

Draft Submittal

**BRUNSWICK OCT/NOV 2004**

**EXAM 50-325, 324/2004-301  
OCTOBER 29, 2004 &  
NOVEMBER 2 - 10, 2004**

Draft Admin JPMs



**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM1ROCOO**

**LESSON TITLE:** Perform SRM/IRM overlap per GP-02.

**LESSON NUMBER:** ADM1ROCOO

**REVISION NO:** 0

**RECOMMENDED BY:** Curt Robert  
Instructor/Developer Date

**CONCURRENCE BY:** \_\_\_\_\_  
Line Superintendent/Supervisor Date

**APPROVED BY:** \_\_\_\_\_  
Superintendent/Supervisor Training Date

**SAFETY CONSIDERATIONS:**

1. None.

**SIMULATOR SETUP**

IC-3            BOC

Rx Pwr        0%

Insert malfunction NI059F, SRM/IRM overlap incorrect and then withdraw control rods and establish a reactor period of approximately 120 sec. Allow reactor power to increase until the first SRM reaches approximately  $5 \times 10^5$  cps. Snap as an IC if required for multiple performers.

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**EVALUATOR NOTES:** (Do not read to performer)

1. If this is the first JPM of the JPM set, read the JPM briefing contained in NUREG 1021, Appendix E, or similar to the performer.
  2. **START LOCATION:** Simulator.
  3. **PROVIDE A COPY:** The applicable procedure section **WILL NOT** be provided to the trainee. If performed in the classroom setting the evaluator may provide GP-02, Technical Specifications and TRM **ONLY** if the trainee requests these procedures.
  4. **TIME CRITICAL – BASIS FOR TIME:** This JPM is not a time critical JPM.
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Read the following to the JPM performer.

**TASK CONDITIONS:**

1. Unit One startup is being performed per 0GP-02. Unit One reactor is critical with a period of approximately 120 seconds established. GP-02 has been completed up through Step 5.2.17 and reactor power is currently on range one (1) of the IRMs and rising.
2. Initial pre-startup IRM data recorded in the Reactor Operator's log (Step 5.2.7) as follows:

<b>IRM Channel</b>	<b>Reading*</b>
<b>A</b>	<b>0.5%</b>
<b>B</b>	<b>0.6%</b>
<b>C</b>	<b>0.4%</b>
<b>D</b>	<b>0.4%</b>
<b>E</b>	<b>0.2%</b>
<b>F</b>	<b>0.3%</b>
<b>G</b>	<b>0.1%</b>
<b>H</b>	<b>0.2%</b>

\* All IRM Readings taken on Range One from the digital readout 0-125 scale.

**INITIATING CUE:**

You are directed to perform Step 5.2.18 of GP-02 and continue the plant startup until all SRMs have been withdrawn.

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.  
Comments required for any step evaluated UNSAT.

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

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.

**NOTE:** If desired, the examiner may provide a copy GP-02 to the examinee.

Step 1 - Obtain a current revision of 0GP-02.  
*Current Revision of 0GP-02 obtained and verified, if applicable.*

**SAT/UNSAT\***

Step 2 – Determine SRM/IRM overlap criteria is **ONLY** met for IRM B. No other IRMs have reached a reading 10% of scale before the first SRM reached  $5 \times 10^5$  cps.

*Determined that SRM/IRM overlap criteria is not met for IRMs A, C, E, G, D, F, and H based on not reading 10% of scale.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 3 – **IF** correct SRM/IRM overlap is **NOT** verified, **THEN** the Reactor Engineer shall be notified **AND** Technical Specification LCO 3.3.1.1 referenced.

*Notifies SCO that Reactor Engineer shall be notified **AND** Technical Specification LCO 3.3.1.1 referenced.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

**PROMPT:** If examinee commences step 5.2.19 and withdraws SRM detectors as required to maintain an indicated count rate between  $10^2$  cps and  $5 \times 10^4$  cps then inform the examinee that the JPM is complete.

**TERMINATING CUE:** When SRM/IRM overlap determination has been made and the SCO has been informed of the results, this JPM is complete.

\* Comments required for any step evaluated as UNSAT.

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

**RELATED TASKS:**

215201B101, Verify Correct Overlap Between SRMs And IRMs Per GP-02

**K/A REFERENCE AND IMPORTANCE RATING:**

GEN 2.1.7 3.7/4.4

Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation.

**REFERENCES:**

0GP-02

**TOOLS AND EQUIPMENT:**

None.

**SAFETY FUNCTION** (from NUREG 1123, Rev 2.):

Generic (Administrative)

**REASON FOR REVISION:**

Modified to produce substantively different results for use on 2004 NRC exam.



Determine SRM/IRM Overlap Per GP-02

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Time Required for Completion: **10 Minutes** (approximate).

Time Taken: \_\_\_\_ Minutes

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**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual \_\_\_\_ Unit: \_\_\_\_  
Setting: Control Room \_\_\_\_ Simulator  (Not applicable to In-Plant JPMs)  
Time Critical: Yes \_\_\_\_ No \_\_\_\_ Time Limit **NA**  
Alternate Path: Yes \_\_\_\_ No

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**EVALUATION**

Performer: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass \_\_\_\_ Fail \_\_\_\_

Remedial Training Required: Yes \_\_\_\_ No \_\_\_\_

Did Performer Verify Procedure? Yes \_\_\_\_ No \_\_\_\_  
(Each Student should verify one JPM per evaluation set)

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Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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**TASK CONDITIONS:**

1. Unit One startup is being performed per OGP-02. Unit One reactor is critical with a period of approximately 120 seconds established. GP-02 has been completed up through Step 5.2.17 and reactor power is currently on range one (1) of the IRMs and rising.
2. Initial pre-startup IRM data recorded in the Reactor Operator's log (Step 5.2.7) as follows:

<b>IRM Channel</b>	<b>Reading*</b>
<b>A</b>	<b>0.5%</b>
<b>B</b>	<b>0.6%</b>
<b>C</b>	<b>0.4%</b>
<b>D</b>	<b>0.4%</b>
<b>E</b>	<b>0.2%</b>
<b>F</b>	<b>0.3%</b>
<b>G</b>	<b>0.1%</b>
<b>H</b>	<b>0.2%</b>

\* All IRM Readings taken on Range One from the digital readout 0-125 scale.

**INITIATING CUE:**

You are directed to perform Step 5.2.18 of GP-02 and continue the plant startup until all SRMs have been withdrawn.

## 5.0 PROCEDURAL STEPS

Initials \_\_\_\_\_

- 5.2.17 **IF** any MSIV pit shield plug is **NOT** installed, **THEN** **INITIATE** MSIV pit entry requirements in accordance with 00I-01.03, Non-Routine Activities.

**NOTE:** SRM/IRM overlap must be demonstrated prior to withdrawing SRMs from the fully inserted position. SRM/IRM overlap exists when at least three IRM channels in each RPS trip system show an increase to at least twice their pre-startup levels **AND** indicate at least 10% of scale (i.e., 12.5 on the digital readout 0-125 scale) before the first SRM channel reaches  $5 \times 10^5$  cps. (TS SR 3.3.1.1.6)

If desired, the level of the highest reading IRM (pre-startup) may be doubled and that value used as overlap criteria for all IRMs. This method will allow the operator to compare IRM channel response to a single value which is at least twice the pre-startup levels of the individual IRMs.

### CAUTION

**IF** correct SRM/IRM overlap is **NOT** verified, **THEN** the Reactor Engineer shall be notified **AND** Technical Specification LCO 3.3.1.1 referenced.

- 5.2.18 **CONFIRM** correct overlap between SRM and IRM channels based on the pre-startup IRM data recorded in the Reactor Operator's log (Step 5.2.7).

**NOTE:** With IRM channels below range 3, the SRM channels will initiate a rod withdrawal block when either of the following conditions exists:

1. SRM channel indicates greater than  $5 \times 10^4$  cps.
2. SRM channel indicates less than  $10^2$  cps with its detector **NOT** full in.

**NOTE:** SRM detectors should be withdrawn two at a time so that the reactor flux level conditions are being monitored by channels that are **NOT** being affected by detector movement.

- 5.2.19 **WHEN** SRM/IRM overlap has been verified, **THEN** **WITHDRAW** SRM detectors as required to maintain an indicated SRM count rate between  $10^2$  and  $5 \times 10^4$ .

R36

**CAUTION**

Repositioning IRM range switches should be performed by one Operator, using one hand on one trip system at a time.

**CAUTION**

**WHEN** repositioning the IRM range switches, **THEN** care should be taken in order to prevent a reactor scram from occurring.

- 5.2.20 **REPOSITION** the IRM range switches, as reactor power increases, to maintain IRM indication on recorders between 15 and 50 on the 0-125 scale. \_\_\_\_\_
- 5.2.21 **WHEN** all operable IRM channels are above range 3 **AND** prior to reaching range 7, **THEN FULLY WITHDRAW** all SRM detectors. \_\_\_\_\_
- 5.2.22 **IF** this is the initial startup following a refuel outage, **THEN PERFORM** the following: \_\_\_\_\_
1. OPT-14.3.1 (if OPT-14.3 was **NOT** completed prior to startup). \_\_\_\_\_
  2. IRM Range 6 and 7 Correlation in accordance with 0MST-IRM25R. \_\_\_\_\_



**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM2ROCOO**

**LESSON TITLE:** Core Performance Parameter Check.

**REVISION NO:** 0

**RECOMMENDED BY:** Curt Robert \_\_\_\_\_  
Instructor/Developer Date

**CONCURRENCE BY:** \_\_\_\_\_  
Line Superintendent/Supervisor Date

**APPROVED BY:** \_\_\_\_\_  
Superintendent/Supervisor Training Date

**SAFETY CONSIDERATIONS:**

1. None.
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**EVALUATOR NOTES:** (Do not read to performer)

1. If this is the first JPM of the JPM set, read the JPM briefing contained in NUREG 1021, Appendix E, or similar to the performer.
  2. **START LOCATION:** This JPM can be performed at any location because it is an administrative task.
  3. **PROVIDE A COPY:** Evaluator may provide 2PT-01.11, Core Performance Parameter Check. Provide Core Performance Log to be used for performance of 2PT-01.11 and ensure that CMFLPD is >1.0.
  4. **TIME CRITICAL – BASIS FOR TIME:** This JPM is not a time critical JPM.
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Read the following to the JPM performer.

**TASK CONDITIONS:**

1. Unit Two (2) is operating at rated power and the CODSR requires performance of 2PT-01.11 Core Performance Parameter Check.
2. All applicable prerequisites of 2PT-01.11 are met.
3. The Core Performance Log program has been executed and the edit printout provided should be used to complete 2PT-01.11.
4. There are no Failed Sensors.
5. If independent verification is required, assume the verification is complete as applicable.

**INITIATING CUE:**

The Unit SCO directs you to perform 2PT-01.11, Core Performance Parameter Check.

Circle any parameter on the Core Performance Log that you check during performance of 2PT-01.11.

Inform the SCO of the results upon completion by documenting results on Attachment 1, Certification and Review Form as follows.

“General Comments and Recommendations”

“Exceptions to satisfactory performance”

State whether Technical Specifications are met or not met.

You may leave the “Corrective action required” line on Attachment 1 blank as the SCO will make this determination if necessary.



Core Performance Parameter Check

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**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.  
Comments required for any step evaluated UNSAT.

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

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.

**PROMPT:** Provide the Core Performance Log edit before administering this JPM for use throughout the remainder of this JPM.

**NOTE:** If desired, the examiner may provide a copy 2PT-01.11 to the examinee.

Step 1 - Obtain a current revision of 2PT-01.11.

*Current Revision of 2PT-01.11 obtained and verified, if applicable.*

**SAT/UNSAT\***

Step 2 – Locate WTFLAG on the Core Performance Log and proceed with step 7.1.5.

*WTFLAG determined to equal 2, proceeds to Step 7.1.5 of 2PT-01.11.*

**SAT/UNSAT\***

Step 3 – Determine if criteria listed in Section 6.1 of 2PT-1.11 are met.

*Checks core performance log and verifies values for CMFLCPR  
CMAPRAT  $\leq 1.00$ .*

**SAT/UNSAT\***

Core Performance Parameter Check

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Step 4 – Determine if the acceptance criteria listed in Section 6.2 of 2PT-01.11 are satisfied.  
*Determines APRMS 1, 2, 3, and 4.*

\* SAT/UNSAT\*

Step 5 – Determine if CMFLPD is > 1.00.

*Checks core performance log and determines value for CMFLPD is >1.00. Should document this result in the General Comments and Recommendations section or Exception to satisfactory performance lines of Attachment 1.*

\*\* CRITICAL STEP \*\* SAT/UNSAT\*

**NOTE:** The Following Step is likely already performed and is NOT required to be completed again.

Step 6 - Verify acceptance criteria listed in Section 6.0 met satisfactorily.  
*Acceptance criteria determined to be satisfactory.*

\* SAT/UNSAT\*

Step 7 - Notify Unit SCO that 2PT-01.11 is completed with CMFLPD >1.00.

*SCO notified that 2PT-01.11 is completed with CMFLPD >1.00. 2PT-01.11 is UNSAT but Technical Specifications are met.*

\*\* CRITICAL STEP \*\* SAT/UNSAT\*

**TERMINATING CUE:** When 2PT-01.11 has been completed, this JPM is complete.

\* Comments required for any step evaluated as UNSAT.

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

## Core Performance Parameter Check

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### RELATED TASKS:

299201B201: Perform Daily Surveillance Report Per OI-3.1 Or OI-3.2.

### K/A REFERENCE AND IMPORTANCE RATING:

GEN 2.1.7 3.7/4.4

Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation.

GEN 2.1.19 3.0/3.0

Ability to use plant computer to obtain and evaluate parametric information on system or component status.

### REFERENCES:

2PT-01.11 CORE PERFORMANCE PARAMETER CHECK

### TOOLS AND EQUIPMENT:

None.

### SAFETY FUNCTION (from NUREG 1123, Rev 2.):

Generic (Administrative)

### REASON FOR REVISION:

New for use on 2004 NRC exam.

Core Performance Parameter Check

Time Required for Completion: **10 Minutes** (approximate).

Time Taken: \_\_\_\_ Minutes

**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual \_\_\_\_ Unit: \_\_\_\_  
Setting: Control Room \_\_\_\_ Simulator \_\_\_\_ (Not applicable to In-Plant JPMs)  
Time Critical: Yes \_\_\_\_ No  Time Limit **NA**  
Alternate Path: Yes \_\_\_\_ No

**EVALUATION**

Performer: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass \_\_\_\_ Fail \_\_\_\_

Remedial Training Required: Yes \_\_\_\_ No \_\_\_\_

Did Performer Verify Procedure? Yes \_\_\_\_ No \_\_\_\_  
(Each Student should verify one JPM per evaluation set)

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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**TASK CONDITIONS:**

1. Unit Two (2) is operating at rated power and the CODSR requires performance of 2PT-01.11 Core Performance Parameter Check.
2. All applicable prerequisites of 2PT-01.11 are met.
3. The Core Performance Log program has been executed and the edit printout provided should be used to complete 2PT-01.11.
4. There are no Failed Sensors.
5. If independent verification is required, assume the verification is complete as applicable.

**INITIATING CUE:**

The Unit SCO directs you to perform 2PT-01.11, Core Performance Parameter Check.

Circle any parameter on the Core Performance Log that you check during performance of 2PT-01.11.

Inform the SCO of the results upon completion by documenting results on Attachment 1, Certification and Review Form as follows.

“General Comments and Recommendations”

“Exceptions to satisfactory performance”

State whether Technical Specifications are met or not met.

You may leave the “Corrective action required” line on Attachment 1 blank as the SCO will make this determination if necessary.



DATE COMPLETED \_\_\_\_\_  
 UNIT 2 % PWR \_\_\_\_\_ GMWE \_\_\_\_\_  
 SUPERVISOR \_\_\_\_\_  
 REASON FOR TEST (check one or more)  
 Routine Surveillance  
 W/O # \_\_\_\_\_  
 Other (explain) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

FREQUENCY:  
 A. Once/24 hours when operating  $\geq$  23% rated thermal power.  
 B. Within 12 hours after thermal power is  $\geq$  23% of rated thermal power.

PLANT OPERATING MANUAL

VOLUME X

PERIODIC TEST

<p>UNIT 2</p>
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**2PT-01.11**

***CORE PERFORMANCE PARAMETER CHECK***

REVISION 1

## 1.0 PURPOSE

This PT provides a procedure for obtaining the basic core performance parameters required by Technical Specifications and calibrates APRM channels to read greater than or equal to actual core thermal power. The procedure satisfies Technical Specifications SR 3.2.1.1, SR 3.2.2.1, SR 3.3.1.1.3.

## 2.0 REFERENCES

- 2.1 Technical Specifications
- 2.2 NEDE-24011-P-A (GESTAR II), Amendment 19
- 2.3 NRC Generic Letter 88-16, Removal of Cycle-Specific Parameter Limits from Technical Specifications
- 2.4 Core Operating Limits Report
- 2.5 Letter, L. M. Quintana to B. A. Morgan, "Linear Heat Generation Rate Monitoring," October 9, 1989, LMQ: 89-241
- 2.6 0OI-72, Plant Process Computer System Operating Instruction
- 2.7 0OP-55, Process and ERFIS Computer System Operating Procedure
- 2.8 0PT-01.8C, Hand Calculation of AGAFs
- 2.9 0PT-01.8D, Core Thermal Power Calculation
- 2.10 0ENP-24.19, Operation of the BWR Process Computer Backup Program
- 2.11 2OP-09, Neutron Monitoring System Operating Procedure
- 2.12 GE SIL 516 Supplement 1, Recirculation Drive Flow/Core Flow Correlation
- 2.13 NEDO-32465-A, Licensing Topical Report: Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applicability GE Nuclear Energy, August 1996.

### 3.0 PRECAUTIONS AND LIMITATIONS

- 3.1 Special care should be taken in verifying data. Errors on the nonconservative side could cause operation that might lead to a violation of Technical Specifications.
- 3.2 **IF** the value of a core performance parameter exceeds its limits, **THEN** the Unit SCO should be immediately notified.
- 3.3 During APRM gain adjustments, the plant should be held at a steady state operating condition. During APRM gain adjustments, the affected APRMs may be bypassed.
- 3.4 **IF** APRM gain adjustments are made, **THEN** Independent Verification is required.
- 3.5 **IF** measured core flow (WT) is less than core flow calculated from WD (WTSUB), **AND** if the difference can be attributed to operation on a rod line above the rated line, **THEN** the measured core flow value may be manually entered into the process computer if determined to be appropriate by the Reactor Engineer.

### 4.0 PREREQUISITES

Thermal power is greater than or equal to 23%.

### 5.0 SPECIAL TOOLS AND EQUIPMENT

None



## 6.0 ACCEPTANCE CRITERIA

**NOTE:** Attachment 3 contains definitions and abbreviations of terms.

- 6.1 This PT is acceptable when it is shown by the certifying signature that the parameters have been obtained correctly according to this instruction and these conditions exist:
- 6.1.1 CMFLCPR is less than or equal to 1.0 (See Attachment 2, Note N4, for parameter location on the core performance edit).
  - 6.1.2 CMAPRAT is less than or equal to 1.0 (See Attachment 2, Note N3, for parameter location on the core performance edit).
- 6.2 At least three operable APRMs are adjusted such that the APRM gain adjustment factors (GAFs) are less than or equal to 1.00. The APRM gain adjustment factor is determined by either the periodic NSS Core Performance Log (Attachment 2, Note N2), Display 820 (Heat Balance/Core Mon), or hand calculation of AGAFs (OPT-01.8C). IF APRM gain adjustments are performed, **THEN** the postadjustment AGAFs are verified by a second Display 820 or OPT-01.8C.

## 7.0 PROCEDURAL STEPS

Initials

**NOTE:** Attachments 2 and 3 may be discarded after completion of test.

**NOTE:** IF unable to obtain the required process computer edits, THEN the On-Shift Reactor Engineer should be contacted prior to performance of Section 7.2.

### 7.1 Using the Process Computer

**NOTE:** Plant process computer operating instructions and report codes are contained within procedures 00I-72 and 00P-55.

- 7.1.1 **OBTAIN** an edit of the process computer core performance program. \_\_\_\_\_
- 7.1.2 **IF** there are failed inputs on the failed sensor list, **THEN ENSURE** correct values have been substituted where appropriate. \_\_\_\_\_
- 7.1.3 **LOCATE** WTFLAG on the Core Performance Log (Attachment 2, N16): \_\_\_\_\_
1. **IF** WTFLAG is equal to 2, **THEN GO TO** Step 7.1.5. \_\_\_\_\_
  2. **IF** WTFLAG is **NOT** equal to 2, **THEN NOTIFY** the On-Shift Reactor Engineer to evaluate if core flow is accurate for thermal limit calculations (Precaution 3.5). \_\_\_\_\_
- 7.1.4 **IF** core flow was changed by the Reactor Engineer in Step 7.1.3, **THEN OBTAIN** a new Core Performance Log edit. \_\_\_\_\_
- 7.1.5 **DETERMINE** from the core performance edit, if criteria listed in Section 6.1 are met. (Locations on the core performance edit where thermal limit parameters are found are indicated on Attachment 2). \_\_\_\_\_

## 7.0 PROCEDURAL STEPS

Initials

7.1.6 IF limits specified in Section 6.1 are **NOT** satisfied, **THEN NOTIFY** the Unit SCO of the condition. \_\_\_\_\_

1. **NOTIFY** the On-Shift Reactor Engineer to take action to restore the thermal limits to acceptable values. \_\_\_\_\_

**NOTE:** Note N2 on Attachment 2 shows the location of the APRM GAFs. The APRMs are ordered: APRMs 1, 2, 3, 4.

7.1.7 **DETERMINE**, from the core performance edit, if Acceptance Criteria listed in Section 6.2 are satisfied (at least three APRM gain adjustment factors are less than or equal to 1.00). \_\_\_\_\_

7.1.8 IF an APRM gain adjustment is necessary, **THEN PERFORM** applicable section of 2OP-09. \_\_\_\_\_

7.1.9 IF an APRM gain change was performed, **THEN OBTAIN** from the process computer a copy of Display 820, Heat Balance/Core Mon, **OR PERFORM** OPT-01.8C to ensure APRM GAFs satisfy the requirements of Acceptance Criteria, Section 6.2.   /    
Ind.Ver.

7.1.10 **DETERMINE**, from the core performance edit, if CMFLPD is less than or equal to 1.00 (Attachment 2, Note N5, for CMFLPD location on the core performance edit). \_\_\_\_\_

7.1.11 IF CMFLPD is greater than 1.00, **THEN NOTIFY** the Unit SCO of the condition. \_\_\_\_\_

1. **NOTIFY** the On-Shift Reactor Engineer to take action to restore the limit to an acceptable value. \_\_\_\_\_

## 7.0 PROCEDURAL STEPS

Initials

7.1.12 **ENSURE** Acceptance Criteria listed in Section 6.0 have been satisfied. \_\_\_\_\_

7.1.13 **ATTACH** the collected edits. \_\_\_\_\_

### 7.2 Using a Process Computer Backup Program

**NOTE:** This section is performed only when Section 7.1 can **NOT** be completed. The On-Shift Reactor Engineer should be contacted to perform this section.

7.2.1 **PERFORM** OPT-01.8D to calculate core thermal power. \_\_\_\_\_

**NOTE:** 0ENP-24.19 should be referenced for instructions on utilizing the backup program.

7.2.2 **OBTAIN** LPRM readings, control rod pattern, core flow, reactor pressure, and additional data as required by the computer backup program **AND RUN** the program. \_\_\_\_\_

7.2.3 **OBTAIN** the output of the backup program. \_\_\_\_\_

7.2.4 **DETERMINE** from the backup edit, if criteria listed in Section 6.1 are met. \_\_\_\_\_

7.2.5 **IF** limits specified in Section 6.1 are **NOT** satisfied, **THEN NOTIFY** the Unit SCO of the condition. \_\_\_\_\_

1. **RESTORE** thermal limits to acceptable values. \_\_\_\_\_

7.2.6 **PERFORM** OPT-01.8C to determine if acceptance criteria listed in Section 6.2 are satisfied. \_\_\_\_\_

**7.0 PROCEDURAL STEPS**

Initials

- 7.2.7 **IF** an APRM gain adjustment is necessary, **THEN PERFORM** applicable section of 2OP-09. \_\_\_\_\_
  
- 7.2.8 **IF** an APRM gain change was performed, **THEN PERFORM** another 0PT-01.8C to ensure APRM gain adjustment factor satisfies the requirements of Acceptance Criteria, Section 6.2.  /   
Ind.Ver.
  
- 7.2.9 **DETERMINE**, from the backup edit, if CMFLPD is less than or equal to 1.00. \_\_\_\_\_
  
- 7.2.10 **IF** CMFLPD is greater than 1.00, **THEN NOTIFY** the Unit SCO of the condition. \_\_\_\_\_
  
- 1. **RESTORE** the limit to an acceptable value (see definition for CMFLPD). \_\_\_\_\_
  
- 7.2.11 **ENSURE** Acceptance Criteria listed in Section 6.0 have been met satisfactorily. \_\_\_\_\_
  
- 7.2.12 **ATTACH** the backup program edits. \_\_\_\_\_
  
- 7.3 **ENSURE** the required information has been recorded on the cover page. \_\_\_\_\_
  
- 7.4 **NOTIFY** the Unit SCO when this test is complete or found to be unsatisfactory. \_\_\_\_\_

ATTACHMENT 1  
Page 1 of 1  
**Certification and Review Form**

General Comments and Recommendations

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	Initials	Name (Print)
Test procedure performed by	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Exceptions to satisfactory performance \_\_\_\_\_

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Corrective action required \_\_\_\_\_

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Test procedure has been satisfactorily completed:

Unit SCO: _____	_____
Signature	Date

Test procedure has **NOT** been satisfactorily completed:

Unit SCO: _____	_____
Signature	Date

Test has been reviewed by:

Shift Superintendent: _____	_____
Signature	Date

ATTACHMENT 2

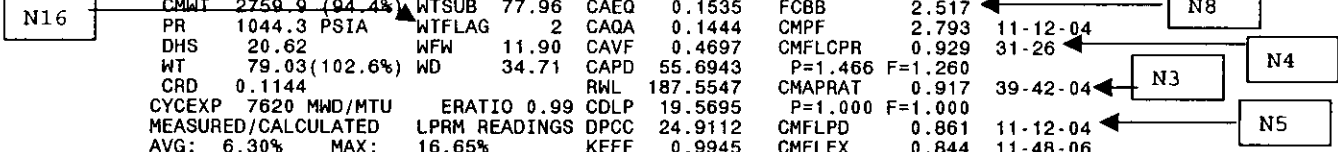
Page 1 of 2

Limit Positions on the Core Performance Log – Long Edit

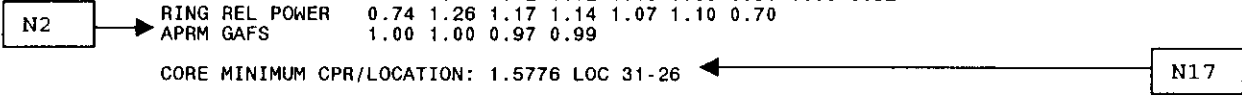
BRUNSWICK-1 WK-0303 03JAN15-10.52.53 7620 MWD/MTU TRIGR=1HR REV=SEP02

CORE PERFORMANCE LOG --- LONG EDIT  
 B1C14 BOC TO EOFPC-2026MWD/MT ODYNB POW DEP MCPR  
 CALCULATION TYPE : NORMAL CONVERGENCE : TIGHT SYMMETRY : FULL  
 CTP CALCULATION : HEAT BALANCE CYCLE : 14

STATE CONDITIONS	FLOW RATES	CORE PARAMETERS	NUCLEAR LIMITS	LOCATION
GMWE 926.54	WT 79.0	CMEQ 0.2740	P-PCS 1.86	35-26-15
CMWT 2759.9 (94.4%)	WTSUB 77.96	CAEQ 0.1535	FCBB 2.517	
PR 1044.3 PSIA	WFLAG 2	CAQA 0.1444	CMFP 2.793	11-12-04
DHS 20.62	WFW 11.90	CAVF 0.4697	CMFLCPR 0.929	31-26
WT 79.03(102.6%)	WD 34.71	CAPD 55.6943	P=1.466 F=1.260	
CRD 0.1144		RWL 187.5547	CMAPRAT 0.917	39-42-04
CYCEXP 7620 MWD/MTU	ERATIO 0.99	CDLP 19.5695	P=1.000 F=1.000	
MEASURED/CALCULATED	LPRM READINGS	DPCC 24.9112	CMFLPD 0.861	11-12-04
AVG: 6.30% MAX: 16.65%		KEFF 0.9945	CMFLEX 0.844	11-48-06



LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
AXIAL REL POWER	0.65	1.39	1.41	1.27	1.14	1.08	1.07	1.02	1.00	0.87	0.71	0.38
REGION REL POWER	0.93	1.01	0.92	1.02	1.18	1.03	0.91	1.00	0.92			
RING REL POWER	0.74	1.26	1.17	1.14	1.07	1.10	0.70					
APRM GAFS	1.00	1.00	0.97	0.99								



CORE MINIMUM CPR/LOCATION: 1.5776 LOC 31-26

\*\*\*\*\* THE 10 MOST LIMITING BUNDLES \*\*\*\*\*

FLCPR	LOC	CPR	LIMIT	APRAT	LOC	APLHGR	LIMIT	FLPD	LOC	LPD	LIMIT
0.929	31-26	1.578	1.466	0.917	39-42-04	9.36	10.21	0.861	11-12-04	11.54	13.40
0.917	29-24	1.598	1.466	0.911	41-40-04	9.42	10.34	0.849	07-32-04	11.38	13.40
0.915	31-22	1.602	1.466	0.876	37-40-04	8.79	10.04	0.843	39-44-04	11.30	13.40
0.908	33-24	1.614	1.466	0.873	39-38-04	8.84	10.13	0.843	43-40-04	11.30	13.40
0.908	27-22	1.615	1.466	0.873	11-12-04	9.43	10.80	0.842	07-30-04	11.29	13.40
0.898	37-24	1.632	1.466	0.864	07-32-04	9.33	10.80	0.838	39-40-04	11.23	13.40
0.893	29-20	1.641	1.466	0.861	39-40-04	9.77	11.35	0.836	21-08-04	11.20	13.40
0.881	23-16	1.664	1.466	0.856	39-44-04	9.24	10.80	0.828	29-46-04	11.10	13.40
0.880	39-22	1.667	1.466	0.855	43-40-04	9.24	10.80	0.819	37-44-04	10.98	13.40
0.868	21-14	1.689	1.466	0.854	07-30-04	9.22	10.80	0.817	43-38-04	10.95	13.40
# ASSYS W LIMITS > 1				FLCPR	0	APRAT	0	FLPD	0		

\*\*\*\*\* NUCLEAR LIMITS BY REGION \*\*\*\*\*

7		8		9	
0.840	13-40	0.867	29-38	0.844	39-40
0.829	13-44-04	0.833	31-46-04	0.847	41-42-04
0.905	13-42-04	0.846	31-46-04	0.917	39-42-04
4		5		6	
0.876	15-30	0.929	31-26	0.898	37-24
0.849	07-32-04	0.759	31-28-17	0.844	45-32-04
0.864	07-32-04	0.844	33-26-14	0.857	45-32-04
1		2		3	
0.859	13-14	0.881	23-16	0.863	39-14
0.861	11-12-04	0.836	21-08-04	0.818	43-14-04
0.902	13-12-04	0.846	21-08-04	0.869	41-14-05

See Attachment 3 for definitions/abbreviations.

ATTACHMENT 2  
Page 2 of 2  
Limit Positions on the Core Performance Log – Long Edit

BRUNSWICK-1 WK-0303 03JAN15-10.52.53 7620 MHD/MTU TRIGR=1HR REV=SEP02  
CORE PERFORMANCE LOG --- LONG EDIT (PAGE 2)  
\*\*\*\*\* CONTROL ROD POSITIONS AND CALIBRATED LPRM READINGS \*\*\*\*\*

	02	06	10	14	18	22	26	30	34	38	42	46	50
51													51
47			23	34	42	28	26	39	27	40	19	29	47
43			69	47	20	70	00	71	20	68	49	37	43
39	20	35	35	50	35	50	43	61	37	51	27	40	39
35	52	20	74	54	00	66	24	58	00	73	20	45	35
31	23	34	34	50	43	62	42	58	44	62	28	41	31
27	70	00	71	55	24	60	00	57	24	66	00	54	27
23	22	36	36	52	41	56	42	63	37	53	29	45	23
19	63	20	70	54	00	62	24	56	00	65	20	50	19
15			29	45	36	54	35	51	35	52	24	36	15
11			87	57	20	72	00	56	20	71	67	47	11
07	D				21	32	22	34	21	30			07
03	B				45	47		38		38			
	A				62			48		48			03
02	06	10	14	18	22	26	30	34	38	42	46	50	

CONTROL ROD SYMMETRY : EIGHT-FOLD CONTROL ROD SEQUENCE : A-2 CONTROL ROD DENSITY : 0.1144

\*\*\*\*\*  
\* LPRM FAILED \*  
\* SENSOR DATA \*  
\*\*\*\*\*  
LOCATION STATUS  
-----  
44-37-D BYP  
36-29-D BYP  
\*\*\*\*\*  
\* OTHER FAILED \*  
\* SENSOR DATA \*  
\*\*\*\*\*  
SENSOR STATUS  
-----  
1GENY508 BAD



ATTACHMENT 3

Page 1 of 2

**Definitions and Abbreviations Found on Core Performance Edit**

1. APLHGR Nodal Average Planar Linear Heat Generation Rate (kw/ft).
2. APRM GAFS Average Power Range Monitor Gain Adjustment Factors.
3. CMAPRAT Core Maximum APRAT (T/S 3.2.1). Maintaining this value  $\leq 1.00$  ensures that the peak cladding temperature will be kept  $< 2200^{\circ}\text{F}$  and, therefore, core geometry will be maintained during a LOCA.
4. CMFLCPR Core Maximum Fraction of limiting CPR (T/S 3.2.2). Maintaining this value  $\leq 1.00$  ensures that departure from nucleate boiling will not occur.
5. CMFLPD Core Maximum Fraction of Limiting Power Density. Formerly a technical specification limit, maintaining this value  $\leq 1.00$  ensures that the fuel cladding does not exceed 1% plastic strain. Reference 2.5 states that the NRC expects LHGR monitoring to remain the same as CPR and APLHGR (i.e., to restore LHGR within limits within 4 hours, or to be below 23% power within the next 4 hours).
6. CPR Critical Power Ratio.
7. CPR LIMIT The limiting CPR.
8. FCBB Fraction of Core Boiling Boundary (stability monitor)
9. LHGR Power generation in 1 foot of a fuel rod (kw/ft).
10. APLHGR LIMIT Nodal limiting value of APLHGR (kw/ft).
11. APRAT Maximum fraction of limiting APLHGR rate.  
$$= \frac{\text{Maximum of APLHGR}}{\text{APLHGR LIMIT}}$$
12. FLCPR Maximum Fraction of Limiting CPR.  
$$= \frac{\text{Maximum of CPR LIMIT}}{\text{CPR}}$$

ATTACHMENT 3

Page 2 of 2

**Definitions and Abbreviations Found on Core Performance Edit**

13. FLPD Maximum Fraction of Limiting Power Density (kw/ft).  
$$= \frac{\text{MRPD}}{\text{RPDLIM}} = \text{Maximum of } \frac{\text{LPD}}{\text{LPD LIMIT}}$$
14. LPD Limiting fuel rod Power Density (LHGR).
15. LPD LIMIT Fuel Rod Power Density Limit (LHGR limit).
16. WTFLAG WTFLAG on the core performance log indicates which core flow value is used for thermal limit calculations.
- WTFLAG = 2 indicates WT, which is WTCF Total Core Flow analog signal representing the summation of the 20 single tap jet pumps.
- WTFLAG = 4 indicates WTSUB, which is the flow resulting from the drive flow (WD) to core flow (WT) correlation.
- WTFLAG = 5 indicates WT, which is using an operator substituted core flow in WTCF Total Core Flow.
- WTFLAG = 7 indicates WT, and states the difference between WTSUB correlated core flow and WT is greater than 5%.
17. CORE MINIMUM CPR/ LOCATION The MCPR used to determine the requirement for RBM operability iaw Tech Spec 3.3.2.1. This is the lowest core CPR and corresponding bundle location.

## REVISION SUMMARY

Revision 1 incorporated EC, 47907, Unit 2 Extended Power Uprate Implementation, and EC 46730, Replace Unit 2 Power Range Neutron Monitoring System, required changes and updated to Word 2000 software.

Revision 0 was issued in accordance with ESR 00-00442, Unit 1 Power Range Neutron Monitoring Replacement, which required the OPT-01.11 be separated into unit specific procedures.

CORE PERFORMANCE LOG -- LONG EDIT  
 B2C16 BOC TO 16000 MWD/MT ODYNB POW DEP MCPR  
 CALCULATION TYPE : NORMAL CONVERGENCE : TIGHT SYMMETRY : FULL  
 CTP CALCULATION : HEAT BALANCE CYCLE : 16

STATE CONDITIONS	FLOW RATES	CORE PARAMETERS	NUCLEAR LIMITS	LOCATION
GMWE 938.34	WT 77.1	CMEQ 0.2600	P-PCS 1.02	27-26-05
CMWT 2802.5 (95.9%)	WTSUB 75.41	CAEQ 0.1476	FCBB 2.530	
PR 1044.1 PSIA	WTFLAG 2	CAQA 0.1471	CMFP 2.873	35-12-10
DHS 21.06	WFW 11.03	CAVF 0.4579	CMFLCPR 0.921	27-24
WT 77.11 (100.1%)	WD 33.10	CAPD 51.6674	P=1.432 F=1.260	
CRD 0.0742		RWL 185.4821	CMAPRAT 0.906	33-10-10
CYCEXP 0 MWD/MTU	ERATIO 0.99	CDLP 17.4552	P=1.000 F=1.000	
AVG: 0.00% MAX: 0.00%	KEFF 1.0016		CMFLPD 1.012	35-12-10
			CMFLEX 0.782	45-44-05

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
AXIAL REL POWER	0.60	1.31	1.39	1.36	1.38	1.31	1.17	0.95	0.88	0.76	0.58	0.31
REGION REL POWER	0.91	1.03	0.91	1.02	1.18	1.02	0.90	1.02	0.91			
RING REL POWER	1.13	1.28	1.12	1.15	1.13	1.08	0.68					
APRM/GAFS	0.99	0.99	0.99	0.99								

CORE MINIMUM CPR/LOCATION: 1.5549 LOC 39-24

\*\*\*\*\* THE 10 MOST LIMITING BUNDLES \*\*\*\*\*

FLCPR	LOC	CPR	LIMIT	APRAT	LOC	APLHGR	LIMIT	FLPD	LOC	LPD	LIMIT
0.921	27-24	1.555	1.432	0.906	33-10-10	8.51	9.40	1.012	35-12-10	13.56	13.40
0.920	29-26	1.557	1.432	0.899	09-20-10	8.45	9.40	0.982	29-22-04	13.16	13.40
0.918	37-40	1.559	1.432	0.888	39-42-04	8.35	9.40	0.972	33-10-10	13.03	13.40
0.914	29-22	1.566	1.432	0.885	35-12-10	8.39	9.48	0.969	31-24-04	12.98	13.40
0.914	39-38	1.567	1.432	0.882	29-22-04	8.39	9.51	0.966	11-18-10	12.94	13.40
0.913	31-24	1.567	1.432	0.881	41-40-04	8.28	9.40	0.962	27-24-04	12.89	13.40
0.905	33-14	1.582	1.432	0.880	31-24-04	8.37	9.51	0.953	39-42-04	12.77	13.40
0.901	13-20	1.589	1.432	0.879	41-36-10	8.33	9.48	0.943	29-26-04	12.64	13.40
0.901	21-16	1.590	1.432	0.878	27-24-04	8.35	9.51	0.938	09-20-10	12.57	13.40
0.900	37-10	1.591	1.432	0.877	29-26-04	8.34	9.51	0.937	41-40-04	12.55	13.40
# ASSYS W LIMITS > 1				FLCPR	0	APRAT	0	FJPD	1		

\*\*\*\*\* NUCLEAR LIMITS BY REGION \*\*\*\*\*

7	8	9
0.898 13-38	0.918 33-40	0.918 37-40
0.966 11-36-10	1.012 35-12-10	0.847 35-42-10
0.906 11-36-10	0.936 33-44-10	0.888 39-42-10
4	5	6
0.901 13-20	0.921 27-24	0.899 39-20
0.938 09-20-10	0.982 29-22-04	0.966 43-34-10
0.899 09-20-10	0.882 29-22-04	0.903 43-34-10
1	2	3
0.901 15-14	0.905 33-14	0.903 37-14
0.810 17-12-10	0.972 33-10-10	1.012 35-12-10
0.880 17-12-10	0.906 33-10-10	0.885 35-12-10

\* MFLCPR \*  
 \* MFLPD \*  
 \* MAPRAT \*  
 \*\*\*\*\*



**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM3ROEC**

LESSON TITLE: Develop a Clearance Boundary - RBCCW Pump 2C.

REVISION NO: 0

RECOMMENDED BY: Curt Robert  
Instructor/Developer DATE

CONCURRENCE BY: \_\_\_\_\_  
Line Superintendent/Supervisor DATE

APPROVED BY: \_\_\_\_\_  
Superintendent/Supervisor Training DATE

**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM3SROEC**

LESSON TITLE: Develop a Clearance Boundary - RBCCW Pump 2C.

REVISION NO: 0

RECOMMENDED BY: Curt Robert  
Instructor/Developer DATE

CONCURRENCE BY: \_\_\_\_\_  
Line Superintendent/Supervisor DATE

APPROVED BY: \_\_\_\_\_  
Superintendent/Supervisor Training DATE

**SAFETY CONSIDERATIONS:**

None

**EVALUATOR NOTES:** (Do not read to trainee)

1. The applicable procedure section **WILL** be provided to the trainee.
  2. If this is the first JPM of the JPM set, read the JPM briefing contained NUREG 1021, Appendix E, or similar to the trainee.
  3. If desired, the evaluator may provide the examinee with a copy of OPS-NGGC-1301 and the referenced prints.
  4. The evaluator should have available copies of prints D-02538 SH1 & 2, LL-9241 SH8 & 24 to support performance of JPM, or perform JPM in a location where a print machine is available.
- 

Read the following to trainee.

**TASK CONDITIONS:**

1. You are an operator in the Work Control Center. PASSPORT (Equipment Tag Out) is not available for use. No historical clearances are available for review.
2. A Clearance has been requested by maintenance to place RBCCW Pump 2C under clearance, isolated, vented, and drained for scheduled work. RBCCW Pumps 2A and 2B will be running.
3. This clearance is to allow maintenance to replace the pump packing.

**INITIATING CUE:**

The WCC SRO directs you to propose a Clearance Boundary for RBCCW Pump 2C by completing Attachment 4 of OPS-NGGC-1301. The Attachment 4 columns for Sequence, Position, and Equipment/Component are to be filled in. Other columns of Attachment 4 may be filled in later. Your proposed boundary should include a Clearance Information Tag for the control switch.

---



**ANSWER KEY**

ATTACHMENT 4  
Sheet 1 of 1  
OPERATIONS CLEARANCE TAG SHEET

Clearance No. \_\_\_\_\_  
PAGE  1  of  1

INT NAME (PRINT) INT NAME (PRINT)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\* Independent Verification Required? Yes/No If No, N/A the Blocks

Seq	Action	Type	Tag Id	Position	Equipment/Component	Completed By	IV By
1					RTGB Control Switch 2-RCC-CS-449		
2				OFF LOCKED	Motor Feeder 2XE Compt EA7		
3				CLOSE	Discharge Valve 2-RCC-V34		
4				CLOSE	Suction Valve 2-RCC-V30		
5				OPEN	Pump Drain Valve 2-RCC-V128		
6				OPEN	Pump Drain Valve 2-RCC-V129		
7				OPEN	Pump Vent Valve 2-RCC-V301		

Sequence must have breaker OFF/LOCKED prior to operating discharge/suction valves, and discharge/suction valves closed before operating drain/vent valves.

It is acceptable for the performer to provide control switch clearance information tag position as an extra measure of protection but position is not required by procedure.

Minimum requirements for satisfactory boundary are breaker, discharge valve, suction valve, at least one drain valve, and vent valve.

## PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the Comments.

**NOTE:** If desired, the examiner may provide a copy OPS-NGGC-1301 to the examinee.

Step 1 - Obtain a current revision of OPS-NGGC-1301.  
*Current Revision of OPS-NGGC-1301 obtained.*

SAT/UNSAT\*

**NOTE:** If desired, the examiner may provide a copy of the required prints to the examinee (D-02538, Sheets 1 & 2, LL-9241, Sheets 8 & 24).

Step 2 – Obtain copies of required prints (D-02538, Sheets 1 & 2, LL-9241, Sheet 24).  
*Drawings D-02538, Sheets 1 & 2, LL-9241, Sheets 8 & 24 obtained.*

SAT/UNSAT\*

Step 3 - Identify control switch 2-RCC-CS-449 should be placed to OFF.  
*Determine 2-RCC-CS-449 should be placed to OFF.*

SAT/UNSAT\*

Develop a Clearance Boundary - RBCCW Pump 2C.

---

Step 4 - Identify breaker 2XE Compt EA7 should be placed to OFF.  
*Determine 2XE Compt EA7 should be placed to OFF.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 5 - Identify discharge valve 2-RCC-V34 should be closed.  
*Determine 2-RCC-V34 should be closed.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 6 - Identify suction valve 2-RCC-V30 should be closed.  
*Determine 2-RCC-V30 should be closed.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

**NOTE:** Either 2-RCC-V218 or 2-RCC-V219 is critical. Both are not required to meet critical task standards.

Step 7 - Identify drain valve 2-RCC-V218 should be open.  
*Determine 2-RCC-V218 should be open.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 8 - Identify drain valve 2-RCC-V219 should be open.  
*Determine 2-RCC-V219 should be open.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Develop a Clearance Boundary - RBCCW Pump 2C.

---

Step 9 - Identify vent valve 2-RCC-V301 should be open.  
*Determine 2-RCC-V301 should be open.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 10 – Submit proposed boundary to WCC SRO.  
Proposed boundary submitted to WCC SRO.

**SAT/UNSAT\***

**TERMINATING CUE:** When the proposed boundary has been submitted, this JPM is complete.

**\* Comments required for any step evaluated as UNSAT.**

**RELATED TASKS:**

299020B301, Develop A Clearance Per OPS-NGGC-1301

**K/A REFERENCE AND IMPORTANCE RATING:**

2.2.13 3.6/3.8

Knowledge of tagging and clearance procedures

**REFERENCES:**

OPS-NGGC-1301, Revision 3

**TOOLS AND EQUIPMENT:**

Referenced prints.

**SAFETY FUNCTION (from NUREG 1123, Rev 2.):**

A.2 - Equipment Control

**REASON FOR REVISION:**

Revised task condition to meet OPS-NGGC-1301 procedural requirement for maintenance to specify the conditions of the clearance. (LOT-OJT-JP-201-E04)

Develop a Clearance Boundary - RBCCW Pump 2C.

---

Time Required for Completion: 20 Minutes (approximate).

---

**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual  Unit: 2  
Setting: Control Room  Simulator  ( Not applicable to In-Plant JPMs )  
Time Critical: Yes  No  Time Limit N/A  
Alternate Path: Yes  No

---

**EVALUATION**

Trainee: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass  Fail

Remedial Training Required: Yes  No

Did Trainee Verify Procedure? Yes  No   
(Each Student should verify one JPM per evaluation set)

---

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

---

**TASK CONDITIONS:**

1. You are an operator in the Work Control Center. PASSPORT (Equipment Tag Out) is not available for use. No historical clearances are available for review.
2. A Clearance has been requested by maintenance to place RBCCW Pump 2C under clearance, isolated, vented, and drained for scheduled work. RBCCW Pumps 2A and 2B will be running.
3. This clearance is to allow maintenance to replace the pump packing.

**INITIATING CUE:**

The WCC SRO directs you to propose a Clearance Boundary for RBCCW Pump 2C by completing Attachment 4 of OPS-NGGC-1301. The Attachment 4 columns for Sequence, Position, and Equipment/Component are to be filled in. Other columns of Attachment 4 may be filled in later. Your proposed boundary should include a Clearance Information Tag for the control switch.





**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM4ROEP**

LESSON TITLE: Estimate Source Term for a Release from the Main Stack per PEP-03.6.1.

REVISION NO: 0

RECOMMENDED BY: Curt Robert  
Instructor/Developer DATE

CONCURRENCE BY: \_\_\_\_\_  
Line Superintendent/Supervisor DATE

APPROVED BY: \_\_\_\_\_  
Superintendent/Supervisor Training DATE

**SAFETY CONSIDERATIONS:**

None

**EVALUATOR NOTES:** (Do not read to trainee)

1. The applicable procedure section **WILL** be provided to the trainee.
  2. If this is the first JPM of the JPM set, read the JPM briefing contained NUREG 1021, Appendix E, or similar to the trainee.
  3. This JPM may be administered in the simulator, control room, or classroom setting.
-

Read the following to trainee.

**TASK CONDITIONS:**

1. A Loss of Coolant Accident on Unit Two has required declaration of a General Emergency due to entry into Severe Accident Management Guidelines.
2. Off-Site Dose Projection is required. ERFIS is not available in the EOF, and the Radiological Control Manager has requested the Control Room to determine the Source Term for the Main Stack Release.
3. The Main Stack flow transmitter (2-VA-FT-3359) is not operational. Main Stack flow indication is not available.
4. Unit Two (2) is performing Containment Venting per SAMG procedures.
5. Unit One (1) has been placed in Hot Shutdown.

**INITIATING CUE:**

You are directed by the Shift Superintendent to estimate the Source Term release from the Main Stack per PEP-03.6.1, and inform him of the Source Term estimation.

### PERFORMANCE CHECKLIST

**NOTE:** Sequence is assumed unless denoted in the **Comments**.

Step 1 - Obtain current revision of PEP-03.6.1.

*Current Revision of OPEP03.6.1 obtained and verified, if applicable.*

**SAT/UNSAT\***

Step 2 - Refer to Attachment 1 for source term calculation from the plant stack and determine calculation per Attachment 1 is required.

*Determined that calculation of main stack source term is required by PEP-03.6.1 Attachment 1.*

**SAT/UNSAT\***

Step 3 - Enter time on Attachment 1.

*Time is entered on Attachment 1.*

**SAT/UNSAT\***

**PROMPT:** Inform examinee that 2-D12-RR-4599, Main Stack Radiation Monitor, is reading  $7.8 \times 10^{-3} \mu\text{Ci/cc}$ .

Step 4 - Obtain monitor readings from 2-D12-RR-4599.

*Record 2-D12-RR-4599 reading as 7.8 E-3 on Attachment 1.*

**SAT/UNSAT\***

**NOTE:** Examinee will verify which Unit One, Unit Two, and Common Systems are exhausting to the Main Stack. These systems can be checked in any order and the examiner should prompt the examinee when asked about system status.

**PROMPT:** When asked about system status to Estimate Stack Flow per Attachment 6 of PEP-03.6.1 reply as follows:

	<u>Unit 1</u>	<u>Unit 2</u>
SJAE A	Shutdown 0	Shutdown 0
SJAE B	Shutdown 0	Shutdown 0
Seal Stm Exh. A	In service 650	Shutdown 0
Seal Stm Exh. B	Shutdown 0	Shutdown 0
Mech. Vac. Pmp A	In service 1510	Shutdown 0
Mech. Vac. Pmp B	Shutdown 0	Shutdown
Purge Fan A	Shutdown 0	In service 700
Purge Fan B	Shutdown 0	In service 700
SBGT A	In service 3500	In service 3500
SBGT B	In service 3500	In service 3500

	<u>Common Systems</u>
Radwaste Exhaust Fan A	In service 2300
Radwaste Exhaust Fan B	Shutdown 0
AOG Building Ventilation	In service 18,000

Step 5 - Estimate Stack Flow using Attachment 6 as follows:

- a. Unit 2 flow determined to be (DW Purge A + DW Purge B + SBGT A + SBGT B) 21,400 CFM.

*Unit 2 flow calculated and recorded as 21,400 cfm on attachment 6.*

**SAT/UNSAT\***

- b. Unit 1 flow determined to be 9460 cfm (MVP A + SPE A + SBT A + SBT B).

*Unit 1 flow determined to be 9460 cfm and recorded on attachment 6.*

**SAT/UNSAT\***

- c. Common flow determined to be 41,200 cfm (RW Fan A + AOG Vent).

*Common flow determined and recorded as 41,200 cfm on attachment 6.*

**SAT/UNSAT\***

- d. Total Stack flow estimated at (Unit 1 + Unit 2 + Common) 72,060 cfm.

*Total Stack flow estimate recorded as 72,060 cfm on attachment 6.*

**SAT/UNSAT\***

7.8

Step 6 - Determine Release Rate ( $7.8 \text{ E-3} \times 72,060 \times 472 = 2.65 \text{ E5 } \mu\text{C/sec}$ ).

*Release Rate from Main Stack determined to be 2.6-2.7 E5  $\mu\text{C/sec}$ .*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 7 - Inform Shift Superintendent of results.

*SS notified.*

**SAT/UNSAT\***

**TERMINATING CUE:** When the Main Stack Source Term has been estimated, this JPM is complete.

\* Comments required for any step evaluated as UNSAT.

## LIST OF REFERENCES

### RELATED TASKS:

283 005 B1 01

### K/A REFERENCE AND IMPORTANCE RATING:

GEN 2.4.39 3.3/3.1

Knowledge of the RO's responsibilities in emergency plan implementation

### REFERENCES:

OPEP-03.6.1 Rev. 11

Release Estimation Based Upon Stack/Vent Readings.

### TOOLS AND EQUIPMENT:

Calculator.

### SAFETY FUNCTION (from NUREG 1123, Rev 2):

Administrative A.4 (Emergency Plan)

### REASON FOR REVISION:

Revised JPM created for HLC 2004 NRC exam, LOT-OJT-JP-301-A14.

Time Required for Completion: 10 Minutes (approximate).

---

**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual  Unit: 0  
Setting: Control Room  Simulator  ( Not applicable to In-Plant JPMs )  
Time Critical: Yes  No  Time Limit N/A  
Alternate Path: Yes  No

---

**EVALUATION**

Trainee: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass  Fail

Remedial Training Required: Yes  No

Did Trainee Verify Procedure?: Yes  No   
(Each Student should verify one JPM per evaluation)

---

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_



---

**TASK CONDITIONS:**

1. A Loss of Coolant Accident on Unit Two has required declaration of a General Emergency due to entry into Severe Accident Management Guidelines.
2. Off-Site Dose Projection is required. ERFIS is not available in the EOF, and the Radiological Control Manager has requested the Control Room to determine the Source Term for the Main Stack Release.
3. The Main Stack flow transmitter (2-VA-FT-3359) is not operational. Main Stack flow indication is not available.
4. Unit Two (2) is performing Containment Venting per SAMG procedures.
5. Unit One (1) has been placed in Hot Shutdown.

**INITIATING CUE:**

You are directed by the Shift Superintendent to estimate the Source Term release from the Main Stack per PEP-03.6.1, and inform him of the Source Term estimation.



PLANT OPERATING MANUAL

VOLUME XIII

PLANT EMERGENCY PROCEDURE

UNIT  
0



**0PEP-03.6.1**

***RELEASE ESTIMATES BASED UPON STACK/VENT  
READINGS***

REVISION 11

**EFFECTIVE DATE**  
10/30/97

Sponsor      Signature and Date on File      \_\_\_\_\_  
Date

Approval      Signature and Date on File      \_\_\_\_\_  
Supervisor - Emergency Preparedness      Date

## REVISION SUMMARY

Revision 11 of OPEP-03.6.1 consists of the following changes:

-Step 6.0 - deleted "...by the RCM/RCD,..."

-Conversion of procedure from WordPerfect 5.1 DOS to Microsoft Word 7.0.

## LIST OF EFFECTIVE PAGES

<u>Page(s)</u>	<u>Revision</u>
1-12	11

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## 1.0 PURPOSE

This procedure defines a methodology for determining if a radiation release has occurred or is occurring.

## 2.0 REFERENCES

- 2.1 OPEP-03.4.7, Automation of Offsite Dose Projection Procedures
- 2.2 OPEP-02.6.26, Activation and Operation of the Technical Support Center (TSC)
- 2.3 OPEP-02.6.27, Activation and Operation of the Emergency Operations Facility (EOF)
- 2.4 OPEP-02.6.20, Dose Projection Coordinator

## 3.0 DEFINITIONS

- 3.1 RCM - Radiological Control Manager
- 3.2 RCD - Radiological Control Director
- 3.3 ERM - Emergency Response Manager

## 4.0 RESPONSIBILITIES

- 4.1 The Radiological Control Manager (RCM) is responsible to the Emergency Response Manager (ERM) for determining the magnitude and rate of radioactive release to the environment. The Dose Projection function shall report to the Radiological Control Manager.
- 4.2 If the EOF is not activated, the Radiological Control Director (RCD) will direct the Dose Projection Team.
- 4.3 The Radiological Control Manager/Director may delegate the calculational aspects of this procedure to the Dose Projection Coordinator.
- 4.4 This procedure may be used by the Control Room personnel until the Dose Projection Team is activated in the EOF.

## 5.0 GENERAL

None

## 6.0 INITIATING CONDITION(S)

This procedure shall be implemented whenever an abnormal radiological release through an identifiable release point is suspected, including any Site Area or General Emergency.

## 7.0 PRECAUTIONS AND LIMITATIONS

None

## 8.0 SPECIAL TOOLS AND EQUIPMENT

Scientific Calculator

## 9.0 INSTRUCTIONS

**NOTE:** The detector response will depend on the specific isotopic mixture being released at various times. Grab samples must be taken, analyzed and evaluated to provide an exact relationship; however, the predetermined relationship used in this procedure should be sufficiently accurate to guide initial emergency response actions and assessments.

- 9.1 Depending upon alarming channel(s), use appropriate Attachment (Attachment 1 through Attachment 5) to calculate the release source term.
- 9.2 If only one channel is alarming or reading abnormally high, the source term determined on the appropriate Attachment is the total.
- 9.3 If multiple building vent radiation monitors are alarming (and are not monitoring the same point), calculate the individual source terms and sum them to obtain the total source term.

**NOTE:** Source terms calculated for the stack should not be added to source terms calculated for alarming vent monitors since stack source terms represent elevated rather than ground level releases. If the stack and vent monitors are alarming, then separate elevated and ground level source terms. These should be calculated and applied separately to dose calculations. The resultant off-site dose projections can then be summed to assess the total impact of the releases off site.

- 9.4 Report the source term to the RCM (RCD if the EOF is not activated) for use with PEP-03.4.7.

## 9.0 INSTRUCTIONS

- 9.5 If the Hardened Wetwell Vent (HWV) is initiated, the Operator should go to the releasing plant's panel XU-54. A reading may be observed. The Operator can obtain the proper release rate by pushing the "EFL" button on the HWV panel (XU-54) and taking the reading which is displayed in microcuries per second.

ATTACHMENT 1  
Page 1 of 1  
**Source Term Calculation From Plant Stack Monitors**

Release rate is read in  $\mu\text{Ci}/\text{sec}$  directly from 2-D12-RR-4600 (effluent channel) when the 2-VA-FT-3359 flow instrument loop is operational. The following calculations are necessary when this loop is not operational.

TIME	MONITOR <sup>1</sup> READING ( $\mu\text{Ci}/\text{cc}$ )	FLOW <sup>2</sup> (cfm)	CONVERSION FACTOR $\frac{\text{cc}/\text{sec}}{\text{cfm}}$	RELEASE RATE <sup>3</sup> ( $\mu\text{Ci}/\text{sec}$ )
			472	

<sup>1</sup> The monitor automatically selects the most accurate operational channel, either low, mid, or high range. Read the  $\mu\text{Ci}/\text{cc}$  from the appropriate channel (low, mid, or high) of 2-D12-RR-4599.

<sup>2</sup> If not available, use the sum of design flows for systems exhausting to the stack per Attachment 6.

<sup>3</sup> Release rate ( $\mu\text{Ci}/\text{sec}$ ) = ( $\mu\text{Ci}/\text{cc}$ ) x (cfm) x (472)



ATTACHMENT 2  
Page 1 of 1  
**Source Term Calculation From #1 RX Gas (1-CAC-AQH-1264-3)**

TIME	METER READING (cpm)	FLOW <sup>1</sup> (cfm)	EFFICIENCY <sup>(2)</sup> FACTOR	RELEASE <sup>(3)</sup> RATE ( $\mu$ Ci/sec)

(1) If not available use 43,200 cfm per discharge fan times the number of fans operating.

(2) The efficiency factors posted on the front panel of the stack, reactor buildings monitors. If not posted, these values can be obtained from the latest E&RC 2020 performance (contact E&RC counting room).

(3) Release Rate = (cpm) x (cfm) x (Efficiency Factor)

ATTACHMENT 3  
Page 1 of 1  
Source Term Calculation From #1 Turbine Vent

Release rate is read in  $\mu\text{Ci}/\text{sec}$  directly from 1-D12-RR-4549 (effluent channel) when the 1-VA-FT-3358 flow instrument loop is operational. The following calculations are necessary when this loop is not operational.

TIME	MONITOR READING <sup>(1)</sup> ( $\mu\text{Ci}/\text{cc}$ )	FLOW <sup>(2)</sup> (cfm)	CONVERSION FACTOR $\frac{\text{cc}/\text{sec}}{\text{cfm}}$	RELEASE RATE <sup>(3)</sup> ( $\mu\text{Ci}/\text{sec}$ )
			472	

(1) The monitor automatically selects the most accurate operational channel, either low, mid, or high range. Read the  $\mu\text{Ci}/\text{cc}$  from the appropriate channel (low, mid, or high) of 1-D12-RR-4548.

(2) If not available, use 15,500 cfm.

(3) Release Rate ( $\mu\text{Ci}/\text{sec}$ ) = ( $\mu\text{Ci}/\text{cc}$ ) x (cfm) x (472)

ATTACHMENT 4  
Page 1 of 1  
Source Term Calculation From #2 RX Gas (2-CAC-AQR-1264-3)

TIME	METER READING (cpm)	FLOW <sup>(1)</sup> (cfm)	EFFICIENCY <sup>(2)</sup> FACTOR	RELEASE <sup>(3)</sup> RATE (μCi/sec)

(1) If not available use 43,200 cfm per discharge fan times the number of fans operating.

(2) The efficiency factors posted on the front panel of the stack, reactor buildings monitors. If not posted, these values can be obtained from the latest E&RC 2020 performance (contact E&RC counting room).

(3) Release Rate = (cpm) x (cfm) x (Efficiency Factor)

ATTACHMENT 5  
Page 1 of 1  
**Source Term Calculation From #2 Turbine Vent**

Release rate is read in  $\mu\text{Ci}/\text{sec}$  directly from 2-D12-RR-4549 (effluent channel) when the 2-VA-FT-3358 flow instrument loop is operational. The following calculations are necessary when this loop is not operational.

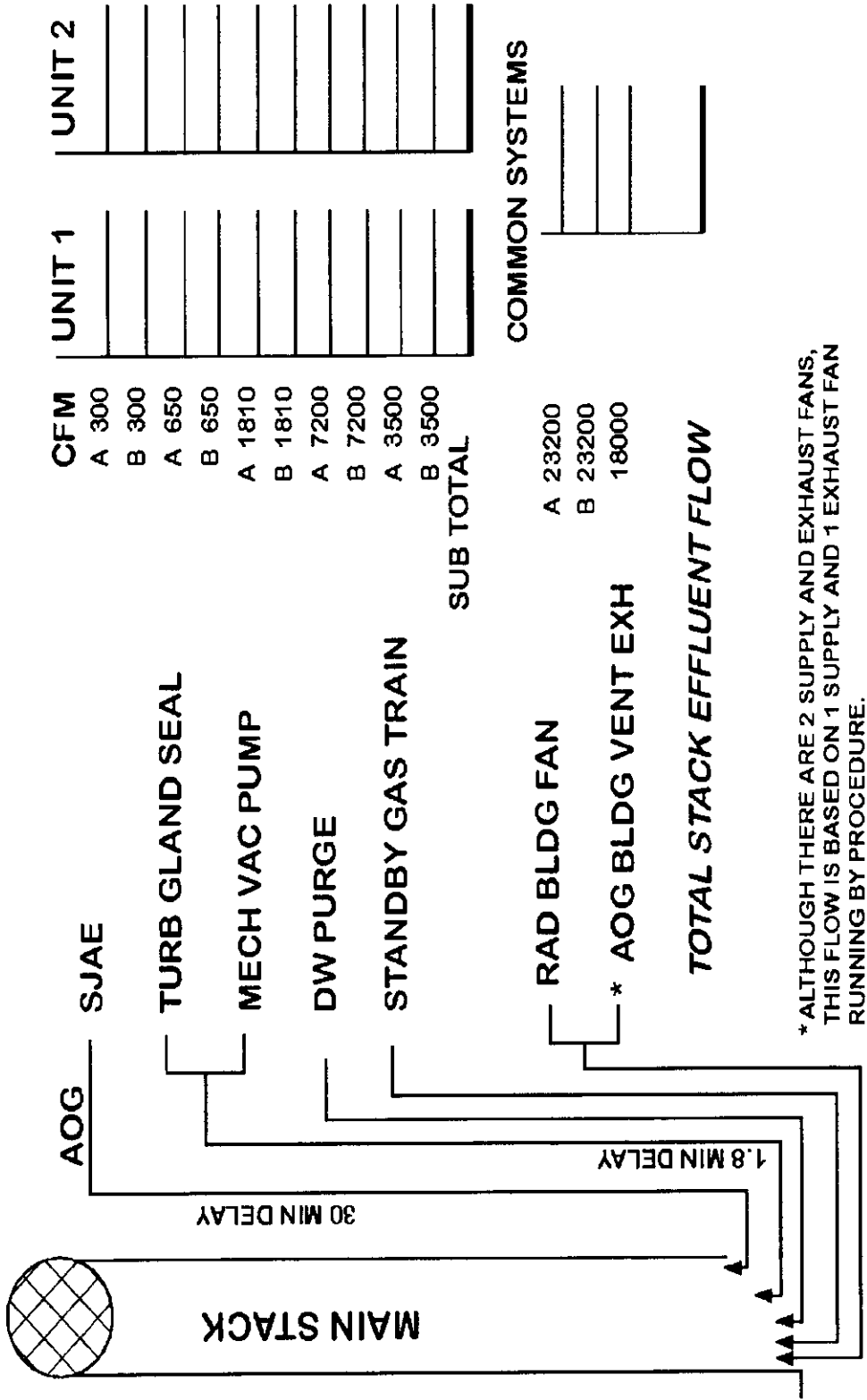
TIME	MONITOR READING <sup>(1)</sup> ( $\mu\text{Ci}/\text{cc}$ )	FLOW <sup>(2)</sup> (cfm)	CONVERSION FACTOR $\frac{\text{cc}/\text{sec}}{\text{cfm}}$	RELEASE RATE <sup>(3)</sup> ( $\mu\text{Ci}/\text{sec}$ )
			472	

(1) The monitor automatically selects the most accurate operational channel, either low, mid, or high range. Read the  $\mu\text{Ci}/\text{cc}$  from the appropriate channel (low, mid, or high) of 2-D12-RR-4548.

(2) If not available, use 15,500 cfm.

(3) Release Rate ( $\mu\text{Ci}/\text{sec}$ ) = ( $\mu\text{Ci}/\text{cc}$ ) x (cfm) x (472)

**SUM OF THE DESIGN FLOWS FOR SYSTEMS EXHAUSTING TO THE MAIN STACK**



\* ALTHOUGH THERE ARE 2 SUPPLY AND EXHAUST FANS, THIS FLOW IS BASED ON 1 SUPPLY AND 1 EXHAUST FAN RUNNING BY PROCEDURE.



**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM1SROCOO**

**LESSON TITLE:** Perform SRM/IRM overlap per GP-02.

**LESSON NUMBER:** ADM1SROCOO

**REVISION NO:** 0

**RECOMMENDED BY:** Curt Robert  
Instructor/Developer Date

**CONCURRENCE BY:** \_\_\_\_\_  
Line Superintendent/Supervisor Date

**APPROVED BY:** \_\_\_\_\_  
Superintendent/Supervisor Training Date

**SAFETY CONSIDERATIONS:**

1. None.

**SIMULATOR SETUP**

IC-3	BOC
Rx Pwr	%

Insert malfunction NI059F, SRM/IRM overlap incorrect and then withdraw control rods and establish a reactor period of approximately 120 sec. Allow reactor power to increase until the first SRM reaches approximately  $5 \times 10^5$  cps. Snap as an IC if required for multiple performers.

---

**EVALUATOR NOTES:** (Do not read to performer)

1. If this is the first JPM of the JPM set, read the JPM briefing contained in NUREG 1021, Appendix E, or similar to the performer.
  2. **START LOCATION:** Simulator.
  3. **PROVIDE A COPY:** The applicable procedure section **WILL NOT** be provided to the trainee. If performed in the classroom setting the evaluator may provide GP-02, Technical Specifications and TRM **ONLY** if the trainee requests these procedures.
  4. **TIME CRITICAL – BASIS FOR TIME:** This JPM is not a time critical JPM.
-



Read the following to the JPM performer.

**TASK CONDITIONS:**

1. Unit One startup is being performed per 0GP-02. Unit One reactor is critical with a period of approximately 120 seconds established. GP-02 has been completed up through Step 5.2.17 and reactor power is currently on range one (1) of the IRMs and rising.
2. Initial pre-startup IRM data recorded in the Reactor Operator's log (Step 5.2.7) as follows:

IRM Channel	Reading*
A	0.5%
B	0.6%
C	0.4%
D	0.4%
E	0.2%
F	0.3%
G	0.1%
H	0.2%

\* All IRM Readings taken on Range One from the digital readout 0-125 scale.

**INITIATING CUE:**

You are directed to perform Step 5.2.18 of GP-02 and continue the plant startup until all SRMs have been withdrawn.

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.  
Comments required for any step evaluated UNSAT.

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

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.

**NOTE:** If desired, the examiner may provide a copy GP-02 to the examinee.

Step 1 - Obtain a current revision of 0GP-02.  
*Current Revision of 0GP-02 obtained and verified, if applicable.*

**SAT/UNSAT\***

Step 2 – Determine SRM/IRM overlap criteria is ONLY met for IRM B. No other IRMs have reached a reading 10% of scale before the first SRM reached  $5 \times 10^5$  cps.

*Determined that SRM/IRM overlap criteria is not met for IRMs A, C, E, G, D, F, and H based on not reading 10% of scale.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 3 – IF correct SRM/IRM overlap is **NOT** verified, **THEN** the Reactor Engineer shall be notified **AND** Technical Specification LCO 3.3.1.1 referenced.

*Notifies SCO that Reactor Engineer shall be notified **AND** Technical Specification LCO 3.3.1.1 referenced.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

**PROMPT:** If examinee states that the Reactor Engineer shall be notified **AND** Technical Specification LCO 3.3.1.1 referenced direct him to assess Technical Specifications and determine the required actions.

If examinee commences step 5.2.19 and withdraws SRM detectors as required to maintain an indicated count rate between  $10^2$  cps and  $5 \times 10^4$  cps then inform the examinee that the JPM is complete.

Step 4 – Determine LCO 3.3.1.1, Condition A is applicable.

*Determined that LCO 3.3.1.1 Condition A applies. Required Action is to place the channel or associated trip system in trip within 12 hours.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

**TERMINATING CUE:** When Technical Specification determination has been made and the SCO has been informed of the results, this JPM is complete.

**\* Comments required for any step evaluated as UNSAT.**

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

**RELATED TASKS:**

215201B101, Verify Correct Overlap Between SRMs And IRMs Per GP-02

**K/A REFERENCE AND IMPORTANCE RATING:**

GEN 2.1.7 3.7/4.4

Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation.

**REFERENCES:**

0GP-02

**TOOLS AND EQUIPMENT:**

None.

**SAFETY FUNCTION** (from NUREG 1123, Rev 2.):

Generic (Administrative)

**REASON FOR REVISION:**

Modified to produce substantively different results for use on 2004 NRC exam.

Determine SRM/IRM Overlap Per GP-02

Time Required for Completion: **10 Minutes** (approximate).

Time Taken: \_\_\_\_ Minutes

**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual \_\_\_\_ Unit: \_\_\_\_  
Setting: Control Room \_\_\_\_ Simulator  (Not applicable to In-Plant JPMs)  
Time Critical: Yes \_\_\_\_ No \_\_\_\_ Time Limit **NA**  
Alternate Path: Yes \_\_\_\_ No

**EVALUATION**

Performer: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass \_\_\_\_ Fail \_\_\_\_

Remedial Training Required: Yes \_\_\_\_ No \_\_\_\_

Did Performer Verify Procedure? Yes \_\_\_\_ No \_\_\_\_  
(Each Student should verify one JPM per evaluation set)

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

---

**TASK CONDITIONS:**

1. Unit One startup is being performed per OGP-02. Unit One reactor is critical with a period of approximately 120 seconds established. GP-02 has been completed up through Step 5.2.17 and reactor power is currently on range one (1) of the IRMs and rising.
2. Initial pre-startup IRM data recorded in the Reactor Operator's log (Step 5.2.7) as follows:

<b>IRM Channel</b>	<b>Reading*</b>
<b>A</b>	<b>0.5%</b>
<b>B</b>	<b>0.6%</b>
<b>C</b>	<b>0.4%</b>
<b>D</b>	<b>0.4%</b>
<b>E</b>	<b>0.2%</b>
<b>F</b>	<b>0.3%</b>
<b>G</b>	<b>0.1%</b>
<b>H</b>	<b>0.2%</b>

\* All IRM Readings taken on Range One from the digital readout 0-125 scale.

**INITIATING CUE:**

You are directed to perform Step 5.2.18 of GP-02 and continue the plant startup until all SRMs have been withdrawn.



**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM2SROCOO**

**LESSON TITLE:** Core Performance Parameter Check.

**REVISION NO:** 0

**RECOMMENDED BY:** Curt Robert  
Instructor/Developer Date

**CONCURRENCE BY:** \_\_\_\_\_  
Line Superintendent/Supervisor Date

**APPROVED BY:** \_\_\_\_\_  
Superintendent/Supervisor Training Date



## Core Performance Parameter Check

---

### **SAFETY CONSIDERATIONS:**

1. None.
- 

### **EVALUATOR NOTES:** (Do not read to performer)

1. If this is the first JPM of the JPM set, read the JPM briefing contained in NUREG 1021, Appendix E, or similar to the performer.
  2. **START LOCATION:** This JPM can be performed at any location because it is an administrative task.
  3. **PROVIDE A COPY:**
    - a. Provide a clean copy of 2PT-01.11, Core Performance Parameter Check if requested.
    - b. As typical in plant, provide completed 2PT-01.11 as Cover Page, Certification and Review Form only with Core Performance Log Printout (CMFLPD is >1.0) attached.
  4. **TIME CRITICAL – BASIS FOR TIME:** This JPM is not a time critical JPM.
-

Read the following to the JPM performer.

**TASK CONDITIONS:**

1. Unit Two (2) is operating at rated power and the CODSR requires performance of 2PT-01.11 Core Performance Parameter Check.
2. The Core Performance Log printout included was used by the RO to complete 2PT-01.11.
3. The revision of 2PT-01.11 that was used is the current revision.

**INITIATING CUE:**

You are directed by the Shift Superintendent to perform the Unit SCO review 2PT-01.11, Core Performance Parameter Check and supporting documentation. Document your results on the Certification and Review form and inform the Shift Superintendent when you have completed the review.

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.  
Comments required for any step evaluated UNSAT.

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

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.

**PROMPT:** Provide the Core Performance Log edit before administering this JPM for use throughout the remainder of this JPM.

**NOTE:** If desired, the examiner may provide a copy 2PT-01.11 to the examinee.

Step 1 – Reviews Core Performance Log Printout and determines the CMFLPD has been exceeded. This contradicts the satisfactory results shown on the Certification and Review Form.

*Determines CMFLPD is greater than 1.*

**SAT/UNSAT\***

Step 2 – Verifies that the acceptance criteria of section 6.0 has been satisfied.

*CMFLPD is not required by Technical Specifications. Documents as an "Exception to Satisfactory Performance" that CMFLPD is UNSAT.*

**SAT/UNSAT\***

Core Performance Parameter Check

---

Step 3 – Determine corrective action required for UNSAT CMFLPD.

*2PT-01.11 requires that the Reactor Engineer be informed to take action to restore CMFLPD within limits within 4 hours, or to be below 23% power within the next 4 hours.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 7 - Notify Shift Superintendent that 2PT-01.11 was completed with CMFLPD >1.00.

*SCO signs on the Certification and Review form that test procedure has **NOT** been satisfactorily completed. Notifies SS that 2PT-01.11 was completed with CMFLPD >1.00. 2PT-01.11 is UNSAT but Technical Specifications are met.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

**TERMINATING CUE:** When review of 2PT-01.11 has been completed, this JPM is complete.

\* Comments required for any step evaluated as UNSAT.

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

## Core Performance Parameter Check

---

### **RELATED TASKS:**

299201B201: Perform Daily Surveillance Report Per OI-3.1 Or OI-3.2.

### **K/A REFERENCE AND IMPORTANCE RATING:**

GEN 2.1.7 3.7/4.4

Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation.

GEN 2.1.19 3.0/3.0

Ability to use plant computer to obtain and evaluate parametric information on system or component status.

### **REFERENCES:**

2PT-01.11 CORE PERFORMANCE PARAMETER CHECK

### **TOOLS AND EQUIPMENT:**

None.

### **SAFETY FUNCTION** (from NUREG 1123, Rev 2.):

Generic (Administrative)

### **REASON FOR REVISION:**

New for use on 2004 NRC exam.

Core Performance Parameter Check

Time Required for Completion: **10 Minutes** (approximate).

Time Taken: \_\_\_\_ Minutes

**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual \_\_\_\_ Unit: \_\_\_\_  
Setting: Control Room \_\_\_\_ Simulator \_\_\_\_ (Not applicable to In-Plant JPMs)  
Time Critical: Yes \_\_\_\_ No  Time Limit **NA**  
Alternate Path: Yes \_\_\_\_ No

**EVALUATION**

Performer: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass \_\_\_\_ Fail \_\_\_\_

Remedial Training Required: Yes \_\_\_\_ No \_\_\_\_

Did Performer Verify Procedure? Yes \_\_\_\_ No \_\_\_\_  
(Each Student should verify one JPM per evaluation set)

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

---

**TASK CONDITIONS:**

1. Unit Two (2) is operating at rated power and the CODSR requires performance of 2PT-01.11 Core Performance Parameter Check.
2. The Core Performance Log printout included was used by the RO to complete 2PT-01.11.
3. The revision of 2PT-01.11 that was used is the current revision.

**INITIATING CUE:**

You are directed by the Shift Superintendent to perform the Unit SCO review 2PT-01.11, Core Performance Parameter Check and supporting documentation. Document your results on the Certification and Review form and inform the Shift Superintendent when you have completed the review.





**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM4SRORC**

LESSON TITLE: Evaluate Liquid Discharge Release Permit.

REVISION NO: 0

RECOMMENDED BY: Curt Robert  
Instructor/Developer DATE

CONCURRENCE BY: \_\_\_\_\_  
Line Superintendent/Supervisor DATE

APPROVED BY: \_\_\_\_\_  
Superintendent/Supervisor Training DATE

Evaluate Liquid Discharge Release Permit.

---

Special Instructions

Prepare a Liquid Release Permit, OP-06.4, Attachment 4. Complete Part I, Part II and Part III up to the Unit SCO approval line.

Complete Part I as follows:

PART I. TANK DATA

- A. Tank to be released **SWRT**  
B. Tank to be released will be recirculated and sampled as in accordance with section **5.7** of OOP-06.4.  
C. Level **85** % Volume **27187.5** gallons.  
D. Required Recirculation Time **0.9** min / % Level X **85** % Level = **76.5** Min  
E. Start Recirculation Date/Time **date of jpm/0830**  
Required recirc time completed Date/Time **date of jpm/0947**  
Sample Taken Date/Time **date of jpm/1000**  
(After required recirc time)

The remainder of the data should be correct.

Fill out 0E&RC-2009, Attachment 2, Part I. Ensure sample time matches time specified in the OP-06.4, Attachment 4.

Obtain a copy of an E&RC Pre-Release Permit. NOTE: Electronic file available on K:\Training\JPM\Admin JPMS

An actual release may be obtained from the E&RC counting room to aid in filling out the required data.

**SAFETY CONSIDERATIONS:**

None.

**EVALUATOR NOTES:** (Do not read to trainee)

1. The applicable procedure section **WILL** be provided to the trainee.
  2. If this is the first JPM of the JPM set, read the JPM briefing contained NUREG 1021, Appendix E, or similar to the trainee.
  3. Provide examinee with prepared copy of OOP-06.4, Attachment 4, OE&RC-2009, Attachment 2, and the E&RC Pre-Release Permit.
- 

Read the following to trainee.

**TASK CONDITIONS:**

1. The Unit 1 Salt Water Release Tank is nearing capacity, and is scheduled to be released.
2. A Radioactive Liquid Release Permit has been prepared in accordance with OOP-06.4.
3. A Pre-Release Permit has been prepared by E&RC in accordance with E&RC-2009.

**INITIATING CUE:**

You are directed by the Shift Superintendent to review the Radioactive Liquid Release Permit, and the Pre-Release Permit, and determine if the Unit 1 Salt Water Release Tank can be released per the supporting documentation, and inform the Shift Superintendent of the results of your review.

### PERFORMANCE CHECKLIST

**NOTE:** Sequence is assumed unless denoted in the Comments.

**NOTE:** The examiner should have a copy of OOP-06.4, Section 5.7 to provide to the examinee if requested, or allow examinee access to the entire procedure.

Step 1 - Obtain a current revision of OOP-06.4.

*Current Revision of OOP-06.4 obtained and verified, if applicable.*

**SAT/UNSAT\***

Step 2 – Verify that Volume determination of U/1 SWRT corresponds to a level of 85% as specified on the Radioactive Liquid Release Permit.

*Determine that volume of U/1 SWRT of 27187.5 gallons is NOT correct as specified on the Radioactive Liquid Release Permit. Should be 30812.5.*

**SAT/UNSAT\***

Step 3 – Verify that required Recirculation time for a U/1 SWRT at a tank level of 85% is correct as specified on the Radioactive Liquid Release Permit.

*Determine that required Recirculation time for the U/1 SWRT at a tank level of 85% of 76.5 minutes is NOT correct as specified on the Radioactive Liquid Release Permit. Should be  $4 \text{ min}/\% \times 85\% = 340 \text{ min}$ . The  $0.9 \text{ min}/\%$  recirculation requirements applies to FDST and WST NOT SWRT.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Evaluate Liquid Discharge Release Permit.

---

Step 4 – Determine with a Start Recirculation time of 0830, the required Recirc completion time should be 1410 (not 0947) and that the sample taken time must be after 1410 (not 1000) as specified on the Radioactive Liquid Release Permit.

*Determines requirements for Recirculation time and/or sample time per OOP-06.4 have not been satisfied, and that the release should not be approved.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 5 – Informs Shift Superintendent that the Release Permit may not be approved.  
*Shift Superintendent informed that the Release Permit may not be approved.*

**SAT/UNSAT\***

**TERMINATING CUE:** When the Radioactive Liquid Release Permit has been evaluated as unsatisfactory, this JPM is complete.

**\* Comments required for any step evaluated as UNSAT.**

**RELATED TASKS:**

341012B302, Review Radioactive Waste Discharge/Release Permits Per E&RC-2009 prior To Approval.

**K/A REFERENCE AND IMPORTANCE RATING:**

GEN 2.3.6 3.1

**REFERENCES:**

OOP-06.4  
OE&RC-2009  
BSEP Radioactive Liquid Release Permit 02-0044

**TOOLS AND EQUIPMENT:**

None.

**ADMINISTRATIVE CATEGORY (from NUREG 1123):**

Radiation Control

**REASON FOR REVISION:**

Modified a new JPM developed for NRC 2003 Initial License Exam for NRC 2004 Initial License Exam.

Evaluate Liquid Discharge Release Permit.

---

Time Required for Completion: 15 Minutes (approximate).

---

**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual  Unit:   
Setting: Control Room  Simulator  ( Not applicable to In-Plant JPMs )  
Time Critical: Yes  No  Time Limit N/A  
Alternate Path: Yes  No

---

**EVALUATION**

Trainee: \_\_\_\_\_

JPM: Pass  Fail

Remedial Training Required: Yes  No

Did Trainee Verify Procedure as Authorized Copy?: Yes  No   
(Each Student should verify one JPM per evaluation set.)

---

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

---

**TASK CONDITIONS:**

1. The Unit 1 Salt Water Release Tank is nearing capacity, and is scheduled to be released.
2. A Radioactive Liquid Release Permit has been prepared in accordance with OOP-06.4.
3. A Pre-Release Permit has been prepared by E&RC in accordance with E&RC-2009.

**INITIATING CUE:**

You are directed by the Shift Superintendent to review the Radioactive Liquid Release Permit, and the Pre-Release Permit, and determine if the Unit 1 Salt Water Release Tank can be released per the supporting documentation, and inform the Shift Superintendent of the results of your review.

---



CAROLINA POWER AND LIGHT COMPANY  
BRUNSWICK STEAM ELECTRIC PLANT

PAGE 1

LIQUID RADIOACTIVE WASTE RELEASE PERMIT NUMBER: 04-0001  
PRE-RELEASE PERMIT DATE: TODAY

08:00:00

PART I: PRE-RELEASE DATA:

RELEASE POINT: SALT WATER TANK U1

WASTE SAMPLE PERMIT:  
PERMIT REQUESTED BY:

03-0001  
KAB

PERMIT TIME: TODAY/0800

SAMPLE PH 8.0

RAD MONITOR NUMBER: D12-RM-K604  
# CIRC WATER PUMPS: 6.0  
# SERVICE WATER PUMPS: 4.0

RAD MONITOR BACKGRD: 3.000E+02 CPS  
RAD MONITOR EFF: 1.251E+07  
DILUTION FACTOR: 1.547E-01

PART II: PRE-RELEASE CALCULATIONS

TOTAL ACTIVITY: 1.677E-06 CI  
TOTAL CONC/EC: 5.000E-02  
MAX MONITOR SETPOINT: 1.348E+04 CPS

TOTAL GAMMA ACTIVITY: 1.547E-8 UCI/ML  
RELEASE VOLUME: 2.864E+04 GAL  
MAX RELEASE RATE: 2.271E+06 GPM

PART III: SPECIAL INSTRUCTIONS

PRE-RELEASE COMPLIANCE CHECK PASSES  
PRE-RELEASE ADMIN LIMIT PASSES

CAROLINA POWER AND LIGHT COMPANY  
BRUNSWICK STEAM ELECTRIC PLANT

PAGE 2

LIQUID RADIOACTIVE WASTE RELEASE PERMIT NUMBER: 03-0001  
PRE-RELEASE PERMIT DATE: TODAY

08:00:00

PRE-DILUTION DATA

NUCLIDES	(UCI/ML)	EC (UCI/ML)
I-131	1.547E-08	1.000E-06





ATTACHMENT 4  
Page 2 of 6  
**BSEP Radioactive Liquid Release Permit**

I. Tank to be released will be discharged in accordance with Section \_\_\_\_\_ of OOP-06.4.

J. Part I completed Date/Time \_\_\_\_\_

\_\_\_\_\_  
Radwaste Operator (signature)

**PART II. RADIATION MONITOR STATUS**

A. Monitor is being used for discharge (General Electric D12-RM-K604)  
Yes \_\_\_\_\_ No \_\_\_\_\_

(If monitor is **NOT** being used, list special instructions in Part III. See ODCMS 7.3.1 for additional sampling requirements.)

B. Monitor Hi-Hi setpoint is at \_\_\_\_\_ cps.

(If monitor is **NOT** being used, set monitor Hi-Hi setpoint to maximum to prevent spurious trip during release.)

C. Monitor Hi-Hi setpoint set between background and maximum monitor setpoint (E&RC-2009). Yes \_\_\_\_\_ No \_\_\_\_\_

D. Monitor indication prior to release (chart) \_\_\_\_\_ cps.

(Circle one used) Unit 1 / Unit 2

E. **CONFIRM** Radwaste effluent isolation valves are closed.

1-D12-V27A Position \_\_\_\_\_ Unit 1      2-D12-V27B Position \_\_\_\_\_ Unit 2

ATTACHMENT 4  
Page 3 of 6  
**BSEP Radioactive Liquid Release Permit**

Part III. APPROVAL FOR USE

- A. Both unit Reactor Operators have been informed of release and are aware of Circulating Water/Service Water Pump requirements.

Unit 1 RO \_\_\_\_\_  
Signature

Unit 2 RO \_\_\_\_\_  
Signature

- B. 1. Liquid Radwaste effluent flow measurement device operable (if inoperable, ODCMS 7.3.1 Required Compensatory Measure C1, requires the flow rate be estimated at least once/4 hours during actual releases.)

Yes \_\_\_\_\_ No \_\_\_\_\_

2. Liquid Radwaste radioactivity effluent monitor operable (if inoperable, reference ODCMS 7.3.1)

Yes \_\_\_\_\_ No \_\_\_\_\_

C. Special instructions for release: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

D. Approval to release: \_\_\_\_\_  
Unit SCO Date/Time

E. Approval to release: \_\_\_\_\_  
Shift Superintendent Date/Time

Key(s) \_\_\_\_\_ Received by \_\_\_\_\_  
Radwaste Operator (signature)

ATTACHMENT 4  
Page 4 of 6  
**BSEP Radioactive Liquid Release Permit**

Part IV. RELEASE DATE

A. Maximum permissible release rate \_\_\_\_\_ gpm

B. Special instructions in Part III understood

\_\_\_\_\_  
Radwaste Operator (signature)

C. Release times:

Start (Date/Time)	Stop (Date/Time)	Time Interval
_____	_____	_____ minutes
_____	_____	_____ minutes
_____	_____	_____ minutes

Total release time: \_\_\_\_\_ minutes

**NOTE:** Post-Trip and DDT Flushes go to the Floor Drains or the Oily Drain Collector Tank. Flush water flows through the radiation monitor and flow totalizer, while the 1-D12-V27A and 2-D12-V27B are closed. If a Post-Trip or DDT flush is performed, then the number of gallons of flush water should be logged below as this water is not released. If a post trip or DDT flush is not performed, N/A this reading.

D. Flow rate instrument verification in accordance with ODCMS TR 7.3.1.2

Flow Totalizer  
2-G16-FIQ-3497  
(Discharge via  
2-G16-F187)

Release Zero Set \_\_\_\_\_

Flush to ODCT or Floor Drains \_\_\_\_\_ gallons.

Release Final Reading \_\_\_\_\_

ATTACHMENT 4  
Page 5 of 6  
**BSEP Radioactive Liquid Release Permit**

E. Flow rate instrument verification (in accordance with TR 7.3.1.2).

Flow rates (recorder) 2-G16-FR-R039

Start \_\_\_\_\_ GPM      Stop \_\_\_\_\_ GPM

**NOTE:** Completion of Part F is **NOT** required if the 2-G16-FIT-N057 is operable. Reference ODCMS 7.3.1 Required Compensatory Measure C1.

F. Flow estimate using tank level indicator.

Formula: (Start % - Stop % = Difference % X Gallons /% =

Gallons from tank decrease ÷ total release time = GPM)

Start % \_\_\_\_\_ - Stop % \_\_\_\_\_ = Difference \_\_\_\_\_ %

Difference \_\_\_\_\_ % X \_\_\_\_\_ \*Gallons/% = \_\_\_\_\_  
(From line above) (Gal. from tank decrease)

Gallons from tank decrease ÷ \_\_\_\_\_ Total release time = \_\_\_\_\_ GPM  
(From line above) (In minutes)

G. Monitor Flush:

Flow Totalizer  
(Discharge via  
2-G16-F187)

Flush Start \_\_\_\_\_

Flush Total \_\_\_\_\_

Difference \_\_\_\_\_

\*Gallons/% obtained from E&RC-2009.



ATTACHMENT 4  
Page 6 of 6  
**BSEP Radioactive Liquid Release Permit**

Post-flush readings (chart) \_\_\_\_\_ CPS      Unit 1 / Unit 2  
(Circle one used)

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

H. Release completed Date \_\_\_\_\_ Time \_\_\_\_\_

\_\_\_\_\_  
Radwaste Operator (signature)

Part V. Review

A. Key(s) \_\_\_\_\_ returned to Main Control Room \_\_\_\_\_  
Initials

B. Radiation monitor channel check in accordance with ODCMS 7.3.1, and TR 7.3.1.1.

**NOTE:** Use same monitor as used in Part II. D.

Highest reading during release (chart) \_\_\_\_\_ CPS

Average reading during release (chart) \_\_\_\_\_ CPS

C. Monitor Hi and Hi-Hi setpoints set above background reading.

\_\_\_\_\_  
Initials

\_\_\_\_\_  
Unit SCO (signature)

\_\_\_\_\_  
Date

**5.7 Recirculation and Sampling of Saltwater Release Tank #1**

**5.7.1 Initial Conditions**

1. All applicable prerequisites as listed in Section 4.0 are met.

**5.7.2 Procedural Steps** Saltwater Release Tank \_\_\_\_\_

1. **PERFORM** the following to ensure the Saltwater Release Tank can **NOT** receive inputs from the following sources during recirculation and sampling:
- a. **ENSURE** the Unit 1 Breezeway North end West side mop water drain tube is locked.
  - b. **DISCONNECT** electrical supply to pipe tunnel dike portable bilge pump.
  - c. **REMOVE** Turbine Building portable sump pump discharge hose from Saltwater Release Tank.
2. **IF** the tank is being recirculated through the Saltwater Release System Filters in accordance with Section 5.8, **THEN GO TO** Step 5.7.2.6.
3. **OPEN SALTWATER RELEASE SYSTEM RECIRCULATION VALVE, 1-SWR-V11.**

**NOTE:** Saltwater Release Tank level may drop 0-4% when placed in recirculation.

4. **WHEN** placing Saltwater Release Tank in recirculation, **THEN RECORD** tank level prior to starting pump.

\_\_\_\_\_  
Tank Level

5. **START** Saltwater Release System Pump #1.

**5.7.2 Procedural Steps**

- 6. **SAMPLE** Saltwater Release Tank #1 by completing the following:
  - a. **ALLOW** Saltwater Release Tank to recirculate for 4 minutes for each percent of indicated tank volume.
  - b. **OPEN SALTWATER RELEASE SYSTEM SAMPLE STATION VALVE, 1-SWR-V17.**
  - c. **ALLOW** sample to run for at least 5 minutes to ensure a representative sample is obtained.
  - d. **OBTAIN** sample in accordance with E&RC-2009.
  - e. **CLOSE SALTWATER RELEASE SYSTEM SAMPLE VALVE, 1-SWR-V17.**
  
- 7. **IF** tank activity is greater than ODCM limits, **OR** additional filtration is desired, **AND** the tank is being recirculated through the Saltwater Release System Filters in accordance with Section 5.8, **THEN CONTINUE** recirculation.
  
- 8. **IF** tank activity is greater than allowed ODCM limits, **OR** additional filtration is desired, **AND** the tank is **NOT** being recirculated in accordance with Section 5.8, **THEN:**
  - a. **PERFORM** Section 7.6 **AND,**
  - b. **PERFORM** Section 5.8 to conduct cleanup.
  
- 9. **IF** tank activity is within ODCM limits **AND** it is desired to release Saltwater Release Tank #1, **THEN PERFORM** Section 5.9.
  
- 10. **IF** desired, **THEN SHUT DOWN** recirculation in accordance with:
  - a. Section 7.6 **OR**
  - b. Section 7.5.

**5.9 Discharge of Saltwater Release Tank #1 via the General Electric Radiation Monitor**

**5.9.1 Initial Conditions** Date/Time Started \_\_\_\_\_

1. All applicable prerequisites in Section 4.0 are met. \_\_\_\_\_
2. Tank is in recirculation in accordance with Section 5.7 or Section 5.8. \_\_\_\_\_
3. Tank has been sampled in accordance with Section 5.7. \_\_\_\_\_
4. Radioactive Liquid Release Permit has been received with Parts I, II, and III completed and signed. \_\_\_\_\_

**R22**

**CAUTION**

The following section has the potential to significantly raise area dose rates.

**5.9.2 Procedural Steps** Saltwater Release Tank \_\_\_\_\_

1. **RESET FLOW TOTALIZER, 2-G16-FIQ-3497, AND RECORD** totalizer indication at "Release Zero Set" in Part IV.D of the Radioactive Liquid Release Permit. \_\_\_\_\_

**NOTE:** IF tank level has changed, THEN the discharge process should be terminated and a new Radioactive Liquid Release Permit should be prepared.

2. **CONFIRM** Saltwater Release Tank #1 level recorded in Part I.C of the Radioactive Liquid Release Permit has **NOT** changed. \_\_\_\_\_
3. **ENSURE** the following valves are closed:
  - a. *FLOOR DRAIN SAMPLE PUMP A DISCHARGE, 2-G16-F177A* \_\_\_\_\_  
Ind.Ver.   /
  - b. *FLOOR DRAIN SAMPLE PUMP B DISCHARGE, 2-G16-F177B* \_\_\_\_\_  
Ind.Ver.   /

## 5.9.2 Procedural Steps

4. **PLACE RELEASE ISOLATION VALVE, 2-G16-F187,** control switch in **OPEN**. /   
 Ind.Ver.
5. **ENSURE UNIT 1 (2) RADWASTE EFFLUENT ISOLATION VALVE, 1-D12-V27A (2-D12-V27B),** is open. /   
 Ind.Ver.

**NOTE:** IF flow is **NOT** obtained within 30 seconds, **THEN** Saltwater Release Tank Pump #1 should be stopped and the reason for lack of flow should be investigated.

6. **OPEN RELEASE FLOW CONTROL VALVE, 2-G16-FCV-F189,** by setting 2-G16-FIC-R038 at less than or equal to 5%. \_\_\_\_\_
7. **OPEN SALTWATER RELEASE SYSTEM DISCHARGE ISOLATION VALVE, 1-SWR-V13.** /   
 Ind.Ver.
8. **OPEN FLOOR DRAIN SAMPLE PUMPS TO DISCHARGE MONITOR ISOLATION VALVE, 2-G16-V1190.** /   
 Ind.Ver.
9. **OPEN RADIATION MONITOR INLET HEADER CROSSTIE, 2-G16-V1116.** /   
 Ind.Ver.
10. **ENSURE SALTWATER RELEASE SYSTEM LEVEL CONTROL VALVE, 1-SWR-AOV-4990,** is closed. /   
 Ind.Ver.
11. **ENSURE SALTWATER RELEASE SYSTEM FILTER 1A (1B) INLET ISOLATION VALVE, 1-SWR-V7 (1-SWR-V8),** depending on which filter is to be used, is open. /   
 Ind.Ver.
12. **ENSURE SALTWATER RELEASE SYSTEM FILTER BYPASS VALVE, 1-SWR-V6,** is closed. /   
 Ind.Ver.
13. **OPEN SALTWATER RELEASE SYSTEM PUMP DISCHARGE VALVE, 1-SWR-V5.** /   
 Ind.Ver.
14. **ENSURE SALTWATER RELEASE SYSTEM RECIRCULATION VALVE, 1-SWR-V11,** is closed. /   
 Ind.Ver.

**5.9.2 Procedural Steps**

- 15. **RECORD** release start time in Part IV.C of the Radioactive Liquid Discharge Permit. \_\_\_\_\_
- 16. **IF** maximum flow is less than 100 gpm, at any time during the discharge, **THEN INITIATE** a W/R to have the filter elements replaced. \_\_\_\_\_
- 17. **RAISE** discharge flow rate, using 2-G16-FIC-R038, up to but **NOT** above the maximum release rate specified in the Prerelease Permit.     /      
Ind.Ver.
- 18. **WHEN** discharge is complete, **THEN SECURE** discharging in accordance with Section 7.4. \_\_\_\_\_

Date/Time Completed \_\_\_\_\_

Performed By (Print) \_\_\_\_\_ Initials \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reviewed By: \_\_\_\_\_  
Unit SCO

ATTACHMENT 4  
Page 1 of 6  
**BSEP Radioactive Liquid Release Permit**

Release# \_\_\_\_\_  
Date \_\_\_\_\_

BSEP RADIOACTIVE LIQUID RELEASE PERMIT

PART I. TANK DATA

- A. Tank to be released U1 SWRT
- B. Tank to be released will be recirculated and sampled as in accordance with section 5.7 of OOP-06.4.
- C. Level 85 % Volume 27187.5 gallons.
1. \*Batch Release Tank Volumes

**NOTE:** Attachment 3 of OE&RC-2009, Radioactive Effluent Releases and Reports, lists abnormal release volumes for miscellaneous tanks.

WSTs = 208.4 gallons/% level  
FDSTs = 209.4 gallons/% level  
DDTs = 10.9 gallons/% level  
U/1 SWRT = 362.5 gallons/percent

- D. Required Recirculation Time 0.9 min / % Level X 85 % Level =  
76.5 Min
- E. Start Recirculation Date/Time 11/1 0830  
Required recirc time completed Date/Time 11/1 0947  
Sample Taken Date/Time 11/1 1000  
(After required recirc time)
- F. Source of water condenser inlet pit
- G. Treatment prior to release filter
- H. \*Has the tank to be released been subjected to PH adjustments due to NaOH or H2SO4? Yes \_\_\_\_\_ No

\*Reference procedure E&RC-2009.

**Routine Release Sample Data Sheet**

Circle one: FDST A FDST B WST A WST B DDT A DDT B U/1 SWRT

**I. TO BE COMPLETED BY E&C**

Liquid radwaste monitor in service: Yes \_\_\_\_\_ No\* \_\_\_\_\_

SDCP Release in Progress Yes\*\* \_\_\_\_\_ No \_\_\_\_\_

Sample location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Sample by: \_\_\_\_\_

E&C or OPS

E&C or OPS\*

Release Permit Number \_\_\_\_\_ pH \_\_\_\_\_

File # \_\_\_\_\_ Detector \_\_\_\_\_ RW Bkg \_\_\_\_\_

<u>Unit 1</u>	<u>Unit 2</u>	<u>Total # Pumps</u>
# Circ Pumps _____	#Circ Pumps _____	Circ _____
# Serv Pumps _____	#Serv Pumps _____	Serv _____

Release Rate Calculation: \_\_\_\_\_  
E&C Technician E&C Technician\*

**II. REFER TO PART III OF THE ATTACHED BSEP RADIOACTIVE LIQUID RELEASE PERMIT FOR SPECIAL INSTRUCTIONS.**

Reviewed Prior to Release \_\_\_\_\_  
Shift Superintendent / Date

**III. POSTRELEASE REVIEW**

Reviewed by: \_\_\_\_\_ / \_\_\_\_\_  
E&C Technician Date

\*Two independent samples, and verification thereof, are required when radwaste effluent monitor is declared inoperative and two technically qualified E&C personnel are required to verify and sign the release rate calculations.

\*\*If SDCP Release is in Progress, subtract two Service Pumps from total service pumps used in the release.





**PROGRESS ENERGY CAROLINAS  
BRUNSWICK TRAINING SECTION**

**JOB PERFORMANCE MEASURE  
ADMIN**

**ADM5SROEP**

**LESSON TITLE:** Make Protective Action Recommendations per  
0PEP-02.6.28.

**REVISION NO:** 0

**RECOMMENDED BY:** Curt Robert  
Instructor/Developer Date

**CONCURRENCE BY:** \_\_\_\_\_  
Line Superintendent/Supervisor Date

**APPROVED BY:** \_\_\_\_\_  
Superintendent/Supervisor Training Date

**SAFETY CONSIDERATIONS:**

1. None.
- 

**EVALUATOR NOTES:** (Do not read to performer)

1. If this is the first JPM of the JPM set, read the JPM briefing contained in NUREG 1021, Appendix E, or similar to the performer.
  2. **START LOCATION:** This JPM can be performed at any location because it is an administrative task.
  3. **PROVIDE A COPY:**
    - a. Provide a clean copy of OPEP-02.6.28, Core OFF-SITE PROTECTIVE ACTION RECOMMENDATIONS.
    - b. Provide a completed Emergency Notification form. (Except blocks 3, 15 and 16)
  4. **TIME CRITICAL – BASIS FOR TIME:** This JPM is a time critical JPM based upon the fact that OPEP-02.6.28 Rev. 8 Section 5.2 requires that the SEC ensures that PARs be issued within 15 minutes from the General Emergency Declaration.
-

Read the following to the JPM performer.

This is a time critical JPM and must be completed within 15 minutes.

**TASK CONDITIONS:**

1. A General Emergency has just been declared due to an unisolable Main Steam Line break with fuel failure.
2. Weather Conditions are as follows:

Temperature	82 °F
Upper Wind Speed	7.8 mph
Lower Wind Speed	7.3 mph
Upper Wind Direction	246.3 °
Lower Wind Direction	246.7 °
Stability Class	E
3. Projected off-site dose per OPEP03.4.7 is 515 mrem at the site boundary.

**INITIATING CUE:**

As Site Emergency Coordinator (SEC) complete Block 15, Recommended Protective Actions, of the Emergency Notification form and sign for approval. This must be completed within 15 minutes.

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.  
Comments required for any step evaluated UNSAT.

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

**PERFORMANCE CHECKLIST**

**NOTE:** Sequence is assumed unless denoted in the **Comments**.

**PROMPT:** Remind examinee that this is a time critical JPM with a 15 minute time limit.

Step 1 – Obtain current revision of OPEP-02.6.28, Off-site Protective Action Recommendations.

*Obtains OPEP-02.6.28.*

**SAT/UNSAT\***

Step 2 – Determine Protective Action Recommendations.

*Determines PAR to Evacuate Zones A, B, C, G, H, K and Shelter Zones D, E, F.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 3 – Fill in Item 15 Blocks B and C and indicate the zones to be evacuated and sheltered.

*Fill B Evacuate Zones A, B, C, G, H, K*  
*Fill C Shelter Zones D, E, F*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

Step 7 – Sign Notification form as SEC for approval.

*Sign and dated as SEC.*

**\*\* CRITICAL STEP \*\* SAT/UNSAT\***

**TERMINATING CUE:** When Notification Form has been approved, this JPM is complete.

**\* Comments required for any step evaluated as UNSAT.**

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

**RELATED TASKS:**

344005B102: Recommend Protective Actions to States and Counties per OPEP-02.6.28.

**K/A REFERENCE AND IMPORTANCE RATING:**

GEN 2.4.44      2.1/4.0

Knowledge of emergency plan protective action recommendations..

**REFERENCES:**

OPEP-02.6.28 OFF-SITE PROTECTIVE ACTION RECOMMENDATIONS

OPEP-02.6.21 EMERGENCY COMMUNICATOR

**TOOLS AND EQUIPMENT:**

None.

**SAFETY FUNCTION** (from NUREG 1123, Rev 2.):

Generic (Administrative)

**REASON FOR REVISION:**

New for use on 2004 NRC exam.

Time Required for Completion: **10 Minutes** (approximate).

Time Taken: \_\_\_\_ Minutes

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**APPLICABLE METHOD OF TESTING**

Performance: Simulate  Actual \_\_\_\_ Unit: \_\_\_\_  
Setting: Control Room \_\_\_\_ Simulator \_\_\_\_ (Not applicable to In-Plant JPMs)  
Time Critical: Yes \_\_\_\_ No  Time Limit **NA**  
Alternate Path: Yes \_\_\_\_ No

---

**EVALUATION**

Performer: \_\_\_\_\_ SSN: \_\_\_\_\_

JPM: Pass \_\_\_\_ Fail \_\_\_\_

Remedial Training Required: Yes \_\_\_\_ No \_\_\_\_

Did Performer Verify Procedure? Yes \_\_\_\_ No \_\_\_\_  
(Each Student should verify one JPM per evaluation set)

---

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments reviewed with Student

Evaluator Signature: \_\_\_\_\_ Date: \_\_\_\_\_



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This is a time critical JPM and must be completed within 15 minutes.

**TASK CONDITIONS:**

1. A General Emergency has just been declared due to an unisolable Main Steam Line break with fuel failure.
2. Weather Conditions are as follows:

Temperature	82 °F
Upper Wind Speed	7.8 mph
Lower Wind Speed	7.3 mph
Upper Wind Direction	246.3 °
Lower Wind Direction	246.7 °
Stability Class	E
3. Projected off-site dose per OPEP03.4.7 is 515 mrem at the site boundary.

**INITIATING CUE:**

As Site Emergency Coordinator (SEC) complete Block 15, Recommended Protective Actions, of the Emergency Notification form and sign for approval. This must be completed within 15 minutes.