SG 1 Level Lo, o SG 1 Delta P Hi
	TERM	Bypass lights illuminated on BCP and ROM for the desired bistable channels

OP Test 1, Scenario 3, Event 2 - CEA 20 Drops

Event Description:

After the crew bypasses the affected PPS bistable, CEA 20 drops into the core. The crew should implement OP-901-102 CEDMCS or CEA Malfunction, Subsection E0 and E1 and OP-901-501, PMC or COLSS Inoperable. Within 15 minutes of the dropped CEA, the crew must begin a power reduction to < 70% IAW OP-901-212, Rapid Plant Power Reduction.

Event Objectives:

1. Stabilize plant conditions following a dropped CEA.
2. Determine the cause and results of a dropped CEA.
3. Reduce reactor power and withdraw dropped CEA in accordance with Off-Normal Operating Procedure OP-901-102, CEA or CEDMCS Malfunction.

Event Critical Tasks:

None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO	Recognize and report indications of Dropped CEA ▪ CEA 20 Amber Rod Bottom Light on CEA Rod Bottom Light Mimic on CP-2 ▪ CEA 20 Green Lower Electrical Limit Light illuminated on CEDMCS Control Panel on CP-2 ▪ CEAC CRT on CP-2 indicates CEA 20 inserted in core ▪ RCS Tc, Th, and Tave lowering on indicators and recorders on CP-2, CP-7 and PMC ▪ RCS Pressure slowly lowering on CP-2 and CP-7 indicators and recorders ▪ CEA Disabled, CEA Group Minor Deviation, CEA Group Major Deviation Annunciators on CP-2 ▪ COLSS Master annunciator on CP-36 (SNPO) ▪ SG pressure lowering on CP-1 and CP-8 (SNPO)
	CRS	Determines need to enter OP-901-102, CEA or CEDMCS Malfunction.
	PNPO	Place CEDMCS Mode Select Switch to OFF on CEDMCS Control Panel on CP-2.
	CRS	CRS transitions to Section E1, CEA Misalignment Greater Than 7 Inches

Time:	Position:	Applicant's Actions or Behavior:
	Crew	Match TREF with TAVE ▪ CRS directs the SNPO and PNPO to coordinate to match Tave and Tref ▪ SNPO lowers load reference and sets load rate per CRS or PNPO instructions and depresses GO pushbutton on DEH Control Panel on CP-1 ▪ PNPO instructs SNPO to place turbine in Hold when Tave and Tref are matched ▪ Action is taken prior to reactor tripping on SG Pressure Lo
	CRS	Notifies or directs notification of the Duty Plant Manager and Duty Engineer.
	CRS/PNPO	Record time of CEA misalignment.
	CREW	If > 19 inches then: ▪ CRS determines need to commence power reduction by boration of 30% and implement OP-901-212, Rapid Plant Power Reduction ▪ CRS determines need to start downpower within 15 minutes of CEA deviation ▪ CRS declares COLSS inoperable and enters OP-901-501, PMC or COLSS Inoperable ▪ CRS directs STA or board operators to start COLSS offnormal 15 minute logs
	TERM	Termination Point is entry into OP-901-212 to perform downpower

OP Test 1, Scenario 3, Event 3 - Rapid Power Reduction

Event Description:

Within 15 minutes of the dropped CEA, the crew must begin a power reduction IAW OP-901-212, Rapid Plant Power Reduction.

Event Objectives:

1. When plant conditions exist requiring a Rapid Plant Shutdown, implement the steps of OP-901-212 to establish the desired final plant conditions.
2. During a Rapid Plant Downpower, coordinate boration and Main Turbine load reduction to control RCS Tcold B between 541and 558.

Event Critical Tasks:

None

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	CRS	Enters OP-901-212, Rapid Power Reduction
	PNPO	Initiate RCS boration ▪ Performs Direct Boration lineup in accordance with OP-002-005 or aligns for emergency boration at CP-4 per CRS direction. ▪ Estimates ~ 600 gallons of boric acid to reduce power to 70% and sets up Boric Acid Batch Counter at CP-4 for desired amount of Boric Acid
	PNPO	Calculate Spray Nozzle Delta T using: ▪ Pressurizer Water Temperature on CP-2 or PMC ▪ Spray Line Temperatures on CP-2 or PMC
	PNPO	Establish Boron Equalization. ▪ Place all available Pressurizer Backup Heater C/Ss to ON on CP-2. ▪ Lower Potentiometer on Spray Valve Controller on CP-2 until Spray Valves indicate intermediate
	PNPO/CRS	Maintain ASI ▪ CRS provides direction on ASI Control - Preferred groups and CEA insertion limits per TS 3.1.3.6 ▪ PNPO uses CEAs in Manual Group in accordance with CRS direction and OP-004-004, Control Element Drive
	CRS	Notify Dispatcher of load reduction
	SNPO	Initiate MT load reduction to maintain RCS Tcold 541 to 558. ▪ SNPO lowers load reference and sets load rate per CRS or PNPO instructions and depresses GO pushbutton on DEH Control Panel on CP-1

Time:	Position:	Applicant's Actions or Behavior:
	Termination	Terminate after reactivity manipulation is satisfied.

OP Test 1, Scenario 3, Event 4 - Pressurizer Pressure Control Channel X Fails High/Pressurizer Spray Valve RC-301B Fails Open

Event Description:

After the reactivity manipulation is satisfied, the in-service PZR pressure control channel fails high and Spray Valve B fails open. The crew should refer to OP-901-120, Pressurizer Pressure Control Malfunction and implement Subsections E0, E1 and E3 or perform actions per Standard Post Trip Actions. After the crew secures RCP 1B the Spray Valve will close.

Event Objectives:

1. Stabilize pressurizer pressure on alternate control channel according to off-normal operator procedure OP-901-120, Pressurizer Pressure Control Malfunction.
2. Perform actions of OP-901-120, section E3 as necessary for a spray valve failed open.
3. Realign pressurizer spray components for failed closed spray valve(s).

Event Critical Tasks:

1	Establish RCS Pressure Control	The task is identified by at least one member of the crew. The PNPO takes action to secure Reactor Coolant Pump for affected Pressurizer Spray valve prior to subcooled margin dropping below 28 degrees F.

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/CRS	Verifies Pressurizer Pressure Instrument failure by checking X/Y recorder (CP-2) - Determines Channel X is failed high
	PNPO/CRS	Places Pressurizer Spray Controller to MANUAL and adjusts output to 0%
	PNPO/CRS	Transfer Pressurizer Pressure Control Channel Selector Switch to Y on CP-2
	PNPO/CRS	If Pressurizer Pressure Control Channel is failed high, then perform the following: - Transfer Pressurizer Lo Level Cutout Selector Switch to Y (CP-2) - Verify all available Backup Heater Banks energize if RCS Pressure < 2200 psia (CP-2) - Reset Proportional Heater Banks 1 and 2 (CP-2)
	PNPO/CRS	If Spray Valve fails open, Selects Spray Valve A using Spray Valve Selector Switch on CP-2

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/CRS	If Pressurizer Pressure still dropping: - Verify Reactor tripped - Stop Reactor Coolant Pump 1B o Start at least 1 Lift Oil Pump for RCP 1B (CP-2) o Momentarily place RCP 1B C/S to OFF (CP-2) **Note: Booth Operator remove malfunction RC14B1 after RCP 1B is secured**
	Crew	Enters OP-902-000, Standard Post Trip Actions
	PNPO/CRS	Verify Reactivity Control ▪ Check reactor power dropping on CP-2 or CP-7 ▪ Check startup rate is negative on CP-2 or CP-7 ▪ Check less than 2 CEAS not fully inserted using ▪ CEAC CRT on CP-2 ▪ CEDMCS LEL Lights illuminated on CP-2 ▪ CEA Rod Bottom Lights illuminated on CP-2
	SNPO/CRS	Verify Maintenance Of Vital Auxiliaries by: ▪ Checking the main turbine tripped by verifying all valves indicate green at Turbine Mimic on CP-1 ▪ Check the generator tripped by verifying green indication on both Generator Output Breakers and Exciter Field Breaker on CP-1 ▪ Check train A and B station loads are energized from offsite power by: ▪ Voltage available to A1, A2, A3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1 ▪ Voltage available to B1, B2, B3 busses (PMC or CP-1) and feeder breakers from Startup Transformer A indicate red on CP-1 ▪ A and B DC bus indicators on CP-1 read > 105 volts ▪ Vital AC Instrument Bus Indicators on CP-7 read ~ 120 volts
	PNPO/CRS	Verify RCS Inventory Control by: ▪ Checking PZR level 7% to 60% and trending to 33% to 60% on CP-2 ▪ Checks Subcooling Margin greater than or equal to 28 deg. on CP-2

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/CRS	Verify RCS Pressure Control by: ▪ Checks PZR pressure between 1750 psia and 2300 psia (CP-2, CP-7, PMC or QSPDS) and trending to between 2025 and 2275 psia or ▪ If PZR pressure is less than 1684 psia, the operator verifies that SIAS and CIAS (CP-7) initiate or performs manual initiation (CP-7 or CP-8) ▪ If PZR pressure is less than 1621 psia, the operator verifies no more than two RCPs are operating ▪ Starts a lift oil pump for RCPs to be secured at CP-2 ▪ Secures a RCP in Loop 1 and Loop 2 at CP-2 ▪ If PZR pressure is less than minimum RCP NPSH of App. 2A (curve located on CP-6) the operator secures all RCPS. ▪ Starts a lift oil pump for RCPs to be secured on CP-2 ▪ Secures all RCPs at CP-2
	PNPO/CRS	Verify Core Heat Removal by: ▪ Checking at least one RCP operating on CP-2, ▪ Operating loop delta-T less than 13 deg. F, and ▪ RCS Subcooling (CP-2) greater than or equal to 28 deg. F. (may be N/A for LOCA event)
	SNPO/CRS	Check RCS Heat Removal by: ▪ Checking at least one S/G is both 15-80% NR (CP-1 or CP-8) and Main Feedwater is available to restore level or ▪ Verify EFW is available to restore level in at least one S/G. ▪ EFAS-1 or EFAS-2 actuation occurred if < 27.4% NR (PPS ROM lights extinguished CP-7) ▪ EFW pumps operating (CP-8) if EFAS-1 or 2 actuated
	PNPO/SNPO/C	Check RCS Tc (CP-2 or CP-7) is 535-555 deg. F or ▪ If Tc is > 555 deg. 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 535-555 deg. F. ▪ If Tc is < 535 deg. F then verify feed flow (MFW-CP-1 or EFW-CP-8) is not excessive and verify SBCS or ADVs are restoring RCS Tc 535-555 deg. F ▪ If Tc is < 500 deg. F verify no more than 2 RCPs operating on CP-2
	SNPO/CRS	Check S/G pressure 925-1050 psia (CP-1 or CP-7) or ▪ If S/G press < 925 psia verify steam bypass valves and ADVs are closed. ▪ If S/G press less than or equal to 764 psia verify MSIS is initiated. ▪ if S/G press > 1050 psia verify SBCs or ADVs are restoring S/G press to < 1050 psia

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Check FWCS in Reactor Trip Override (CP-1)by ▪ Checking Main Feed Reg Valves are closed, ▪ Startup Feed Reg Valves are 13-21% open, and ▪ Operating Feed Pumps are 3800 to 4000 rpm or ▪ Manually operate feedwater system to restore level in at least one S/G to 50-70% NR.(N/A if MSIS is initiated)
	SNPO/CRS	Reset Moisture Separator Reheaters ▪ Check the Temp Control Valves closed (Reheat Control Panel CP-1) (N/A if MSIS is initiated)
	PNPO/CRS	Verify Containment Isolation by ▪ Checking Containment pressure (CP-7 or CP-8) < 16.4 psia, ▪ Check that no Containment Area rad monitors (RMS CRT/CP-14/PMC) are in alarm or show an unexplained rise in activity, and ▪ Check that no steam plant rad monitors (RMS CRT/CP-14/PMC) alarm or show an unexplained rise in activity. ▪ If Containment pressure is greater than or equal to 17.1 psia verify CIAS, SIAS, and MSIS (CP-7) initiate or manually initiate each actuation (CP-7 or CP-8).
	SNPO/PNPO/C	Verify Containment Temperature And Pressure Control And Containment Combustible Gas Control by ▪ Verifying Containment Temperature (CP-18 or QSPDS) less than or equal to 120 deg. F and Containment pressure is < 16.4 psia or ▪ Verify at least 3 Containment Fan Coolers (CP-18) operating. ▪ If Containment press is greater or equal to 17.1 psia verify all CFCs are operating in emergency mode. o Verifies 4 CFCs operating in slow speed ▪ If Containment pressure is greater than or equal to 17.7 psia, verify CSAS is initiated, all available CS pumps are delivering > 1750 gpm, and secure all RCPs.
	CRS	Determines whether all Safety Function Acceptance Criteria were met and no contingencies were taken: ▪ If answer is Yes CRS goes to OP-902-001, Reactor Trip Recovery ▪ **If answer is NO then CRS performs diagnostics flowchart OP-902-009, Appendix 1**
	TERM	Crew diagnoses a Reactor Trip Event and transitions to OP-902-001

OP Test 1, Scenario 3, Event Number 5 – Small Break LOCA

Event Description:

After the crew diagnoses to OP-902-001, Reactor Trip Recovery a small break LOCA occurs. The crew should transition to OP-902-002, Loss of Coolant Accident Recovery. HPSI pump A will trip on overcurrent when SIAS actuates and HPSI Pump B fails to auto start. The scenario may be terminated after the crew takes action to commence an RCS cooldown.

Event Objectives:

1. Take appropriate actions to mitigate the consequences of a large break loss of coolant accident in accordance with OP-902-002, Loss of Coolant Accident Recovery Procedure.
2. Monitor RCS/Core conditions and verify all critical safety functions are being addressed.
3. Ensure Reactor coolant pumps are secured as required, and the automatic & manual actions required for recirc actuation take place with two minutes of signal.

Event Critical Tasks

1	Stop All RCPs	The task is identified by at least one member of the crew. The PNPO takes action to stop all RCPs within 3 minutes of a loss of CCW flow or loss of subcooled margin.
2	Establish RCS Inventory Control	The task is identified by at least one member of the crew. The SNPO starts HPSI Pump B prior to Reactor Vessel Plenum level dropping below 20%.

Event Action Steps:

Time:	Position:	Applicant's Actions or Behavior:
	Crew	Notes indication of Pressurizer level and pressure lowering
	CRS	Diagnoses to and enters OP-902-002
	CRS	Confirm diagnosis ▪ CRS directs STA to perform safety function status check list ▪ CRS notifies Chemistry to sample both S/Gs for activity
	CREW	Announce the event using plant page
	CRS	Directs SM to refer to Emergency Plan
	CRS	Implements Placekeeper and records time of Reactor Trip

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO/CRS	If PZR pressure < 1684 psia verify SIAS initiated, ▪ LPSI and HPSI pumps started, ▪ **SNPO takes action to manually start HPSI Pump B** **NOTE: CRITICAL TASK** ▪ Injection flow is acceptable per OP-902-009, Appendix 2 ▪ available charging pumps (2) are running OR ▪ perform any of the following: ▪ Verify power to SI pumps. ▪ Verify Cold Leg injection valves open. ▪ Start additional SI pumps until flow is acceptable per app. 2. ▪ Align HPSI AB to replace A or B
	PNPO/CRS	If Pzr press < 1621 psia and SIAS is actuated verify no more than 2 RCPs operating. **If PZR PRESS does not meet Appendix 2A, Pressure/Temperature Limit Curve (located on CP-6) secure all RCPs.** **NOTE: CRITICAL TASK IF CONDITIONS REACHED BEFORE CSAS INITIATES**
	PNPO/CRS	Verify RCP operating limits ▪ Verify CCW available to RCPs (CP-8 and CP-2) or secure affected RCPs if not restored within 3 minutes. ▪ **Secure all RCPs if CSAS is initiated**. ▪ If Tc < 500 deg. F, verify no more than 2 RCPs operating. **NOTE: CRITICAL TASK IF NOT PERFORMED IN PREVIOUS STEP**
	SNPO/CRS	Verify CCW operation by checking a CCW pump (CP-8) is operating for each energized 4 KV safety bus (CP-1) or ▪ If AB bus aligned to same side as faulted CCW pump start the AB CCW pump ▪ If AB bus aligned to opposite Side from faulted CCW pump start the AB CCW pump after the sequencer has timed out. ▪ If CCW flow can not be restored, notify an NAO to pull the overspeed trip device on the affected EDG.

Time:	Position:	Applicant's Actions or Behavior:
	PNPO/SNPO/CRS	Isolate the LOCA by: ▪ Verifying letdown Containment isolations (CP-4) are closed. ▪ Verifying RCS sampling isolations (CP-8) are closed. ▪ Checking CCW AB rad monitor not in alarm (RMS CRT on CP-6) and no Abnormal rise in reading or stop all RCPs and close CCW Containment isolations.
	PNPO/SNPO/CRS	Verify LOCA not outside Containment by checking ▪ RAB rad monitors, ▪ sump levels (CP-8 and PMC) , and waste tank levels (PMC). ▪ If a leak is indicated, locate and isolate the leak and verify CIAS actuated per Appendix 4D.
	SNPO/CRS	Place Hydrogen Analyzers A and B in service (CP-33) ▪ Open Hydrogen Analyzer Containment Isolation Valves ▪ Start Hydrogen Analyzer sample Pumps
	PNPO/SNPO/CRS	IF Containment Pressure is > 17.1 psia (CP-7 or CP-8)or Containment area rad monitors are in hi alarm (RMS CRT CP-6 or CP-14), ▪ Verify CIAS is initiated (CP-7 or CP-8) ▪ Verify all available CFCs are in the EMERGENCY MODE (CP-18) ▪ If any CFC is not operating and Containment pressure is > 17.1 psia notify a NAO to perform OP-902-009, Appendix 22B and close the associated CFC CCW isolation valves.
	SNPO/PNPO/CRS	If Containment pressure is > 17.7 psia: ▪ Verify CSAS is initiated (CP-7 or CP-8) ▪ Verify all operating CS pumps are delivering > 1750 gpm (CP-8). ▪ If any CS pump is not operating and its associated CS-125 valve is open, perform OP-902-009, Appendix 22A and close the associated valve. (not required for CS Pump A – CS-117A and 118A tagged closed per initial conditions)
	SNPO/CRS	IF offsite power has been lost verify MSIVs and Blowdown Containment isolations are closed.

Time:	Position:	Applicant's Actions or Behavior:
	SNPO/CRS	Restore IA ▪ If a TCW pump and CW pump are not running notify NAO to align IA compressors to potable water ▪ If IA pressure < 95 psig dispatch an operator to start all available air compressors ▪ If IA press > 95 psig ensure IA Containment isolation valve ia-909 is open.
	PNPO/SNPO/CRS	Commence RCS Cooldown to less than 350 degrees F
	Termination	(after cooldown has been started the exam lead may terminate the scenario)

Facility: Waterford III Scenario No.: 1 Op-Test No.: 1

Examiners: _____ Operators: _____

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Initial Conditions: IC-20, 100%, MOC

Turnover: RCP 1A Anti – Reverse Rotation Device Temperature experienced a step change from 175ºF to 195ºF two days ago. Charging pump AB has been OOS for 24 hours to replace a cracked pump block. CS Pump A has been OOS for 74 hours to replace the pump impeller.

Event No.	Malf. No.	Event Type*	Event Description
1	RX14A	I-RO/SRO	After the crew takes the shift, the in-service PZR pressure control channel fails low. The crew should implement OP-901-120, PZR Pressure Control Malfunction, Subsection E0 and E1.
2	SG05A	I-BOP/SRO	After transferring to the non-faulted PPCS Channel, a S/G1 Narrow Range control channel instrument fails high causing the controllers for FWCS 1 to shift to manual. The crew should implement OP-901-201, Steam Generator Level Control Malfunction, and control S/G 1 level manually. Post trip, the Main and Startup Feed Reg Valve controllers must be placed in a RTO condition.
3	RC33A	R-RO N-BOP/SRO	After the crew addresses OP-901-201, RCP 1A Anti Reverse Rotation Device (ARRD) Temperature starts rising. The crew should implement OP-901-130, RCP Malfunction, Subsections E0 and E6. The temperature continues to rise until the crew is required to perform a plant shutdown in accordance with OP-010-005, Plant Shutdown.
4	RD02A01 RD02A02	C-RO/SRO	After the crew satisfies the reactivity manipulation two CEAs drop, requiring a manual reactor trip, OP-901-102, CEDMCS or CEA Malfunction, Subsection D, Immediate Operator Actions. After tripping the reactor the crew should go to OP-902-000, Standard Post Trip Actions.
5	RP03	C-BOP/SRO	The Main Turbine fails to trip automatically on the reactor trip, requiring the SNPO to manually trip the Main Turbine.
6	FW38A	M-ALL	After the crew diagnoses to OP-902-001, a Feedwater Line Break occurs inside containment on S/G 1. The crew should transition to OP-902-004, Excess Steam Demand Recovery.

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

Facility: Waterford III Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

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Initial Conditions: IC-30, 100%, EOC

Turnover: FWPT B was secured 3 days ago to determine cause of a high vibration problem. RCP 1A Anti – Reverse Rotation Device Temperature experienced a step change from 175ºF to 195ºF two days ago. Charging pump AB has been OOS for 24 hours to replace a cracked pump block. CS Pump A has been OOS for 74 hours to replace the pump impeller.

Event No.	Malf. No.	Event Type*	Event Description
1	ED02C	C-SRO	After the crew takes the shift, SUT A fails requiring evaluation of AC offsite circuits operability, Technical Specification 3.8.1.1. OP-903-066 must be performed within 1 hour.
2	CV30A2	C-RO/SRO	After the crew evaluates Technical Specification requirements, the in-service letdown flow control valve fails closed. The crew should implement OP-901-112, Charging or Letdown Malfunction, Subsection E0 and E2.
3	CH01A	C-BOP/SRO	After the crew implements OP-901-112, Containment Fan Cooler A trips. The crew should start the idle Containment Fan Cooler in accordance with OP-008-003, Containment Cooling System, Subsection 6.1 and evaluate Tech Spec 3.6.2.2 and 3.4.5.1.
4	RP01A-D RP02A-D RC03C	C-RO/SRO	After the crew places the alternate letdown flow control valve in service, RCP 2A shaft seizure occurs, resulting in automatic reactor trip signals being generated and loss of the offsite power source to Train A safety buses. The reactor fails to trip automatically or by manual pushbuttons, however, Diverse Reactor Trip pushbuttons work.
5	EG12A1 CV02A FW20A2 MS-13B	C-BOP C-RO C-BOP M-All	EDG A output breaker fails to close automatically. The BOP should manually close the EDG A output breaker. Startup Feed Reg Valve 1 fails closed on the trip, requiring the BOP to take manual control of Main Feed Reg Valve 1 to restore S/G 1 level. Charging Pump A fails to auto start post trip, requiring the RO to manually start Charging Pump A. The crew should implement OP-902-000, Standard Post Trip Actions (SPTAs). During the verification of SPTAs a Main Steam Line Break outside containment occurs on S/G 2. The crew should diagnose to OP-902-004, Excess Steam Demand Recovery.
6	SG01B	M-ALL	After the crew diagnoses to OP-902-004 and S/G dryout occurs, a Steam Generator Tube Rupture occurs in S/G 2. The crew should implement OP-902-008.

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

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

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: IC-10, 100%, BOC

Turnover: RCP 1A Anti – Reverse Rotation Device Temperature experienced a step change from 175 ºF to 195 ºF two days ago. Charging pump AB has been OOS for 24 hours to replace a cracked pump block. CS Pump A has been OOS for 74 hours to replace the pump impeller.

Event No.	Malf. No.	Event Type*	Event Description
1	SG10B	I-BOP/SRO	After the crew takes the shift, the PPS Channel B S/G 1 narrow range level instrument fails high. The crew should evaluate TS 3.3.1 and 3.3.2 and take required actions to bypass the S/G Level High, S/G Level Low and S/G Delta-P trips for S/G 1 in PPS Channel B within 1 hour.
2	RD02A20	C-All	After the crew bypasses the affected PPS bistables, CEA 20 drops into the core. The crew should implement OP-901-102, CEDMCS or CEA Malfunction, Subsection E0 and E1. The crew should also implement OP-901-501, PMC or COLSS Malfunction, Subsection E0 and E2..
3	N/A	R-RO N-BOP/SRO	Within 15 minutes of the dropped CEA the crew must start a power reduction in accordance with OP-901-212, Rapid Plant Power Reduction.
4	RX14A RC14B1	C-All	After the reactivity manipulation is satisfied, the in-service PZR pressure control channel fails high. The crew should implement OP-901-120, PZR Pressure Control Malfunction, Subsection E0 and E1. After transferring to the non-faulted PPCS Channel. PZR Spray Valve B remains open requiring implementation of OP-901-120, Subsection E3. This requires manually tripping the reactor and securing at least RCP 1B. After the RCP is secured the Spray Valve closes. The crew should continue in OP-902-000 and diagnose to OP-902-001, Reactor Trip Recovery.
5	SI02B SI01A RC23D	C-BOP M-ALL	After the crew commences implementation of OP-902-001, a Small Break LOCA occurs. The crew should transition to OP-902-002. HPSI pump A trips on overcurrent. HPSI Pump B fails to auto start requiring the BOP to perform a manual start.

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