Draft Submittal
(Pink Paper)

DRAFT ADMIN JPMS

CRYSTAL RIVER FEBRUARY 2008 EXAM
ADMIN RETAKE

05000302/2008-301

FEBRUARY 14, 2008

CRYSTAL RIVER
UNIT #3

ADMINISTRATIVE
JPMS

NRC

2008 REMEDIAL

Facility:	Crystal River Unit #3	Date of Exam:	February 14, 2008
Examination Level:	SRO	Operating Test Number:	1

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M, P	(CO1) – Calculate SDM with a dropped control rod. After completing the SDM calculation determine ITS required actions. *K/A – G2.1.7* *SRO 4.4* *K/A – G2.1.12* *SRO 4.0* SP-421, OP-103C
Conduct of Operations	D	(CO2) – Perform a review of a completed surveillance procedure and determine ITS required actions. *K/A – G2.1.12* *SRO 4.0* *K/A – G2.1.23* *SRO 4.0* SP-347
Equipment Control	D	(EC1) – Perform RCS Water Inventory Balance per SP-317 and determine ITS required actions. *K/A – G2.2.12* *SRO 3.4* SP-317
Radiation Control	D	(RC1) – Determine external reporting requirements. *K/A – G2.3.1* *SRO 3.0* CP-151, 10CFR20
Emergency Plan	N	(EP1) – Complete an Off-Site Dose Assessment and classify Emergency Action Level. *K/A – G2.4.39* *SRO 3.1* *K/A – G2.4.41* *SRO 4.1* EM-202, EM-204A

Note: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:
(C)ontrol room
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤1; randomly selected)
(S)imulator

CRYSTAL RIVER UNIT 3
JPM COVER SHEET

JPM #CO1 NRC 2008 (ADMIN)

RO and SRO

CALCULATE SDM WITH A DROPPED CONTROL ROD

PREPARED/REVIEWED BY: Alan Kennedy Date: 01-07-08

VALIDATED BY: Bracewell, Virgin Date: 01/10/08

APPROVAL BY: Mark Vansicklen Date: 01/10/08
(Nuclear Training Supervisor)

CONCURRED BY: Blair Wunderly Date: 01/10/08
(Operations Representative)

Validation is not required for minor enhancements, procedure revisions that do not affect the JPM or individual step changes that do not affect the flow of the JPM.

Operations concurrence is required for new JPMs and changes that affect the flow, critical steps or time critical steps of the JPM. Operations concurrence is not required for changes that are required due to a procedure revision.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM #: CO1 NRC 2008 Remedial

Task: Perform a SDM calculation.

Alternate Path: ☐ **YES** ☒ **NO**

PRA Top Critical Action: ☐ **YES** ☒ **NO**

Safety Function: NA

K/A Rating/Importance: G2.1.7 RO 4.4 SRO 4.7

Task Number: 1150202005 – RO 1190201006 - SRO

Position: ☐**SRO ONLY** ☒**RO/SRO** ☐**NLO/RO/SRO**

Task Standard: Determine SDM with a dropped rod using SP-421, Reactivity Balance Calculations.

Preferred Evaluation Location:

☐ **SIM** ☐ **PLANT** ☒ **ADMIN**

Preferred Evaluation Method

☒ **PERFORM** ☐ **SIMULATE**

References:

ITS 3.1.4, SP-421, Rev. 58
OP-103C, Rev. 29

Validation Time: 20 minutes – RO 25 minutes - SRO **Time Critical:** ☐ **YES** ☒ **NO**

==========

Candidate: _____ **Time Started:** _____
Printed Name

Time Finished: _____

Performance Rating: ☐ **SAT** ☐ **UNSAT** **Performance Time:** _____

Examiner: _____ _____ _____
Printed Name Signature Date

Comment: _____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS

1. None

SIMULATOR OPERATOR INSTRUCTIONS

1. None

TOOLS/EQUIPMENT/PROCEDURES NEEDED

1. Consumable copies of:

   SP-421, Rev 58
   OP-103C, Rev 29

2. ITS 3.1.4

!!!!!!SEPARATE CANDIDATE CUE SHEETS FOR SRO and RO!!!!!!

READ TO THE OPERATOR

INITIAL CONDITIONS:

You are the Balance of Plant Operator.

The plant is stable at 60% power.
Control rod 6-6 has dropped fully into the core.
The actions of AP-545, Plant Runback, have been completed up to Step 3.40.
RCS boron is 950 ppmB.
210 EFPD.
Boron-10 atom percent is 19.8.
RCS temperature is 579° F.
Group 8 is at 100% withdrawn.

Xenon value from current Saxon is -2.15% Δ k/k. **(this value must be used for calculations)**

INITIATING CUES:

The Control Room Supervisor has directed you to verify if adequate SDM exists using SP-421, Reactivity Balance Calculations. Enter SDM below and document additional actions, if any, you would perform.

_____

SROs only: After calculating SDM determine if any TS actions are required. Document your answer below.

_____

_____

TIME START:_____

STEP 1: Locate procedures. STANDARD: Candidate obtains a copy of SP-421 and OP-103C. **EXAMINER NOTE:** **Provide candidate with a copy of SP-421 and OP-103C.** COMMENTS:	SAT_____ UNSAT_____
STEP 2: Determine correct enclosure to use. STANDARD: Candidate determines that Enclosure 1B, One Hour Misaligned Rod SDM Calculation, is the enclosure to be used. **EXAMINER NOTE:** **If candidate determines that Enclosure 1, SDM – Normal Conditions, is to be used, allow the candidate to complete the JPM since both enclosures will result at the same endpoint. Make a note of this and during the final exam review point out to the candidate that Enclosure 1B was created just for this type of plant condition.** COMMENTS:	SAT_____ UNSAT_____
STEP 3: Step 1 Enter core burnup. STANDARD: Candidate accurately transfers data from Cue Sheet to enclosure. COMMENTS:	SAT_____ UNSAT_____

STEP 4: Step 2 Boron Reactivity 1. Enter RCS boron concentration (Cue Sheet) 2. Enter B-10 atom percent (Cue Sheet) 3. Calculate B-10 adjusted value 4. Enter RCS temperature (Cue Sheet) 5. Use **Curve 18** to determine boron concentration required for shutdown margin. **(CS)** 6. Use Curve 3 to determine differential boron worth. **(CS)** 7. Perform calculation to determine boron reactivity. **(CS)** STANDARD: Candidate accurately transfers data from Cue Sheet, determines correct curves to use and accurately calculates the value for boron reactivity. Value should be within limits listed on attached key. **EXAMINER NOTE:** Curve 18 must be used since the control rod has fully inserted into the core. Curve 19 is only used if control rod is misaligned and determined to be untrippable. COMMENTS:	**Critical Step** **Basis: Accurate curve selection and calculation required to determine correct SDM.** SAT_____ UNSAT_____
STEP 5: Step 3 Control Rod Group 8 Reactivity STANDARD: NA COMMENTS:	SAT_____ UNSAT_____

STEP 6: Step 4 Determine Xenon reactivity. STANDARD: Candidate accurately transfers data from Cue Sheet to enclosure. COMMENTS:	SAT_____ UNSAT_____
STEP 7: Step 5 Shutdown Margin 1. Determine SDM. 2. If SDM is determined to be less negative than -1.0% Δ k/k then SDM is unacceptable. Immediately notify the CRS and refer to TS 3.1.4. 3. If SDM is determined to be more negative than -1.0% Δ k/k then SDM is acceptable. Notify the CRS and continue to step 6. STANDARD: Candidate determines that SDM is unacceptable and immediately notifies the CRS. Value should be within limits listed on attached key. COMMENTS:	**Critical Step** **Basis: Accurate calculation and immediate notification of the CRS is required to comply with TS.** SAT_____ UNSAT_____
TERMINATION CRITERIA: **Candidate determines that SDM is unacceptable and immediately notifies the CRS.**	
RO* - *END OF TASK	

STEP 8: **SRO Only** Refer to TS 3.1.4, Control Rod Group Alignment Limits, and determine required actions. STANDARD: Candidate determines that TS 3.1.4, Condition A, should be entered. **EXAMINER NOTE:** Candidate may also enter TS 3.1.7, API and RPI position indications. Entry into this specification is NOT required for satisfactory completion of this JPM. COMMENTS:	**Critical Step** **Basis:** **TS required actions.** SAT_____ UNSAT_____
TERMINATION CRITERIA: **Candidate determines correct technical specification.**	
SRO *- END OF TASK*	

TIME STOP:_____

ENCLOSURE 1B

(Page 1 of 3)

ONE HOUR MISALIGNED ROD SHUTDOWN MARGIN CALCULATION

1. Core Burnup

Core Burnup = EFPD (from SAXON)

= **210** EFPD

> **NOTE**
>
> For the remaining steps (2-4) the following NOTES apply:
>
> (1) It is permissible to round to the nearest whole EFPD.
>
> (2) It is permissible to round to the nearest whole %wd.
>
> (3) For RCS > 532 degrees F, 532 degrees F data may be used.
>
> (4) Two decimal place accuracy is required in calculations.

2. Boron Reactivity

a. Measured RCS Boron Concentration **950** ppmB

> **NOTE**
>
> The reference Boron-10 (B-10) atom percent (a/o) is 19.8 for all calculations used in deriving the reactivity curves in OP-103C. If the B-10 a/o is unknown, use the reference value of 19.8

b. B-10 atom percent of RCS Boron **19.8** a/o

c. B-10 adjusted Boron Concentration is
Step 2(a) * Step 2(b) / 19.8 = **950** ppmB

d. RCS temperature **579** °F.

e. Using RCS temperature from 2(d) and core burnup from Step 1, determine the Boron concentration required for shutdown from appropriate Curve 18 or Curve 19 of OP-103C.
1264 ppmB

f. Differential boron worth from Curve 3 of OP-103C, Reactivity Worth Curves.
0.7583 %△k/k/100 ppm

g. Reactivity During Modes 1,2,3,4, and 5
Reactivity = [(e-c) x f/100] - 1.0
= [(**1264** - **950**) x **0.7583** ÷ 100] - 1.0 = + / - **+1.38** %△k/k

(LIMIT 1.35 to 1.40)

ONE HOUR MISALIGNED ROD SHUTDOWN MARGIN CALCULATION (Cont'd)

3. Control Rod Group 8 Reactivity

Shutdown margin curves assume Group 8 at 100%wd, including the first 4 EFPD. Therefore, any APSR insertion would provide conservative margin in the shutdown margin. Since APSRs are not to be routinely inserted, no credit will be taken for APSR position in shutdown margin calculations.

NOTE

(5) For the one hour misaligned rod calculation ONLY, the value for xenon calculated prior to the misaligned rod for this hour may still be used provided that:

- the existing SAXON printout accurately reflects the core conditions prior to the misaligned rod, and
- the maximum post-misaligned rod power level is less than, or equal to, the power level used on the existing SAXON printout for calculating this hour's xenon.

(6) Using a xenon value of 0.0% delta k/k is conservative and may be used at any time.

4. Xenon Reactivity

a. Obtain Xenon reactivity from Saxon code (submit printout).

OR

b. IF the Saxon code is unavailable,
THEN use 0.0% Δ k/k or contact Reactor Engineering for a value (0.0% Δ k/k is conservative and therefore preferred). **- 2.15** - % Δ k/k

5. Shutdown Margin

a. Determine the shutdown margin by adding Items 2, 3 and 4 above, and round to the nearest tenth + /- **- 0.8** *(LIMIT -0.7 TO -0.8)* % Δ k/k

b. 1. IF the shutdown margin determined in Step 5a is less negative than -1.0% k/k (i.e., zero, positive or between 0.0 and -1.0),
THEN the shutdown margin is unacceptable. **IMMEDIATELY** inform the Control Room Supervisor and refer to ITS 3.1.4.

2. IF the shutdown margin determined in Step 5a is more negative than -1.0% k/k,
THEN the shutdown margin is acceptable. Notify the Control Room Supervisor and continue to step 6.

_____/____ Calculated By/Date

_____/____ Verified By/Date

ADMINISTRATIVE JOB PERFORMANCE MEASURE

SRO

CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

You are the Balance of Plant Operator.

The plant is stable at 60% power.
Control rod 6-6 has dropped fully into the core.
The actions of AP-545, Plant Runback, have been completed up to Step 3.40.
RCS boron is 950 ppmB.
210 EFPD
Boron-10 atom percent is 19.8.
RCS temperature is 579° F.
Group 8 is at 100% withdrawn.

Xenon value from current Saxon is -2.15% Δ k/k. **(this value must be used for calculations)**

INITIATING CUES:

The Control Room Supervisor has directed you to verify if adequate SDM exists using SP-421, Reactivity Balance Calculations. Enter SDM below and document additional actions, if any, you would perform.

_____

SROs only: After calculating SDM determine if any TS actions are required. Document your answer below.

_____

_____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

RO

CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

You are the Balance of Plant Operator.

The plant is stable at 60% power.
Control rod 6-6 has dropped fully into the core.
The actions of AP-545, Plant Runback, have been completed up to Step 3.40.
RCS boron is 950 ppmB.
210 EFPD
Boron-10 atom percent is 19.8.
RCS temperature is 579° F.
Group 8 is at 100% withdrawn.

Xenon value from current Saxon is -2.15% Δ k/k. **(this value must be used for calculations)**

INITIATING CUES:

The Control Room Supervisor has directed you to verify if adequate SDM exists using SP-421, Reactivity Balance Calculations. Enter SDM below and document additional actions, if any, you would perform.

_____

CRYSTAL RIVER UNIT 3

JPM COVER SHEET

JPM #CO2 NRC 2008 (ADMIN)

SRO Only

PERFORM A REVIEW OF A COMPLETED SURVEILLANCE PROCEDURE, SP-347

PREPARED/REVIEWED BY: Alan Kennedy Date: 01/08/08

VALIDATED BY: Bracewell, Virgin Date: 01/10/08

APPROVAL BY: Mark Vansicklen Date: 01/10/08
(Nuclear Training Supervisor)

CONCURRED BY: Blair Wunderly Date: 01/10/08
(Operations Representative)

Validation is not required for minor enhancements, procedure revisions that do not affect the JPM or individual step changes that do not affect the flow of the JPM.

Operations concurrence is required for new JPMs and changes that affect the flow, critical steps or time critical steps of the JPM. Operations concurrence is not required for changes that are required due to a procedure revision.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM #: CO2 NRC 2008 Remedial (Bank #256A)

Task: Perform a safety and technical review of a plant procedure, SP-347.

Alternate Path: ☒ **YES** ☐ **NO**

PRA Top Critical Action: ☐ **YES** ☒ **NO**

Safety Function: 2

K/A Rating/Importance: G2.1.12 SRO 4.0
G2.1.23 SRO 4.0

Task Number: 1190101029

Position: ☒ **SRO ONLY** ☐ **RO/SRO** ☐ **NLO/RO/SRO**

Task Standard: Perform a safety and technical review of a plant procedure, SP-347

Preferred Evaluation Location:

☐ **SIM** ☐ **PLANT** ☒ **ADMIN**

Preferred Evaluation Method

☒ **PERFORM** ☐ **SIMULATE**

References:

SP-347, Rev. 58

Validation Time: 30 Minutes

Time Critical: ☐ **YES** ☒ **NO**

Candidate: _____ **Time Started:** _____
Printed Name

Time Finished: _____

Performance Rating: ☐ **SAT** ☐ **UNSAT** **Performance Time:** _____

Examiner: _____ _____ _____
Printed Name Signature Date

Comment: _____

_____

_____

_____

Tools/Equipment/Procedures Needed:

SP-347, Rev. 58
AI-500 Reference copy
Technical Specifications

READ TO THE OPERATOR

INITIAL CONDITIONS

You are the Control Room Supervisor.

A plant shutdown is in progress.
SR 3.5.2.5 was completed during the startup from the last refueling outage 18 months ago.
SP-347, ECCS and Boration Flow Paths, has just been completed.
The Reactor Coolant System is at 840 psig and 450° F.
SFP-2 is NOT operating.

INITIATING CUES

Review the attached completed SP-347 for accuracy and compliance.

NOTE: All components are in the positions verified by the performer.

Document any errors found below, **including** required ITS actions (if any).

_____

_____

_____

_____

_____

_____

_____

_____

TIME START:_____

STEP 1: Reviews the completed SP-347. STANDARD: May identify 3 errors. 1. Incorrect Plant Mode determined in step 4.1. Per initial conditions, the plant is in Mode 3, not Mode 4. 2. The position of CFV-5 in VALVE CHECK LIST I is not in compliance with ITS 3.5.1. **(CS)** 3. The position of CFV-6 in VALVE CHECK LIST I is not in compliance with ITS 3.5.1. **(CS)** **EXAMINER NOTE:** It is required that the candidate find the errors regarding the closed position of CFV-5 and CFV-6. The additional error, if not identified by candidate, should be reviewed following exam completion. COMMENTS:	**Critical Step (CS)** **Basis: ITS required valve positions.** SAT ____ UNSAT ___
STEP 2: Identifies non-compliance with ITS 3.5.1. STANDARD: Enters the Required Actions of ITS 3.5.1, Condition B. **EXAMINER NOTE:** Candidate may also address the AI-500, Appendix 8 notifications required for entering a Tech Spec with a Required Action Completion Time of less than 72 hours. COMMENTS:	**Critical Step** **Basis: Correct ITS actions identified.** SAT ____ UNSAT ___

STEP 3: Restores Operability of the "A" and "B" Core Flood Tanks. STANDARD: Student may direct the opening of CFV-5 and CFV-6 to comply with ITS action. **EXAMINER NOTE:** May include the direction to unlock and close the breakers for the valves, then open the breakers and lock them again after the valves are opened, but this is not required. **The only critical portions of this task are to determine which valves are not in compliance with ITS and to enter the correct LCO.** COMMENTS:	SAT ____ UNSAT ___
STEP 4: Directs the completion of the Surveillance Procedure. STANDARD: Returns the procedure to the operator for: 1. Correction of the error made in determining the Plant Mode in step 4.1. **EXAMINER NOTE:** **The only critical portions of this task are to determine which valves are not in compliance with ITS and to enter the correct LCO.** COMMENTS:	SAT ____ UNSAT ___
TERMINATION CRITERIA: **CFV-5 and CFV-6 identified as mis-positioned and correct ITS LCO determined.**	
END OF TASK	

TIME STOP:_____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS

You are the Control Room Supervisor.

A plant shutdown is in progress.
SR 3.5.2.5 was completed during the startup from the last refueling outage 18 months ago.
SP-347, ECCS and Boration Flow Paths, has just been completed.
The Reactor Coolant System is at 840 psig and 450° F.
SFP-2 is NOT operating.

INITIATING CUES

Review the attached completed SP-347 for accuracy and compliance.

NOTE: All components are in the positions verified by the performer.

Document any errors found below, **including** required ITS actions (if any).

_____

_____

_____

_____

_____

_____

_____

_____

Florida Power
A Progress Energy Company

C
Continuous
Use

FLORIDA POWER

CRYSTAL RIVER UNIT 3

PLANT OPERATING MANUAL

SP-347

ECCS AND BORATION FLOW PATHS

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1.0 PURPOSE

1.1 Intent

1.1.1 This procedure verifies valve positions in different systems to ensure that the Operability of the ECCS flow paths is maintained and Availability of the Boron Injection flow paths is maintained in accordance with the requirements specified in Section 2.2.1.

1.2 Equipment Data Base (EDB) Equipment

1.2.1 The following equipment tags are listed in the Equipment Data Base as being affected by this procedure:

Equipment listed in Enclosures 1 through 6.

2.0 REFERENCES

2.1 Developmental References

2.1.1 Technical Specification References

LCO/Other Applicable References	Surv. Perf. During Modes	Requirements During Modes	Surv. Freq.
FPC Comm. #62316	5,6	5,6	M
FPC Comm. #62188	5,6	5,6	M
FPC Comm. #62190	1 thru 4	1 thru 4	M
FPC Comm. #62315	1 thru 4	1 thru 4	M
FPC Comm. #62148	1 thru 6	1 thru 6	M
3.5.2.1	1 thru 4	1,2,3	M
3.5.3.1	4	4	M
3.7.8.1	1 thru 4	1 thru 4	M
3.7.10.1	1 thru 4	1 thru 4	M
3.6.6.1	1 thru 4	1 thru 4	M
3.5.1.5	1,2,3	1,2,3	M
3.5.2.5	1,2,3	1,2,3	R

SURVEILLANCE FREQUENCY:

M - At least once per 31 days

R - At least once per 24 months

2.1.2 OPS-NGGC-1301, Equipment Clearance

2.1.3 CP-115B, Personal Danger Tags, Cautions Tags and Test Tags

2.1.4 OP-401, Core Flooding System

2.1.5 OP-402, Makeup and Purification System

2.1.6 OP-404, Decay Heat Removal System

2.1.7 OP-405, Reactor Building Spray System

2.1.8 SP-381, Locked/Sealed Valve Check List

2.1.9 OP-209, Plant Cooldown

2.1.10 SP-351, Nuclear Services Flow Path Operability

2.1.11 IOC NEA 93-0859, Minimum initial RB pressure limit to mitigate accidental RB Spray Actuation effects

2.1.12 FSAR Sections 4.2.5.5, 9.1.2.6.e, and 9.4.2.7.d

2.1.13 AP-490, Reactor Coolant System Boration

2.1.14 OP-403B, Chemical Addition - Boric Acid System

2.1.15 MAR 97-02-12-01, HPI Upgrade

2.1.16 MAR 98-12-04-01, HPI Upgrade

2.1.17 AR 47194, CAP-1A Availability with low system pressure

2.1.18 M-93-0035, Rev. 2, Boric Acid Storage Tanks (CAT-5A/5B) Volume and System Hydraulic Analysis

2.1.19 3F0599-01, Letter to NRC Clarifying the Process for SR 3.5.2.5 Valve Position Verification

3.0 PERSONNEL INDOCTRINATION

3.1 Setpoints

None

3.2 Description

3.2.1 The operability of two independent ECCS subsystems ensures sufficient emergency core cooling capability is available in the event of a loss of coolant accident (LOCA) assuming the loss of one sub-system through any one single failure consideration. The verification of correct flow path valve positions assures the proper ECCS flows are maintained in the event of a LOCA. The valve position verifications also assure that flow paths for emergency boration are available.

3.3 Definitions

Available - Ready for use within a short enough time to meet the intended need.

3.4 Responsibilities

3.4.1 The CR-3 operations department performs this procedure.

3.4.2 Nuclear Operations Support is responsible for the content of this procedure.

3.5 Limits & Precautions

3.5.1 Before operating valves, check the plant configuration to ensure that MU flow and RC pump (RCP) seal flow (if applicable) will not be interrupted.

3.5.2 If a valve is not in the position specified in the Valve Check List, notify the CRS/SSO.

3.5.3 For work located in radiation controlled areas, give consideration to the ALARA program. This may result in a determination that special preparations and/or precautions are necessary.

3.5.4 The minimum RB pressure allowed during the performance of this procedure is -0.25 psig using BS-93-PIR or -0.43 psig using the plant computer. [NOCS 40795]

3.6 Acceptance Criteria

NOTE
Acceptance Criteria below, except Steps 3.6.2.1 and 3.6.4.1, originate from Technical Specifications. The two exceptions are FSAR requirements.

3.6.1 Modes 1, 2, 3

3.6.1.1 Two ECCS trains shall be OPERABLE.

Surveillances

a) Every 31 days, verify each ECCS manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.

b) Every 24 months, verify the correct settings of stops for the following HPI stop check valves: [NOCS 62209]

1) MUV-2

2) MUV-6

3) MUV-10

c) Every 24 months, visually verify the welds securing the following HPI throttle valves are intact:

1) MUV-590

2) MUV-591

3) MUV-592

4) MUV-593

3.6.1.2 Two CFTs shall be OPERABLE (in Modes 1 and 2, Mode 3 with RCS pressure > 750 psig).

Surveillance

a) Every 31 days, verify power is removed from each CFT isolation valve operator.

3.6.2 **Modes 1, 2, 3 and 4**

NOTE

- **During Modes 4, 5, and 6 with the RCS pressure less than 150 psig, at least one DH pump in the boron injection path is required. (FSAR 9.4.2.7.d)**
- **During Modes 4 and 5 with RCS pressure greater than or equal to 150 psig, at least one Makeup pump in the boron injection path is required. (FSAR 9.1.2.6.e)**

3.6.2.1 A flow path from the concentrated boric acid storage system via a boric acid pump and makeup (MU) pump to the Reactor Coolant system (RCS) shall be available,

AND

A flow path from the borated water storage tank (BWST) via MU (Modes 1-4) or DHR pump (Mode 4) to the RCS shall be available. (FSAR 4.2.5.5)

Surveillance

a) Every 31 days, each of the Boron Injection Flow paths specified above shall be demonstrated available by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

3.6.2.2 Two Decay Heat Closed Cycle Cooling Water (DC) System trains shall be OPERABLE.

NOTE

Isolation of DC flow to individual components does not render the DC System inoperable.

Surveillance

a) Every 31 days, verify each DC manual and power operated valve in the flow path servicing safety related equipment, that is not locked, sealed or otherwise secured in position, is in the correct position.

3.6.2.3 Two Reactor Building Spray trains and two Containment Cooling trains shall be OPERABLE.

Surveillance

a) Every 31 days, verify each reactor building spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.

3.6.3 **Mode 4**

3.6.3.1 One ECCS train shall be OPERABLE.

Surveillances

a) Every 31 days, verify each ECCS manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.

b) Every 24 months, verify the correct settings of stops for the following HPI stop check valves:

   1) MUV-2

   2) MUV-6

   3) MUV-10

c) Every 24 months, visually verify the welds securing the following HPI throttle valves are intact:

   1) MUV-590

   2) MUV-591

   3) MUV-592

   4) MUV-593

3.6.4 **Modes 5 & 6**

NOTE

- **During Modes 4, 5, and 6 with the RCS pressure less than 150 psig, at least one DH pump in the boron injection path is required. (FSAR 9.4.2.7.d)**
- **During Modes 4 and 5 with RCS pressure greater than or equal to 150 psig, at least one Makeup pump in the boron injection path is required. (FSAR 9.1.2.6.e)**

3.6.4.1 At least one (1) of the following boron injection flow paths shall be available (FSAR 4.2.5.5):

A flow path from the concentrated boric acid storage system via a boric acid pump and a MU or DHR pump to the RCS.

OR

A flow path from the BWST via a MU or standby DHR pump to the RCS.

Surveillance

Every 31 days, at least one of the Boron Injection Flow paths specified above shall be demonstrated available by verifying that each valve (manual, power operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

3.7 Prerequisites

3.7.1 Performance requires one person approximately three hours.

3.7.2 Section 3.0 has been read and understood by those who will be performing this test.

ATK x/x/xx
Initial/Date

3.7.3 Notify the CRS/SSO that this surveillance is to begin.

ATK x/x/xx
Initial/Date

4.0 INSTRUCTIONS

4.1 Determine and RECORD Plant Mode below:

Mode 4

ATK x/x/xx
Initial/Date

4.1.1 IF in Mode 1, 2, 3 or 4
THEN N/A Steps 4.1.2, and 4.5
AND go to Step 4.2.

ATK x/x/xx
Initial/Date

4.1.2 IF in Mode 5 or 6
THEN N/A steps 4.2 thru 4.4
AND go to Step 4.5.

N/A
Initial/Date

NOTE

One MUP must be aligned to BWST and one MUP must be aligned to MUT-1 in Modes 1, 2 & 3.

4.2 RECORD status of Makeup pumps (MUP) by completing the following:

Pump	Suction Source		Tagged Out
	BWST	MUT	
	(√)	(√)	(Yes/No)
MUP-1A			Yes
MUP-1B		√	No
MUP-1C	√		No

ATK x/x/xx
Initial/Date

4.3 VERIFY that the valves on Valve Check List I (Enclosure 1) are in their designated positions.

IF more than one position is listed for a component in a Valve Check List, THEN the position which exists should be circled and a determination should be made to verify if it is in the correct position for existing plant Mode/conditions.

ATK x/x/xx
Initial/Date

4.4 Go to Step 4.6.

ATK x/x/xx
Initial/Date

4.5 For Modes 5 or 6, VERIFY the valves on the appropriate valve check list are in their designated positions for the desired boron injection flow path.
IF more than one position is listed for a component in a Valve Check List, THEN the position which exists should be circled and a determination should be made to verify if it is in the correct position for existing plant Mode/conditions.

Boration Source	DH Train in Operation	Check List
BWST (Using DHP-1B)	A	II
BWST (Using DHP-1A)	B	III
BAST (Using DHP)	A or B	IV
BAST (Using MUP)	A or B	V
BWST (Using MUP)	A or B	VI

N/A
Initial/Date

NOTE

It may be necessary to realign Makeup pumps in order to verify all the positions of the Makeup pump discharge stop check valves.

4.6 IF verification of the valves listed in Technical Specification SR 3.5.2.5 is scheduled to be performed (24 month frequency) THEN PERFORM steps 4.6.1 and 4.6.2.

[√] N/A

4.6.1 UNLOCK MUV-2, MUV-6, and MUV-10 AND VERIFY the position of each valve against OP-402 AND RELOCK each of the valves. [NOCS 62209]

	Verification	Concurrent Verification
MUV-2, MUP-1C Discharge Stop Check	____/____ Initial/Date	____/____ Initial/Date
MUV-6, MUP-1B Discharge Stop Check	____/____ Initial/Date	____/____ Initial/Date
MUV-10, MUP-1A Discharge Stop Check	____/____ Initial/Date	____/____ Initial/Date

4.6.2 Visually VERIFY the HPI throttle valve welds are intact.

	Verification
MUV-590, A2 HPI Throttle Valve	____/____ Initial/Date
MUV-591, A1 HPI Throttle Valve	____/____ Initial/Date
MUV-592, B1 HPI Throttle Valve	____/____ Initial/Date
MUV-593, B2 HPI Throttle Valve	____/____ Initial/Date

4.7 NOTIFY the CRS/SSO that this surveillance has been completed and of any discrepancies.

ATK x/x/xx
Initial/Date

5.0 FOLLOW-UP ACTIONS

5.1 Restoration Instructions

None

5.2 Contingencies

NOTE

Acceptance Criteria of Section 3.6, except Steps 3.6.2.1 and 3.6.4.1, originate from Technical Specifications. The two exceptions are FSAR requirements.

5.2.1 IF any Technical Specification Acceptance Criteria cannot be met, THEN refer immediately to the Actions of the applicable LCO(s).

5.2.2 IF Acceptance Criteria 3.6.2.1 cannot be met, THEN perform the following:

With neither train of the concentrated boric acid storage system available, restore a train to available status within 7 days or initiate a problem report to document and tract the corrective actions.

If the BWST does not meet its acceptance criteria, then refer to the actions of LCO 3.5.4.

5.2.3 IF Acceptance Criteria 3.6.4.1 cannot be met, THEN perform the following:

With none of the boron injection flow paths available, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until at least one injection path is restored to available status.

ENCLOSURE 1
(Page 1 of 6)

VALVE CHECK LIST I [NOCS 000650, 000699] Date x/x/xx

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
BSV-17	BWST Suction Iso.	Open	ATK
BSV-3	RB Spray Header Flow Controller	Closed (1)	ATK
DHV-34	BWST Suction Iso.	Open	ATK
DHV-42	RB Sump Iso.	Closed	ATK
DHV-39	Dropline Iso. to "A" Header	Closed	ATK
DHV-11	DH Disch. to MUP Suction Iso.	Closed	ATK
DHV-5	DH Disch. Iso. to RCS	Closed	ATK
DHV-210	DHHE-1A Outlet Isolation/Test	Open	ATK
DHV-110	"A" LPI Flow Control	Throttled Open (2)	ATK
DHV-91	DH Iso. to PZR Spray	Closed	ATK
DHV-75	"A" DH Iso. from MU Purification	Closed	ATK
DHV-8	Recirc. Iso. to BWST	Closed	ATK
CFV-5	CFT-1A Iso. to RCS	Open/Close (3) ☆	ATK
BSV-16	BWST Suction Iso.	Open	ATK
BSV-4	RB Spray Header Flow Controller	Closed (1)	ATK
DHV-35	BWST Suction Iso.	Open	ATK
DHV-43	RB Sump Iso.	Closed	ATK
DHV-40	Dropline Iso. to "B" Header	Closed	ATK
DHV-12	DH Disch. to MUP Suction Iso.	Closed	ATK
DHV-6	DH Disch. Iso. to RCS	Closed	ATK
DHV-211	DHHE-1B Outlet Isolation/Test	Open	ATK
DHV-111	"B" LPI Flow Control	Throttled Open (2)	ATK

(1) Control Station selected to "Auto/Remote."
(2) Control Station selected to "Auto/3000 GPM" and "ES STBY" light is illuminated
(3) CFV-5 must be Open with its breaker locked off when RC pressure is $\geq$ 750 psig. CFV-5 must be Closed with its breaker locked off when RC pressure is $\leq$ 625 psig.

☆ OP-209 Clearance in Place. ATK x/x/xx

ENCLOSURE 1
(Page 2 of 6)

VALVE CHECK LIST I

Date x/x/xx

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
DHV-76	"B" DH Iso. from MU Purification	Closed	ATK
DHV-7	Recirc. Iso. to BWST	Closed	ATK
CFV-6	CFT-1B Iso. to RCS	Open/Closed (4) ☆	ATK
MUV-23	HPI to Loop "A"	Closed	ATK
MUV-24	HPI to Loop "A"	Closed	ATK
MUV-25	HPI to Loop "B"	Closed	ATK
MUV-26	HPI to Loop "B"	Closed	ATK
MUV-586	A2-B1 Crosstie Air Operated Isolation	Closed	ATK
MUV-587	A1-B2 Crosstie Air Operated Isolation	Closed	ATK
MUV-596	Common Seal Injection/Makeup Isolation	Open	ATK
MUV-73	BWST to MUP-1A	Open/Closed (5)	ATK
MUV-58	BWST to MUP-1C	Open/Closed (6)	ATK
MUV-62	MUP-1B/1C Suction X-Conn.	Open/Closed (5)	ATK
MUV-69	MUP-1A/1B Suction X-Conn.	Open/Closed (6)	ATK
MUV-9	MUP-1A/1B Dischge X-Conn.	Open	ATK
MUV-53	MUP Recirc.	Open	ATK
MUV-257	MUP Recirc.	Open	ATK
MUV-27	Normal Makeup Iso.	Open	ATK
MUV-90	MUFL-1B Outlet	Open	ATK
MUV-91	MUFL-1A Outlet	Open	ATK
MUV-97	MUFL-1B Inlet	Open/Closed (7)	ATK
MUV-96	MUFL-1A Inlet	Open/Closed (7)	ATK

(4) CFV-6 must be Open with its breaker locked off when RCS pressure is ≥ 750 psig. CFV-6 must be Closed with its breaker locked off when RCS pressure is ≤ 625 psig.
(5) Closed when MUP-1C suction is from BWST and MUP-1A suction is from MUT (normal operating configuration). Open when MUP-1A suction is from BWST and MUP-1C suction is from MUT OR when MUP-1B is selected for ES in place of MUP-1C.
(6) Open when MUP-1C suction is from BWST and MUP-1A suction is from MUT (normal operating configuration) OR when MUP-1B is selected for ES in place of MUP-1A. Closed when MUP-1A suction is from BWST and MUP-1C suction is from MUT.
(7) At least one of these valves must be Open.

☆ OP-209 Clearance in Place. ATK x/x/xx

ENCLOSURE 1
(Page 3 of 6)

VALVE CHECK LIST I

Date x/x/xx

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
MUV-100	MUFL-1A/1B Bypass	Closed	ATK
CAV-57	Normal Boration Supply	Closed(8)	ATK
CAV-60	Emergency Boration Supply	Closed(8)	ATK
MUV-541	MUT-1 Makeup Iso.	Closed	ATK
MUV-108	MU Feed Flow Controller	Available(8)	ATK
MUV-31	Normal Makeup Flow Controller	Controlling(9) /Closed	ATK
95' AUX. BLDG.TRIANGLE ROOM			
DHV-110	"A" LPI Flow Controller	Throttled Open(10)	ATK
DHV-111	"B" LPI Flow Controller	Throttled Open(10)	ATK
"A" DECAY HEAT PIT			
DCV-177	DHHE-1A Outlet Controller	Open(11)	ATK
DCV-17	DHHE-1A Bypass Controller	Closed(11)	ATK
"B" DECAY HEAT PIT			
DCV-178	DHHE-1B Outlet Controller	Open(11)	ATK
DCV-18	DHHE-1B Bypass Controller	Closed(11)	ATK
95' AUX. BLDG. SEAWATER ROOM			
DCV-59	DCT-1A DW Iso.	Open	ATK
DCV-10	DCT-1A Fill Valve	Open/Closed(12)	ATK
DCV-91	Chemical Add to "A" DC Train	Closed	ATK
DCV-60	DCT-1B DW Iso.	Open	ATK
DCV-12	DCT-1B Fill Valve	Open/Closed(12)	ATK
DCV-92	Chemical Add to "B" DC Train	Closed	ATK
95' AUX. BLDG. BETWEEN DH PITS			
DHV-120	DHV-39 Bypass	Closed	ATK
DHV-121	DHV-40 Bypass	Closed	ATK
BSV-13	DW Iso. to "A" BS Train	Closed	ATK
BSV-14	DW Iso. to "B" BS Train	Closed	ATK

(8) Either CAV-60 must be available OR CAV-57, MUV-108 and MUV-541 must be available.
(9) Controlling at setpoint.
(10) Valve is at the 3000 GPM mark using local position indication.
(11) These valves are "Air-Failed" to their maximum ES cooling positions per OP-404.
(12) Closed unless DC Surge Tank is filling.

ENCLOSURE 1
(Page 4 of 6)

VALVE CHECK LIST I

Date ___x/x/xx___

Valve No.	Description	Position	Initials
95' AUX. BLDG. MAKEUP VALVE ALLEY			
MUV-5	MUP-1B Discharge Header to CF Tank Iso	Closed	ATK
MUV-13	Filters Outlet Line to MUP-1B Isolation	Closed	ATK
MUV-28	Downstream Iso. for MUV-31	Open	ATK
MUV-29	Upstream Iso for MUV-31	Open	ATK
MUV-30	Minimum Makeup Manual Flow Control Valve	Sealed Throttle (13)	ATK
MUV-32	Downstream Iso. for MUV-30	Open	ATK
MUV-33	Upstream Iso. for MUV-30	Open	ATK
***95' AUX. BLDG. - EAST RB PENETRATION AREA BY HPI VALVES ***			
MUV-573	A2 HPI Line Maintenance Valve	Sealed OPEN	ATK
MUV-574	A1 HPI Line Maintenance Valve	Sealed OPEN	ATK
MUV-575	B1 HPI Line Maintenance Valve	Sealed OPEN	ATK
MUV-576	B2 HPI Line Maintenance Valve	Sealed OPEN	ATK
MUV-588	A2-B1 Crosstie Isolation Maintenance Valve	Sealed OPEN	ATK
MUV-589	A1-B2 Crosstie Isolation Maintenance Valve	Sealed OPEN	ATK
MUV-595	Makeup Line Stop Check Valve	Fixed in Place Throttled 5-3/4 Turns Closed from Full Open	ATK
119' BLOCK ORIFICE ROOM & VALVE ALLEY			
MUV-156	Upstream Iso. for MUV-108	Open	ATK
MUV-158	MUV-108 Bypass	Closed	ATK
MUV-155	Downstream Iso. for MUV-108	Open	ATK
MUV-114	Emergency Boration Iso.	Open	ATK
MUV-106	Batch Controller FT Inlet Iso.	Open	ATK
MUV-107	Batch Controller FT Bypass	Closed	ATK
MUV-105	Batch Controller FT Outlet Iso.	Open	ATK
CAV-56	CAP-1A/B Disch. to SF Pool	Closed	ATK

(13) OP-402 sets the throttle position (20 gpm to 36 gpm with MUV-31 closed)

ENCLOSURE 1

VALVE CHECK LIST I Date ___x/x/xx___

Valve No.	Description	Position	Initials
119' AUX. BLDG. NEAR BAST'S			
CAV-38	CAT-5A Outlet Iso.	Open(14)	ATK
CAV-48	CAP-1A Suction	Open(14)	ATK
CAV-51	CAP-1A Discharge	Sealed Throttled 1 ½ Turns OPEN(14)	ATK
CAV-41	CAT-5A to Drain Connection	Closed(14)	ATK
CAV-43	CAT-5B Outlet Iso.	Open(15)	ATK
CAV-44	CAT-5B to Drain Connection	Closed(15)	ATK
CAV-49	CAP-1B Suction	Open(15)	ATK
CAV-50	CAP-1B Discharge	Open(15)	ATK
CAV-120	CAT-1 Supply to CAP-1B and CAP-1C	Closed(15)	ATK
CAV-40	Demin Water Flush for CAT-5A Outlet	Closed	ATK
CAV-45	Demin Water Flush for CAT-5B Outlet	Closed	ATK
CAV-46	CAT-5A to CAT-5B X-Conn.	Closed	ATK
CAV-55	CAP-1B Recirc.	Closed	ATK
CAV-412	CAP-1A Recirc.	Closed	ATK
CAV-119	CAP's Combined Discharge	Open	ATK
CAV-35	CAP-1C Discharge	Closed	ATK
CAV-114	Demin Water Flush to CAP-1A	Closed	ATK
CAV-116	Demin Water Flush to CAP-1B	Closed	ATK
CAV-53	CAP's Discharge to CFT's	Closed	ATK
CAV-59	CAP's Discharge to BWST	Closed	ATK

(14) Either CAT-5A or CAT-5B must be in Service. Valve position shown for CAT-5A in service; otherwise NA.

(15) Either CAT-5A or CAT-5B must be in Service. Valve position shown for CAT-5B in service; otherwise NA.

ENCLOSURE 1
(Page 6 of 6)

VALVE CHECK LIST I

Date x/x/xx

Valve No.	Description	Position	Initials
***119' AUX. BLDG. - SEAL RETURN VALVE ALLEY* **			
MUV-357	MUT Inlet Isolation	Open	ATK
***119' AUX. BLDG. - MISC. AREAS ***			
CFV-5 Breaker	ES MCC 3AB, UNIT 6B	Locked off (3)	ATK
CFV-6 Breaker	ES MCC 3AB, UNIT 6C	Locked off (4)	ATK
SFV-13	BWST to SF System Iso.	Open/Closed (16)	ATK
MUV-202	MUFL-1B Outlet to DH	Closed	ATK
MUV-203	MUFL-1A Outlet to DH	Closed	ATK
143' AUX. BLDG.			
MUV-9 Breaker	RX MCC 3B1, UNIT 8D [NOCS 97803]	Locked off	ATK

(3) CFV-5 must be Open with its breaker locked off when RC pressure is ≥ 750 psig. CFV-5 must be Closed with its breaker locked off when RC pressure is ≤ 625 psig. NA if neither condition exists.

(4) CFV-6 must be Open with its breaker locked off when RC pressure is ≥ 750 psig. CFV-6 must be Closed with its breaker locked off when RC pressure ≤ 625 psig. NA if neither condition exists.

(16) SFV-13 can only be open if BWST is on recirculation with SFP-2 per OP-406.

ENCLOSURE 2

VALVE CHECK LIST II - BWST Using DHP-1B) Date _____

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
DHV-35	BWST Suction Iso.	Closed	
DHV-43	RB Sump Iso.	Closed	
DHV-40	Dropline Iso. to "B" Header	Closed	
DHV-12	DH Disch. to MUP Suction Iso.	Closed	
DHV-6	DH Disch. Iso. to RCS	Available	
DHV-211	DHHE-1B Outlet Isolation/Test	Available	
DHV-111	"B" LPI Flow Control	Available	
DHV-76	DH Iso. from MU Purification	Closed	
DHV-106	DH Iso. to MU Purification	Closed	
DHV-7	Recirc. Iso. to BWST	Closed	
BSV-16	BSP-1B Suction Iso.	Closed	
MUV-58	BWST to MUP-1C	Open/Closed	
"B" DECAY HEAT PIT			
DHV-32	DHP-1B Suction Iso.	Sealed Open	
95' AUX. BLDG.			
BSV-58	DHP-1B DW Flush Iso.	Locked Closed	
BSV-98	BST-2 to DHP-1B Suction Iso.	Sealed Closed	
119' AUX. BLDG.			
SFV-13	BWST Supply Iso.	Closed	

ENCLOSURE 3

VALVE CHECK LIST III - BWST Using DHP-1A) Date _____

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
DHV-34	BWST Suction Iso.	Closed	
DHV-42	RB Sump Iso.	Closed	
DHV-39	Dropline Iso. to "A" Header	Closed	
DHV-11	DH Disch. to MUP Suction Iso.	Closed	
DHV-5	DH Disch. Iso. to RCS	Available	
DHV-210	DHHE-1A Outlet Isolation/Test	Available	
DHV-110	"A" LPI Flow Control	Available	
DHV-75	DH Iso. from MU Purification	Closed	
DHV-105	DH Iso. to MU Purification	Closed	
DHV-8	Recirc. Iso. to BWST	Closed	
BSV-17	BSP-1A Suction Iso.	Closed	
MUV-73	BWST to MUP-1A	Open/Closed	
"B" DECAY HEAT PIT			
DHV-21	DHP-1A Suction Iso.	Sealed Open	
95' AUX. BLDG.			
BSV-57	DHP-1A DW Flush Iso.	Locked Closed	
BSV-97	BST-2 to DHP-1A Suction Iso.	Sealed Closed	

ENCLOSURE 4
(Page 1 of 2)

VALVE CHECK LIST IV - (BAST Using DHP) Date _____

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
DHV-75	"A" DH Iso. from MU Purification	Available(1)	
DHV-76	"B" DH Iso. from MU Purification	Available(2)	
CAV-57	Normal Boration Supply	Available(3)	
CAV-60	Emergency Boration Supply	Available(3)	
MUV-541	MUT-1 Makeup Iso.	Available(3)	
MUV-108	MU Feed Flow Controller	Available(3)	
MUV-97	MUFL-1B Inlet	Open/Closed(4)	
MUV-96	MUFL-1A Inlet	Open/Closed(4)	
MUV-90	MUFL-1B to MUT-1 Iso.	Closed	
MUV-91	MUFL-1A to MUT-1 Iso.	Closed	
MUV-100	MUFL-1A/1B Bypass	Closed	
119' SEAL RETURN / POST FILTER AREA			
MUV-202	MUFL-1B Outlet to DH	Open	
MUV-203	MUFL-1A Outlet to DH	Open	
119' BLOCK ORIFICE ROOM & VALVE ALLEY			
MUV-156	Upstream Iso. for MUV-108	Open	
MUV-155	Downstream Iso. for MUV-108	Open	
MUV-114	Emergency Boration Iso.	Open	
MUV-106	Batch Controller FT Inlet Iso.	Open	
MUV-105	Batch Controller FT Outlet Iso.	Open	
CAV-56	CAP's Disch. to SF Pool	Closed	

(1) When "A" DH train is in use; otherwise NA.
(2) When "B" DH train is in use; otherwise NA.
(3) Either CAV-60 must be available OR CAV-57, MUV-108 and MUV-541 must be available.
(4) At least one of these valves must be Open.

ENCLOSURE 4
(Page 2 of 2)

VALVE CHECK LIST IV - (BAST Using DHP) Date _____

Valve No.	Description	Position	Initials
119' AUX. BLDG. NEAR BAST'S			
CAV-38	CAT-5A Outlet Iso.	Open(5)	
CAV-48	CAP-1A Suction	Open(5)	
CAV-51	CAP-1A Discharge	Seal Throttled 1 ½ Turns OPEN(5)	
CAV-41	CAT-5A to Drain Connection	Closed(5)	
CAV-43	CAT-5B Outlet Iso.	Open(6)	
CAV-44	CAT-5B to Drain Connection	Closed(6)	
CAV-49	CAP-1B Suction	Open(6)	
CAV-50	CAP-1B Discharge	Open(6)	
CAV-120	CAT-1 Supply to CAP-1B and CAP-1C	Closed(6)	
CAV-40	Demin Water Flush for CAT-5A Outlet	Closed	
CAV-45	Demin Water Flush for CAT-5B Outlet	Closed	
CAV-46	CAT-5A to CAT-5B X-Conn.	Closed	
CAV-55	CAP-1B Recirc.	Closed	
CAV-412	CAP-1A Recirc.	Closed	
CAV-119	CAP's Combined Discharge	Open	
CAV-35	CAP-1C Discharge	Closed	
CAV-114	Demin Water Flush to CAP-1A	Closed	
CAV-116	Demin Water Flush to CAP-1B	Closed	
CAV-53	CAP's Discharge to CFT's	Closed	
CAV-59	CAP's Discharge to BWST	Closed	

(5) Either CAT-5A or CAT-5B must be in Service. Valve position shown for CAT-5A in service; otherwise NA.
(6) Either CAT-5A or CAT-5B must be in Service. Valve position shown for CAT-5B in service; otherwise NA.

ENCLOSURE 5
(Page 1 of 5)

VALVE CHECK LIST V - (BAST Using MUP) Date _____

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
DHV-105	"A" DH Iso. to MU Purification	Closed	
DHV-106	"B" DH Iso. to MU Purification	Closed	
DHV-11	DH Disch. to MUP Suction Iso.	Closed	
DHV-12	DH Disch. to MUP Suction Iso.	Closed	
CAV-57	Normal Boration Supply	Available(1)	
CAV-60	Emergency Boration Supply	Available(1)	
MUV-541	MUT-1 Makeup Iso.	Available(1)	
MUV-108	MU Feed Flow Controller	Available(1)	
MUV-90	MUFL-1B Outlet	Open	
MUV-91	MUFL-1A Outlet	Open	
MUV-97	MUFL-1B Inlet	Open/Closed(2)	
MUV-96	MUFL-1A Inlet	Open/Closed(2)	
MUV-31	Normal Makeup Flow Controller	Available	
MUV-596	Common Seal Injection/Makeup Isolation	Open	
MUV-27	Normal Makeup Iso.	Open	
MUV-53	MUP recirc	Open	
MUV-257	MUP recirc	Open	
MUV-69	MUP-1A to MUP-1B Suction X-Conn.	Open(4)	
MUV-9	MUP-1A to MUP-1B Disch. X-Conn.	Open(4)	
MUV-62	MUP-1B to MUP-1C Suction X-Conn.	Open(5)	
MUV-3	MUP-1B to MUP-1C Disch. X-Conn.	Open(5)	

(1) Either CAV-60 must be available OR CAV-57, MUV-108 and MUV-541 must be available.
(2) At least one of these valves must be Open.
(4) When MUP-1A is in the boration path; otherwise NA
.(5) When MUP-1C is in the boration path; otherwise NA.

ENCLOSURE 5
(Page 2 of 5)

VALVE CHECK LIST V - (BAST Using MUP) Date _____

Valve No.	Description	Position	Initials
119' SEAL RETURN / POST FILTER AREA			
MUV-77	Seal Return Cooler 1A Inlet Iso.	Sealed Open/Closed(6)	
MUV-78	Seal Return Cooler 1B Inlet Iso.	Sealed Open/Closed(6)	
MUV-79	Seal Return Cooler 1B Outlet Iso.	Sealed Open/Closed(6)	
MUV-80	Seal Return Cooler 1A Outlet Iso.	Sealed Open/Closed(6)	
MUV-357	MUT Inlet Iso.	Open	
MUV-202	MUFL-1B Outlet to DH	Closed	
MUV-203	MUFL-1A Outlet to DH	Closed	
119' BLOCK ORIFICE ROOM & VALVE ALLEY			
MUV-156	Upstream Iso. for MUV-108	Open	
MUV-155	Downstream Iso. for MUV-108	Open	
MUV-114	Emergency Boration Iso.	Open	
MUV-106	Batch Controller FT Inlet Iso.	Open	
MUV-105	Batch Controller FT Outlet Iso.	Open	
CAV-56	CAP's Disch. to SF Pool	Closed	

(6) A flow path must be maintained through at least one Seal Return Cooler at all times.

ENCLOSURE 5
(Page 3 of 5)

VALVE CHECK LIST V.- (BAST Using MUP) Date _____

Valve No.	Description	Position	Initials
119' AUX. BLDG. NEAR BAST'S			
CAV-38	CAT-5A Outlet Iso.	Open(7)	
CAV-48	CAP-1A Suction	Open(7)	
CAV-51	CAP-1A Discharge	Sealed Throttled 1½ Turns OPEN(7)	
CAV-41	CAT-5A to Drain Connection	Closed(7)	
CAV-43	CAT-5B Outlet Iso.	Open(8)	
CAV-44	CAT-5B to Drain Connection	Closed(8)	
CAV-49	CAP-1B Suction	Open(8)	
CAV-50	CAP-1B Discharge	Open(8)	
CAV-120	CAT-1 Supply to CAP-1B and CAP-1C	Closed(8)	
CAV-40	Demin Water Flush for CAT-5A Outlet	Closed	
CAV-45	Demin Water Flush for CAT-5B Outlet	Closed	
CAV-46	CAT-5A to CAT-5B X-Conn.	Closed	
CAV-55	CAP-1B Recirc.	Closed	
CAV-412	CAP-1A Recirc.	Closed	
CAV-119	CAP's Combined Discharge	Open	
CAV-35	CAP-1C Discharge	Closed	
CAV-114	Demin Water flush to CAP-1A	Closed	
CAV-116	Demin Water flush to CAP-1B	Closed	
CAV-53	CAP's Discharge to CFT's	Closed	
CAV-59	CAP's Discharge to BWST	Closed	

(7) Either CAT-5A or CAT-5B must be in Service. Valve position shown for CAT-5A in service; otherwise NA.
(8) Either CAT-5A or CAT-5B must be in Service. Valve position shown for CAT-5B in service; otherwise NA.

ENCLOSURE 5
(Page 4 of 5)

VALVE CHECK LIST V.- (BAST Using MUP) Date _____

Valve No.	Description	Position	Initials
95' AUX. BLDG. MAKEUP VALVE ALLEY			
MUV-29	Upstream Iso. for MUV-31	Open	
MUV-28	Downstream Iso. for MUV-31	Open	
MUV-68	MUP-1A to MUP-1B Suction X-Conn.	Open(4)	
MUV-10	MUP-1A Disch. Stop Check	Locked Open (4)	
MUV-147	MUP-1A Recirc	Sealed Open(4)	
MUV-153	MUP-1A Recirc	Sealed Open(4)	
MUV-8	MUP-1A to MUP-1B Disch. X-Conn.	Open(4)	
MUV-6	MUP-1B Disch. Stop Check	Locked Throttled 5-1/4 Turns Open (9)	
MUV-266	MUP-1B recirc	Sealed Open(9)	
MUV-267	MUP-1B recirc	Sealed Open(9)	
MUV-63	MUP-1B to MUP-1C Suction X-Conn.	Open(5)	
MUV-2	MUP-1C Disch. Stop Check	Locked Open(5)	
MUV-264	MUP-1C Recirc	Sealed Open(5)	
MUV-265	MUP-1C Recirc	Sealed Open(5)	
MUV-4	MUP-1B to MUP-1C Disch. X-Conn.	Open(5)	
95' AUX. BLDG. NEAR RC EVAPORATOR ROOM			
MUV-64	Makeup Tank Iso. to Makeup Pumps	Open	
95' AUX. BLDG. NEAR MAKEUP PUMPS			
MUV-70	MUP-1A Suction Iso.	Open(4)	
MUV-66	MUP-1B Suction Iso.	Open(9)	
MUV-59	MUP-1C Suction Iso.	Open(5)	

(4) When MUP-1A is in the boration path; otherwise NA.
(5) When MUP-1C is in the boration path; otherwise NA.
(9) When MUP-1B is in the boration path; otherwise NA.

ENCLOSURE 5
(Page 5 of 5)

VALVE CHECK LIST V.- (BAST Using MUP) Date _____

Valve No.	Description	Position	Initials
95' AUX. BLDG. PENETRATION AREA			
MUV-595	Makeup Line Stop Check Valve	Fixed in Place Throttled 5-3/4 Turns Closed from Full Open	
MUV-574	A1 HPI Line Maintenance Valve	Sealed Open	

ENCLOSURE 6
(Page 1 of 4)

VALVE CHECK LIST VI - (BWST Using MUP) Date _____

Valve No.	Description	Position	Initials
MAIN CONTROL BOARD			
MUV-100	MUFL-1A/1B Bypass	Closed	
MUV-73	BWST Suction Iso. for MUP-1A	Open(1)	
MUV-58	BWST Suction Iso. for MUP-1C	Open(2)	
MUV-62	Suction Crosstie between MUP-1C and MUP-1B	Open(5)	
MUV-69	Suction Crosstie between MUP-1A and MUP-1B	Open(6)	
MUV-3	MUP-1C Discharge Crosstie	Open(3)	
MUV-9	MUP-1A Discharge Crosstie	Open(4)	
MUV-31	Normal Makeup Valve	Auto/Closed	
MUV-596	Common Seal Injection/Makeup Isolation	Open	
MUV-27	Normal Makeup Iso.	Open	
MUV-53	MUP recirc	Open	
MUV-257	MUP recirc	Open	
DHV-11	DHP-1A Disch. to MUP Suction Iso.	Closed	
DHV-12	DHP-1B Disch to MUP Suction Iso.	Closed	
DHV-34	BWST Suction Iso.	Closed	
DHV-35	BWST Suction Iso.	Closed	

(1) When MUP-1A is in the boration path OR MUP-1B is in the boration path aligned for suction via MUV-68 and MUV-69; otherwise NA.
(2) When MUP-1C is in the boration path OR MUP-1B is in the boration path aligned for suction via MUV-62 and MUV-63; otherwise NA.
(3) When MUP-1C is in the boration path; otherwise NA.
(4) When MUP-1A is in the boration path; otherwise NA.
(5) When MUP-1B is in the boration path and suction is from BWST via MUV-58; otherwise NA.
(6) When MUP-1B is in the boration path and suction is from BWST via MUV-73; otherwise NA.

ENCLOSURE 6
(Page 2 of 4)

VALVE CHECK LIST VI - (BWST Using MUP) Date _____

Valve No.	Description	Position	Initials
119' SEAL RETURN / POST FILTER AREA			
MUV-77	Seal Return Cooler 1A Inlet Iso.	Sealed Open/Closed(7)	
MUV-78	Seal Return Cooler 1B Inlet Iso.	Sealed Open/Closed(7)	
MUV-79	Seal Return Cooler 1B Outlet Iso.	Sealed Open/Closed(7)	
MUV-80	Seal Return Cooler 1A Outlet Iso.	Sealed Open/Closed(7)	
MUV-357	Filters Outlet to MUT Isolation	Open	
95' AUX. BLDG. NEAR RC EVAPORATOR ROOM			
MUV-64	MUT Outlet to MUP Iso.	Sealed Open	
95' AUX. BLDG. MAKEUP VALVE ALLEY			
MUV-28	Downstream Iso. for MUV-31	Open	
MUV-29	Upstream Iso for MUV-31	Open	
MUV-10	MUP-1A Discharge	Locked Open	
MUV-147	MUP-1A Recirc	Sealed Open(4)	
MUV-153	MUP-1A Recirc	Sealed Open(4)	
MUV-8	MUP-1A Discharge X-Connect	Locked Open(4)	

(4) When MUP-1A is in the boration path; otherwise NA.
(7) A flow path must be maintained through at least one Seal Return Cooler at all times.

ENCLOSURE 6
(Page 3 of 4)

VALVE CHECK LIST VI - (BWST Using MUP) Date _____

Valve No.	Description	Position	Initials
95' AUX. BLDG. MAKEUP VALVE ALLEY			
MUV-2	MUP-1C Discharge	Locked Open	
MUV-264	MUP-1C Recirc	Sealed Open(3)	
MUV-265	MUP-1C Recirc	Sealed Open(3)	
MUV-4	MUP-1C Discharge X-Connect	Locked Open(3)	
MUV-63	MUP-1B X-tie suction to MUP-1C	Sealed Open(5)	
MUV-68	MUP-1B X-tie suction to MUP-1A	Sealed Open(6)	
MUV-6	MUP-1B Discharge	Locked Throttled 5-1/4 Turns Open(8)	
MUV-266	MUP-1B recirc	Sealed Open(8)	
MUV-267	MUP-1B recirc	Sealed Open(8)	
95' AUX. BLDG. NEAR MAKEUP PUMPS			
MUV-70	MUP-1A Suction	Sealed Open(4)	
MUV-66	MUP-1B Suction	Sealed Open(8)	
MUV-59	MUP-1C Suction	Sealed Open(3)	

(3) When MUP-1C is in the boration path; otherwise NA.
(4) When MUP-1A is in the boration path; otherwise NA.
(5) When MUP-1B is in the boration path and suction is from BWST via MUV-58; otherwise NA.
(6) When MUP-1B is in the boration path and suction is from BWST via MUV-73; otherwise NA.
(8) When MUP-1B is in the boration path; otherwise NA.

ENCLOSURE 6
(Page 4 of 4)

VALVE CHECK LIST VI - (BWST Using MUP) Date _____

Valve No.	Description	Position	Initials
95' AUX. BLDG. PENETRATION AREA			
MUV-595	Makeup Line Stop Check Valve	Fixed in Place Throttled 5-3/4 Turns Closed from Full Open	
MUV-574	A1 HPI Line Maintenance Valve	Sealed Open	

Summary of Changes
PRR# 66298

SECTION	CHANGE
Enclosure 1, 4 and 5	Added seal throttled to CAV-51. CAV-51 was added to SP-381 as a sealed valve (Ref PRR 66298)
Enclosure 1 page 2 of 6 - Note 5 and 6	Removed the word standby following "Selected for ES". This may be confused to mean that MUP-1B could be selected for ES but not be running. This condition would require entry into ITS 3.5.2. (Ref PRR 94084)
Enclosure 1 page 4 of 6	Added seal Throttled to MUV-30. MUV-30 was added SP-381 as a sealed valve (Ref EC 51536) Revised Note 13 to state that OP-402 will sets the throttle position (20 gpm to 36 gpm with MUV-31 closed)

CRYSTAL RIVER UNIT 3
JPM COVER SHEET

JPM #EC1 NRC 2008 (ADMIN)

RO and SRO

PERFORM RCS WATER INVENTORY BALANCE PER SP-317

PREPARED/REVIEWED BY: Alan Kennedy Date: 01/09/08

VALIDATED BY: Virgin, Bracewell Date: 01/10/08

APPROVAL BY: Mark Vansicklen Date: 01/10/08
(Nuclear Training Supervisor)

CONCURRED BY: Blair Wunderly Date: 01/10/08
(Operations Representative)

Validation is not required for minor enhancements, procedure revisions that do not affect the JPM or individual step changes that do not affect the flow of the JPM.

Operations concurrence is required for new JPMs and changes that affect the flow, critical steps or time critical steps of the JPM. Operations concurrence is not required for changes that are required due to a procedure revision.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM #: EC1 NRC 2008 Remedial [Mod Bank #283]

Task: RO - Perform a Reactor Coolant System inventory balance
SRO - Perform safety and technical reviews of plant procedures

Alternate Path: ☐ YES ☒ NO

PRA Top Critical Action: ☐ YES ☒ NO

Safety Function: NA

K/A Rating/Importance: G2.2.12 RO 3.0 SRO 3.4

Task Number/Position: 0020202004 RO
1190101029 SRO

Position: ☐ SRO ONLY ☒ RO/SRO ☐ NLO/RO/SRO

Task Standard: Perform a Reactor Coolant System inventory balance per SP-317.

Preferred Evaluation Location:

☐ SIM ☐ PLANT ☒ ADMIN

Preferred Evaluation Method

☒ PERFORM ☐ SIMULATE

References:

SP-317, Rev 69

Validation Time: 30 – RO 33 min - SRO **Time Critical:** ☐ YES ☒ NO

==========

Candidate: _____ **Time Started:** _____
Printed Name

Time Finished: _____

Performance Rating: ☐ SAT ☐ UNSAT **Performance Time:** _____

Examiner: _____ _____ _____
Printed Name Signature Date

Comment: _____

_____

Tools/Equipment/Procedures Needed:

1. **SP-317**
2. **SRO Only – Technical Specifications**
3. **Calculator**

READ TO THE OPERATOR

Initial Conditions

You are the Reactor Operator

The current time is 0400 on this date.
The plant has been at steady state conditions (100%) for the past 24 hours.
Relevant plant data is supplied with this JPM.
Plant computer is operable.
RM-A12 is inoperable.
Manual calculation is required.
The CRS has authorized a test interval of 4 hours.

Initiating Cues

Using the data supplied, complete an RC System Water Inventory Balance for the period from 0000 to 0400. Where appropriate, assume that independent reviews have been completed.

Completion of the following satisfies the requirement to inform the Control Room Supervisor of your results.

Primary-to-Secondary Leakage	**gpm**
Identified Leakage	**gpm**
Unidentified Leakage	**gpm**
Controlled Bleed Off	**gpm**

SROs only: Upon completion of the above, evaluate your results and list any actions required per Technical Specifications. Include applicable time requirements.

Per TS _____ (TS number) the actions below must be completed within _____ hours.

_____

_____

_____

STEP 1: (step 4.1.1.1) Procedure Note: Dumpster readings are not required if RCV-150 is open and RCDT level indication is being used. Record the following data on Enclosure 1: • Record the instruments selected as sources • Start time • RCDT Level and Start time • Pressurizer Level • Tave • MUT Level • RCS Pressure STANDARD: Data is recorded on Enclosure 1. COMMENTS:	SAT ____ UNSAT ___
STEP 2: (step 4.1.1.2) Determine and record individual RCP CBO flow. STANDARD: Data is recorded on Enclosure 1. COMMENTS:	SAT ____ UNSAT ___
STEP 3: (step 4.1.1.3) Obtain and record RCP standpipe flushwater flow rate. STANDARD: Data is recorded on Enclosure 1. COMMENTS:	SAT ____ UNSAT ___

STEP 4: (step 4.1.1.4) Record component identified leakage. STANDARD: Data is recorded on Enclosure 1. COMMENTS:	SAT ____ UNSAT ___
STEP 5: (step 4.1.1.5) Obtain Primary to Secondary leakage data and record on Enclosure 1. STANDARD: Data is recorded on Enclosure 1. Since RM-A12 is inoperable (per cue) chemistry value is used. Conversion from gpd to gpm is required. COMMENTS:	SAT ____ UNSAT ___
STEP 6: (step 4.1.2.1) Record the following data on Enclosure 1: • Stop time • RCDT level and stop time • RCP Seal leakage, if applicable • Pressurizer Level • Tave • MUT Level • RCS Pressure STANDARD: Data is recorded on Enclosure 1. COMMENTS:	SAT ____ UNSAT ___

STEP 7: (step 4.1.3.1) Calculate the test run time. STANDARD: Per the cue the run time is 4 hours (240 minutes) COMMENTS:	SAT ____ UNSAT ___
STEP 8: (step 4.1.3.2) Complete Section B of Enclosure 1. STANDARD: Values should be within ± 0.1 gpm of value listed on attached key. COMMENTS:	SAT ____ UNSAT ___
STEP 9: (step 4.1.3.3) Calculate total seal leakage, if applicable. STANDARD: Not applicable. RCV-150 open. COMMENTS:	SAT ____ UNSAT ___
STEP 10: (steps 4.1.3.4 thru 4.1.3.7) Complete Section D of Enclosure 1. STANDARD: Values should be within ± 0.1 gpm of value listed on attached key. COMMENTS:	SAT ____ UNSAT ___

STEP 11: (step 4.1.3.8) Total the identified component leakages in Section E of Enclosure 1. STANDARD: Values should be within ± 0.1 gpm of value listed on attached key. COMMENTS:	SAT ____ UNSAT ___
STEP 12: (step 4.1.3.9) Calculate "RCP Seal Leakage Collection Point" leakage in Section F of Enclosure 1. STANDARD: Value should be within ± 0.1 gpm of value listed on attached key. COMMENTS:	SAT ____ UNSAT ___
STEP 13: (step 4.1.3.10) Calculate "RCS Leakages" in Section G of Enclosure 1. STANDARD: Values should be within ± 0.1 gpm of value listed on attached key. COMMENTS:	SAT ____ UNSAT ___
STEP 14: (step 4.1.3.11) Record current μ and σ values. STANDARD: Candidate records data from attached data sheet. COMMENTS:	SAT ____ UNSAT ___

STEP 15: (step 4.1.3.12) Calculate Unidentified Leakage Limit and record in Step 4.1.3.14 STANDARD: Candidate calculates limit and records. COMMENTS:	SAT ____ UNSAT ___
STEP 16: (step 4.1.3.13) Perform an independent review of all calculations on Enclosure 1. STANDARD: N/A. Per the cue all independent reviews are considered complete. COMMENTS:	SAT ____ UNSAT ___
STEP 17: (step 4.1.3.14) Verify Acceptance Criteria are met. STANDARD: Candidate transfers data from Enclosure 1 to cue sheet. Calculation results are ± 0.1 gpm of the values listed on the attached key. COMMENTS:	**Critical Step** (calculations and data transfer must be correct for accurate leak rate) SAT ____ UNSAT ___
STEP 18: (step 4.1.3.15 and 4.1.3.16) If Acceptance Criteria is NOT met, then refer to Section 5.2, Contingencies and INFORM the Control Room Supervisor of the completion and the results of this procedure. STANDARD: Candidate determines that Acceptance Criteria is NOT met and notifies CRS that ITS 3.4.12 actions apply. COMMENTS:	SAT ____ UNSAT ___

TERMINATION CRITERIA: **Correct leak rate determined.**	
RO - END OF TASK	
STEP 19: **(SRO only)** STANDARD: SRO candidates should review ITS and determine the required actions and time frames for the calculated results. TS 3.4.12, Condition A – Reduce leakage to within limits in 4 hours.	**Critical Step** (ensure required actions are taken) SAT ____ UNSAT ___
TERMINATION CRITERIA: **Correct ITS actions determined.**	
SRO - END OF TASK	

ANSWER KEY

RCS LEAKAGE CALCULATION

A. TIME:

1) Start date/time _____ / 0000
2) Stop date/time _____ / 0400
3) Run time (time difference between A1 and A2) _____240_____min

B. RC DRAIN TANK:

B.1	Measurement Source (Note 1)					X368
B.2	DVM instrument number (otherwise N/A)					NA
	DVM calibration due date (otherwise N/A)					NA
		1st period	2nd period	3rd period	Total	Units
B.3	Start time	0000				Clock time
B.4	Stop time	0400				Clock time
B.5	Run time	240			240	Minutes
B.6	Stop level	88.270				Inches
B.7	Start level	86.268				Inches
B.8	Δ Level	2.002			2.002	Inches
B.9	Δ Inventory (Total Δ Level x 33.00)				66.066	Gallons
B.10	RCDT rate of change (Δ Inventory / total run time)				0.275	gpm

Note 1: USE computer point X368 for leak rates < 4 hrs duration. The DVM may be used if X368 is unavailable.

C. RCP SEALS:

	RCP-1A X922	RCP-1B X923	RCP-1C X924	RCP-1D X925
1) CONTROLLED BLEED OFF				
a) Controlled bleed off (gpm)	1.440	1.365	1.540	1.660
b) Total of all pumps (gpm)	6.005			

	RC-134-FZ	RC-135-FZ	RC-136-FZ	RC-137-FZ
2) DUMPSTER FLOWS				
a) Dumpster reading at stop time	NR	NR	NR	NR
b) Dumpster reading at start time	NR	NR	NR	NR
c) Dumpster difference (clicks) (C2a minus C2b)	NR	NR	NR	NR
d) Dumpster conversion (gals/click)	0.25	0.25	0.25	0.25
e) Dumpster flow-rate (C2c x C2d/A3) gpm	NR	NR	NR	NR
f) Standpipe flush water flow-rate (gpm)	0.05	0.05	0.05	0.05
g) RCP seal leakage (C2e minus C2f) gpm	NR	NR	NR	NR
h) Total RCP seal leakage gpm (SUM C2g values for all 4 RCPs)	NR			

D. RCS INVENTORY CHANGES: (If NO change is observed, N/A respective correction factor.)

1) RCS PRESSURE (Computer pt. R762F must be converted from psia to psig)

a)	Measurement source		R762F
b)	Pressure at start time (Round to whole number)		2146 psig
c)	Pressure at stop time (Round to whole number)		2146 psig
d)	Average pressure		2146 psig

2) PRESSURIZER (USE computer point R874 or RECL-66 for leak rates < 4 hrs in duration)

a)	Measurement source		R874 / RECL-66
b)	Level at start time		222.703 in.
c)	Level at stop time	≈	220.710 in.
d)	Level change (D2b minus D2c)	=	1.993 in.
e)	Correction factor (Round D1d to closest value)	x	12.21 gal/in. (Enclosure 3)
f)	Inventory change (D2d x D2e)	=	24.335 gal.

3) T_{avg} (USE computer point R731 or RECL-16 for leak rates < 4 hrs in duration When Tave < 520° use RECL-18 or RECL-239)

a)	Measurement source		R731 / RECL-16
b)	Temperature at start time		579.102 °F
c)	Temperature at stop time	≈	579.107 °F
d)	Temperature change (D3b minus D3c)	=	-0.005 °F
e)	Average temperature ([D3b + D3c] ÷ 2)	=	579.10 °F
f)	Correction factor (Based on D3e)	x	96.51 gal/°F (Enclosure 2)
g)	Inventory change (D3d x D3f)	=	-0.483 gal.

4) MAKE-UP TANK (USE computer point X359 for leak rates < 4 hrs in duration)

a)	Measurement source		X359
b)	Level at start time		88.102 in.
c)	Level at stop time	≈	70.110 in.
d)	Level change (D4b minus D4c)	=	17.992 in.
e)	Correction factor	x	30.85 gal/in.
f)	Inventory change (D4d x D4e)	=	555.053 gal.

5) WATER ADDITIONS OR REMOVALS (Do NOT add or remove inventory for leak rates < 4 hrs in duration)

a) Additions total

____ + ____ + ____ + ____ + ____ = ____ gal.

b) Removals total

____ + ____ + ____ + ____ + ____ = ____ gal.

6) TOTAL INVENTORY RATE-OF-CHANGE

(D2f minus D3g plus D4f plus D5a minus D5b) / A3

(24.335 − -0.483 + 555.053 + 0 − 0) / 240 = 2.416 gpm

E. COMPONENT IDENTIFIED LEAKAGE:

NOTE

To obtain leakage in "gpm", MULTIPY the number of drops per minute by 1.67 x 10^{-5} (0.0000167).

NOTE

Do NOT round the individual component leakages.

Component	Leakage Rate
	gpm
DHV-4	0.00025 gpm
MUV-27	0.0000835 gpm
	gpm
	gpm

Total component leakage rate 0.0 gpm

F. RCP SEAL LEAKAGE COLLECTION POINT: [NOCS 040486]

1) RB Sump (RCV-150 CLOSED) (otherwise N/A)
(RCDT rate of change plus Total RCP seal leakage)
(B10 plus C2h) NA gpm

2) RC Drain Tank (RCV-150 OPEN) (otherwise N/A)
(RCDT rate of change minus Total of RCP standpipe flush water flow-rates)
(B10 minus C2f)
(C2f = RCP-1A + RCP-1B + RCP-1C + RCP-1D)
or Total RCP seal leakage C2h if RCDT level is NOT available .075 gpm

RCS LEAKAGE CALCULATION

G. RCS LEAKAGES [NOCS 000597]

1) Primary-to-Secondary Leakage (Round to hundredths) — 0.07 gpm

2) Identified Leakage (E plus F plus G1) (Round to hundredths if only using computer points /round to tenths if using any analog instruments) — 0.15 gpm

3) Unidentified Leakage (D6 minus [E plus F plus G1]) (Round to hundredths if only using computer points/round to tenths if using any analog instruments) — 2.27 gpm

4) Controlled Bleed Off (C1b) (Round to hundredths if using computer points/round to tenths if using Enclosure 4, Calculated CBO Flow) — 6.01 gpm

Performed By (Start) _____ Time:_____ Date:_____

Performed By (Stop) _____ Time:_____ Date:_____

Independently Reviewed By_____ Time:_____ Date:_____

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions

You are the Reactor Operator

The current time is 0400 on this date.
The plant has been at steady state conditions (100%) for the past 24 hours.
Relevant plant data is supplied with this JPM.
Plant computer is operable.
RM-A12 is inoperable.
Manual calculation is required.
The CRS has authorized a test interval of 4 hours.

Initiating Cues

Using the data supplied, complete an RC System Water Inventory Balance for the period from 0000 to 0400. Where appropriate, assume that independent reviews have been completed.

Completion of the following satisfies the requirement to inform the Control Room Supervisor of your results.

Primary-to-Secondary Leakage	**gpm**
Identified Leakage	**gpm**
Unidentified Leakage	**gpm**
Controlled Bleed Off	**gpm**

SROs only: Upon completion of the above, evaluate your results and list any actions required per Technical Specifications. Include applicable time requirements.

Per TS _____ (TS number) the actions below must be completed within _____ hours.

_____

_____

_____

RCS LEAKAGE DATA SHEET

TANK LEVELS

TIME	RCDT X368	PRESSURIZER LEVEL RC-001-LIR1	PRESSURIZER LEVEL R874 / RECL-66	MUT X359
0000	86.268 in	220 in	222.703 in	88.102 in
0030	86.311 in	220 in	222.555 in	86.303 in
0100	86.625 in	220 in	221.345 in	83.522 in
0130	87.112 in	220 in	220.657 in	82.445 in
0200	87.333 in	220 in	221.412 in	80.189 in
0230	87.645 in	220 in	222.355 in	77.726 in
0300	87.811 in	217.5 in	220.186 in	75.925 in
0330	88.012 in	217.5 in	220.512 in	73.411 in
0400	88.270 in	217.5 in	220.710 in	70.110 in

RCP SEALS CONTROLLED BLEED OFF

TIME	RCP-1A X922	RCP-1B X923	RCP-1C X924	RCP-1D X925
0000	1.440 gpm	1.365 gpm	1.540 gpm	1.660 gpm
0030	1.481 gpm	1.334gpm	1.583 gpm	1.632 gpm
0100	1.432 gpm	1.399 gpm	1.544 gpm	1.677 gpm
0130	1.493 gpm	1.411 gpm	1.498 gpm	1.716 gpm
0200	1.425 gpm	1.393 gpm	1.573 gpm	1.641 gpm
0230	1.437 gpm	1.344 gpm	1.544 gpm	1.685 gpm
0300	1.484 gpm	1.366 gpm	1.591 gpm	1.643 gpm
0330	1475 gpm	1.344 gpm	1.568 gpm	1.634 gpm
0400	1.473 gpm	1.329 gpm	1.553 gpm	1.622 gpm

RCS PARAMETERS

TIME	T_{avg} R731 / RECL-16	RCS PRESSURE RC-003A-PIR1 (psig)	RCS PRESSURE R762F (psia)
0000	579.102°F	2150	2160.735
0030	579.322°F	2145	2155.584
0100	579.415°F	2145	2156.152
0130	579.222°F	2150	2157.235
0200	579.265°F	2155	2165.698
0230	579.125°F	2160	2170.259
0300	579.298°F	2155	2165.364
0330	579.312°F	2150	2159.264
0400	579.107°F	2150	2160.715

COMPONENT LEAKAGE

DHV-4	15 drops/min
MUV-27	5 drops/min

OTSG LEAKAGE

100.8 gpd (from chemistry)

RCDT INFORMATION

PRESSURE	2 psig & steady
RCV-150	open

Vented to waste gas header

No leakage thru RCV-8, 9, 10

ADDITIONAL INFORMATION

1. There were no additions, removals, or samples drawn from the RCS during this period.
2. MUT addition made 45 minutes prior to start of SP.
3. RCDT pumped down 45 minutes prior to start of SP.
4. Standpipe flush water = 0.05 gpm/pump
5. Current μ value is 0.12 gpm.
6. Current σ value is 0.03 gpm
7. Chemistry notified of SP-317 performance starting at 0000.

CRYSTAL RIVER UNIT 3

JPM COVER SHEET

JPM #RC1 NRC 2008 (ADMIN)

SRO Only

DETERMINE EXTERNAL REPORTING REQUIREMENTS

PREPARED/REVIEWED BY: Alan Kennedy Date: 1/15/08

VALIDATED BY: Wunderly, Vansicklen Date: 1/15/08

APPROVAL BY: Mark Vansicklen Date: 1/15/08
(Nuclear Training Supervisor)

CONCURRED BY: Blair Wunderly Date: 1/15/08
(Operations Representative)

Validation is not required for minor enhancements, procedure revisions that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

Operations concurrence is required for new JPMs and changes that affect the flow, critical steps or time critical steps of the JPM. Operations concurrence is not required for changes that are required due to a procedure revision.

JPM #: RC1 NRC 2008 Remedial

Task: Determine External Reporting Requirements

Alternate Path: ☐ YES ☒ NO

PRA Top Critical Action: ☐ YES ☒ NO

Safety Function: NA

K/A Rating/Importance: G 2.3.1 SRO 3.0

Task Number: 1190101035 SRO

Position: ☒ SRO ONLY ☐ RO/SRO ☐ NLO/RO/SRO

Task Standard: Determine External Reporting Requirements per CP-151.

Preferred Evaluation Location:

☐ SIM ☐ PLANT ☒ ADMIN

Preferred Evaluation Method

☒ PERFORM ☐ SIMULATE

References:

CP-151, Rev. 19
10CFR

Validation Time: 15 minutes

Time Critical: ☐ YES ☒ NO

Candidate: _____
Printed Name

Time Started: _____

Time Finished: _____

Performance Rating: ☐ SAT ☐ UNSAT

Performance Time: _____

Examiner: _____ _____ _____
Printed Name Signature Date

Comment: _____

_____

_____

SIMULATOR OPERATOR SETUP INSTRUCTIONS:

1. NA

SIMULATOR OPERATOR INSTRUCTIONS:

1. NA

TOOLS / EQUIPMENT / PROCEDURES NEEDED:

Copy of CP-151 Rev. 19
Copy of 10CFR20 (Rev. 2006)

READ TO THE CANDIDATE

INITIAL CONDITIONS:

You are the Superintendent, Shift Operations.

The plant is at 100% rated thermal power.

- A Health Physics Supervisor has called the Control Room reporting a source is missing.
- The missing source has a concentration of 240,000 μCi of Cs-136.

INITIATING CUE:

You are requested to determine if any external reporting requirements apply, and if so document your findings below. (Include to whom any report(s) due and imposed time limits, if applicable)

_____

_____

_____

_____

Start Time:_____

STEP 1: Obtain a copy of CP-151 STANDARD: Candidate obtains a copy of CP-151. **EXAMINER NOTE:** **Provide candidate with a copy of CP-151.** COMMENTS:	N/A
STEP 2: Using supplied reference material, candidate determines reportability. STANDARD: Using CP-151, Enclosure 2, Section V.B. (Loss of radioactive material (10CFR20.1001-20.2401) and 10CFR20 App. C, determines that immediate notification shall be made to the NRC Operations Center. A written follow-up report must be submitted within 30 days of the verbal notification. **EXAMINER NOTE:** When requested, provide candidate with a copy of 10CFR20. Operator will need to ascertain the value in App. C of Part 20 for Cs-136 to determine if notification is required. See Attached reference for Examiner. Immediate and Immediately imply as soon as practicable after discovery of the associated item (normally within 1 hour of occurrence). **EXAMINER NOTE:** **The only CRITICAL portion of this JPM is to determine that an immediate report to the NRC is required.** COMMENTS:	**Critical Step** **Basis: Fed. Regulation requires notification.** SAT_____ UNSAT_____

TERMINATION CRITERIA: **Immediate notification to NRC determined.**	
END OF TASK	

Stop Time:_____

ANSWER KEY

EXAMINER'S CFR REFERENCE

PART 20 APPENDIX "C" Cs-136 limit requiring labeling is 10 μCi's
(Page 413 of CFR, Rev. 2006)

1000 x 10 μCi's = 10,000 μCi's (Amount lost was 240,000 μCi's)

Sec. 10CFR20.**2201** Reports of theft or loss of licensed material.

(a) Telephone reports.

(1) Each licensee shall report by telephone as follows:

(i) Immediately after its occurrence becomes known to the licensee, any lost, stolen, or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in appendix C to part 20 under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas; or

(ii) Within 30 days after the occurrence of any lost, stolen, or missing licensed material becomes known to the licensee, all licensed material in a quantity greater than 10 times the quantity specified in appendix C to part 20 that is still missing at this time.

(2) Reports must be made as follows:

(i) Licensees having an installed Emergency Notification System shall make the reports to the NRC Operations Center in accordance with Sec. 50.72 of this chapter, and

(ii) All other licensees shall make reports by telephone to the NRC Operations Center (301-816-5100).

(b) Written reports.

(1) Each licensee required to make a report under paragraph (a) of this section shall, within 30 days after making the telephone report, make a written report setting forth the following information:

CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

You are the Superintendent, Shift Operations.

The plant is at 100% rated thermal power.

- A Health Physics Supervisor has called the Control Room reporting a source is missing.
- The missing source has a concentration of 240,000 μCi of Cs-136.

INITIATING CUE:

You are requested to determine if any external reporting requirements apply, and if so document your findings below. (Include to whom any report(s) due and imposed time limits, if applicable)

_____

_____

_____

_____

CRYSTAL RIVER UNIT 3

JPM COVER SHEET

JPM #EP1 NRC 2008 (ADMIN)

SRO

COMPLETE AN OFF-SITE DOSE ASSESSMENT AND CLASSIFY EMERGENCY ACTION LEVEL

PREPARED/REVIEWED BY: Alan Kennedy Date: 1/7/08

VALIDATED BY: Virgin, Bracewell Date: 01/10/08

APPROVAL BY: Mark Vansicklen Date: 01/10/08
(Nuclear Training Supervisor)

CONCURRED BY: Blair Wunderly Date: 01/10/08
(Operations Representative)

Validation is not required for minor enhancements, procedure revisions that do not affect the JPM or individual step changes that do not affect the flow of the JPM.

Operations concurrence is required for new JPMs and changes that affect the flow, critical steps or time critical steps of the JPM. Operations concurrence is not required for changes that are required due to a procedure revision.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM #: EP1 NRC 2008 Remedial

Task: Complete an off-site dose assessment during radiological emergencies.

Alternate Path: ☐ YES ☒ NO

PRA Top Critical Action: ☐ YES ☒ NO

Safety Function: NA

K/A Rating/Importance:

G 2.4.39	RO 3.3	SRO 3.1
G 2.4.41	RO 2.3	SRO 4.1

Task Number: 1150402007 RO

Position: ☒ SRO ONLY ☐ RO/SRO ☐ NLO/RO/SRO

Task Standard: Complete an off-site dose assessment during radiological emergencies and determine Emergency Action Level.

Preferred Evaluation Location:

☐ SIM ☐ PLANT ☒ ADMIN

Preferred Evaluation Method

☒ PERFORM ☐ SIMULATE

References:

EM-204A, Rev 24 EM-202, Rev 84

Validation Time: 20 minutes – SRO

Time Critical: ☐ YES ☒ NO

==========

Candidate: _____
Printed Name

Time Started: _____

Time Finished: _____

Performance Rating: ☐ SAT ☐ UNSAT

Performance Time: _____

Examiner: _____ _____ _____
Printed Name Signature Date

Comment: _____

_____

SIMULATOR SETUP INSTRUCTIONS

NA

SIMULATOR OPERATOR INSTRUCTIONS

NA

TOOLS/EQUIPMENT/PROCEDURES NEEDED

1. EM-204A, Rev 24
2. EM-202, Rev 84
3. Calculator

READ TO THE OPERATOR

Initial Conditions:

You are the Senior Reactor Operator.

A Radiological Emergency is in progress.
Sigma-Theta (MM-7-SI) indicates 12 degrees.
All data from the Primary Met Tower (MMP-3) has been lost.
RM-A2 mid-range monitor has indicated 40 mr/hr for the last 15 minutes.
Wind Speed (33') is 10 meters/second (15 min. avg).
Wind Direction (33') is 285 degrees (15 min. avg).
Release duration is unknown.

Initiating Cues:

You are directed to perform EM-204A AND determine the applicable Emergency Action Level classification, if any.

_____

_____

TIME START _____

STEP 1: Provide candidate with a copy of EM-204A, EM-202 and a calculator. STANDARD: N/A COMMENTS:	
STEP 2: Candidate completes EM-204A, Enclosure 1. STANDARD: Candidate will complete EM-204A. EXAMINER NOTE: See attached Answer Key. Critical Steps are denoted on the Answer Key by **(CS).** Steps without **(CS)** are not deemed critical but any errors should be addressed with the candidate following completion of the exam. COMMENTS:	**Critical Step:** (information used for the protection of the public) SAT _____ UNSAT _____

STEP 3: Candidate determines EAL classification following completion of EM-204A, Enclosure 1. STANDARD: Candidate determines that a Site Area Emergency is applicable based on EAL 1.3, Stability Class D or E with RM-A2 Mid-Range monitor indicating > 20 mr/hr for 15 minutes or longer **OR** Site Boundary dose >100 mR TEDE or >500 mR thyroid CDE. COMMENTS:	**Critical Step:** (correct event classification required) SAT _____ UNSAT _____
TERMINATION CRITERIA: **EM-204A completed and EAL classification determined.**	
END OF TASK	

TIME STOP _____

ANSWER KEY

STEP #	RAD AND MET MONITOR DATA			FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM
4.1.2	RM-A2 LOW RANGE GAS CHANNEL		CPM	
or 4.1.3	RM-A2 MID-RANGE GAS CHANNEL	**40**	mR/HR	
4.2.1	SIGMA-THETA	**12**	DEGREES (1)	
or 4.2.2	DELTA T		DEGREES F (2)	
4.2.3	WIND FROM (33')	**285**	DEGREES (2)	8A
4.2.4	WIND SPEED (33')	**10**	M/SEC (2)	
4.2.4.1	WIND SPEED MPH=M/SEC X 2.24	**22.4**	MPH	13A
4.2.5	STABILITY CLASS	**D (CS)**		13B
	(1) Meter displays a rolling 15 minute average, so the current instantaneous value should be used. (2) 15 minute average from chart recorder on meteorological panel			

ANSWER KEY

STEP#	SITE BOUNDARY DOSE INFORMATION			FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM
4.3.1 or 4.3.2	DDE mR/HR	THYROID mR/HR	TEDE mR/HR	
	2.5 E 03	**6.4 E 03**	**3.1 E 03**	
4.4.1	DOSE RATE CORRECTED FOR WIND SPEED = (mR/HR ÷ M/SEC) (From 4.2.4)			14E, 14F
	DDE mR/HR	THYROID mR/HR	TEDE mR/HR	
	2.5 E 02	**6.4 E 02**	**3.1 E 02**	
		Enter on State Form	Enter on State Form	
4.5.1	PROJECTED RELEASE DURATION _____1_____ HOURS. (If duration can't be estimated, assume 1 hour.)			
4.5.2	DOSE = (CORRECTED DOSE RATE X DURATION HOURS)			
	DDE mR	THYROID mR	TEDE mR	
	2.5 E 02 (CS)	**6.4 E 02 (CS)**	**3.1 E 02 (CS)**	
4.6.1	NOBLE GAS CI/SEC	IODINE CI/SEC		14A, 14B
	8.8 E 01	**8.8 E-01**		
4.6.2	AFFECTED SECTORS ____**E**____, ____**F**____, ____**G**____, _____ (three minimum)			8B
4.7.1	_____ Performed by Date/Time			
4.7.2	_____ Emergency Coordinator Date/Time			

ANSWER KEY

TABLE 2
RM-A2 MID-RANGE MONITOR

ENCLOSURE 2
(Page 2 of 2)

SITE BOUNDARY (0.83-MILE)
DOSE RATE (MR/HR)

				STABILITY CLASS A,B,C			STABILITY CLASS D,E			STABILITY CLASS F,G		
MIDRANGE mR/hr	NG uCi/cc	NG Ci/SEC	I Ci/SEC	DDE mR/HR	THY mR/HR	TEDE mR/HR	DDE mR/HR	THY mR/HR	TEDE mR/HR	DDE mR/HR	THY mR/HR	TEDE mR/HR
0.01	3.0E-04	2.2E-02	2.2E-04	1.3E-01	3.4E-01	1.7E-01	6.2E-01	1.6E+00	7.7E-01	2.2E+00	5.8E+00	2.8E+00
0.02	6.0E-04	4.4E-02	4.4E-04	2.7E-01	6.9E-01	3.3E-01	1.2E+00	3.2E+00	1.5E+00	4.5E+00	1.2E+01	5.6E+00
0.04	1.2E-03	8.8E-02	8.8E-04	5.3E-01	1.4E+00	6.6E-01	2.5E+00	6.4E+00	3.1E+00	8.9E+00	2.3E+01	1.1E+01
0.06	1.8E-03	1.3E-01	1.3E-03	8.0E-01	2.1E+00	9.9E-01	3.7E+00	9.6E+00	4.6E+00	1.3E+01	3.5E+01	1.7E+01
0.08	2.4E-03	1.8E-01	1.8E-03	1.1E+00	2.8E+00	1.3E+00	4.9E+00	1.3E+01	6.2E+00	1.8E+01	4.6E+01	2.2E+01
0.1	3.0E-03	2.2E-01	2.2E-03	1.3E+00	3.4E+00	1.7E+00	6.2E+00	1.6E+01	7.7E+00	2.2E+01	5.8E+01	2.8E+01
0.2	6.0E-03	4.4E-01	4.4E-03	2.7E+00	6.9E+00	3.3E+00	1.2E+01	3.2E+01	1.5E+01	4.5E+01	1.2E+02	5.6E+01
0.4	1.2E-02	8.8E-01	8.8E-03	5.3E+00	1.4E+01	6.6E+00	2.5E+01	6.4E+01	3.1E+01	8.9E+01	2.3E+02	1.1E+02
0.6	1.8E-02	1.3E+00	1.3E-02	8.0E+00	2.1E+01	9.9E+00	3.7E+01	9.6E+01	4.6E+01	1.3E+02	3.5E+02	1.7E+02
0.8	2.4E-02	1.8E+00	1.8E-02	1.1E+01	2.8E+01	1.3E+01	4.9E+01	1.3E+02	6.2E+01	1.8E+02	4.6E+02	2.2E+02
1	3.0E-02	2.2E+00	2.2E-02	1.3E+01	3.4E+01	1.7E+01	6.2E+01	1.6E+02	7.7E+01	2.2E+02	5.8E+02	2.8E+02
2	6.0E-02	4.4E+00	4.4E-02	2.7E+01	6.9E+01	3.3E+01	1.2E+02	3.2E+02	1.5E+02	4.5E+02	1.2E+03	5.6E+02
4	1.2E-01	8.8E+00	8.8E-02	5.3E+01	1.4E+02	6.6E+01	2.5E+02	6.4E+02	3.1E+02	8.9E+02	2.3E+03	1.1E+03
6	1.8E-01	1.3E+01	1.3E-01	8.0E+01	2.1E+02	9.9E+01	3.7E+02	9.6E+02	4.6E+02	1.3E+03	3.5E+03	1.7E+03
8	2.4E-01	1.8E+01	1.8E-01	1.1E+02	2.8E+02	1.3E+02	4.9E+02	1.3E+03	6.2E+02	1.8E+03	4.6E+03	2.2E+03
10	3.0E-01	2.2E+01	2.2E-01	1.3E+02	3.4E+02	1.7E+02	6.2E+02	1.6E+03	7.7E+02	2.2E+03	5.8E+03	2.8E+03
20	6.0E-01	4.4E+01	4.4E-01	2.7E+02	6.9E+02	3.3E+02	1.2E+03	3.2E+03	1.5E+03	4.5E+03	1.2E+04	5.6E+03
40	**1.2E+00**	**8.8E+01**	**8.8E-01**	5.3E+02	1.4E+03	6.6E+02	**2.5E+03**	**6.4E+03**	**3.1E+03**	8.9E+03	2.3E+04	1.1E+04
60	1.8E+00	1.3E+02	1.3E+00	8.0E+02	2.1E+03	9.9E+02	3.7E+03	9.6E+03	4.6E+03	1.3E+04	3.5E+04	1.7E+04
80	2.4E+00	1.8E+02	1.8E+00	1.1E+03	2.8E+03	1.3E+03	4.9E+03	1.3E+04	6.2E+03	1.8E+04	4.6E+04	2.2E+04
100	3.0E+00	2.2E+02	2.2E+00	1.3E+03	3.4E+03	1.7E+03	6.2E+03	1.6E+04	7.7E+03	2.2E+04	5.8E+04	2.8E+04
200	6.0E+00	4.4E+02	4.4E+00	2.7E+03	6.9E+03	3.3E+03	1.2E+04	3.2E+04	1.5E+04	4.5E+04	1.2E+05	5.6E+04
400	1.2E+01	8.8E+02	8.8E+00	5.3E+03	1.4E+04	6.6E+03	2.5E+04	6.4E+04	3.1E+04	8.9E+04	2.3E+05	1.1E+05
600	1.8E+01	1.3E+03	1.3E+01	8.0E+03	2.1E+04	9.9E+03	3.7E+04	9.6E+04	4.6E+04	1.3E+05	3.5E+05	1.7E+05
1000	3.0E+01	2.2E+03	2.2E+01	1.3E+04	3.4E+04	1.7E+04	6.2E+04	1.6E+05	7.7E+04	2.2E+05	5.8E+05	2.8E+05

BASED ON:
0.03 mid-range conversion factor from EEF-00-009, Rev.1
WINDSPEED 1 M/SEC

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Initial Conditions:

You are the Senior Reactor Operator.

A Radiological Emergency is in progress.
Sigma-Theta (MM-7-SI) indicates 12 degrees.
All data from the Primary Met Tower (MMP-3) has been lost.
RM-A2 mid-range monitor has indicated 40 mr/hr for the last 15 minutes.
Wind Speed (33') is 10 meters/second (15 min. avg).
Wind Direction (33') is 285 degrees (15 min. avg).
Release duration is unknown.

Initiating Cues:

You are directed to perform EM-204A AND determine the applicable Emergency Action Level classification, if any.

_____

_____