

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-026A**

2013 NRC RO A1-a: EOP-18.2 MAXIMUM  
ALLOWABLE HEAD VENT CALC

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    5

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

000-097-05-01 RESPOND TO VOIDS IN THE REACTOR VESSEL

***TASK STANDARD:***

Calculation of Head Venting time of approximately 9.9 minutes (tolerance of 8.8-11.7 minutes).

***TERMINATING CUE:*** A maximum allowable head venting time is calculated.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

***REFERENCES:***

EOP-18.2

RESPONSE TO VOIDS IN REACTOR VESSEL

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
0000112406	2.4.6	Knowledge of EOP mitigation strategies.	3.7	4.7
1940012125	2.1.25	Ability to interpret reference materials such as graphs, curves, tables, etc.	3.9	4.2

***TOOLS:***EOP-18.2, Attachment 2, CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME  
Calculator***EVALUATION TIME*** 15 ***TIME CRITICAL*** NO ***10CFR55:*** 45.a.12

TIME START: \_\_\_\_\_ TIME FINISH: \_\_\_\_\_ PERFORMANCE TIME: \_\_\_\_\_

***PERFORMANCE RATING:***

SAT: \_\_\_\_\_ UNSAT: \_\_\_\_\_

***CANDIDATE:*** \_\_\_\_\_***EXAMINER:*** \_\_\_\_\_

SIGNATURE

DATE

## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

***SAFETY CONSIDERATIONS:***       None

***INITIAL CONDITION:***   A LOCA occurred from 100% power.

The crew transitioned to EOP-18.2, RESPONSE TO VOIDS IN REACTOR VESSEL.

The following conditions exist:

1. RB Pressure is 0.9 psig on PI-950.
2. RB Temperature is 148°F on TI-9201A
3. RB Temperature is 146°F on TI-9203A.
4. Hydrogen Concentration is 2.1% on CI-8257
5. Hydrogen Concentration is 2.3% on CI-8258.
6. RCS Pressure is 310 psig on PI-402
7. RCS Pressure is 320 psig on PI-403.

***INITIATING CUES:***   The CRS has directed you to determine the maximum allowable head venting time using EOP-18.2, Attachment 2, CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME.

Show all work.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***



## STEPS

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT**

☐

**UNSAT**

☐

**STEP:**

1

Record values for the following parameters:

- a. TI-9201A, RB TEMP "F. "F
- b. TI-9203A, RB TEMP "F. "F
- c. CI-8257, RB H2 CONC %. %H2
- d. CI-8258, RB H2 CONC %. %H2
- e. PI-402, RCS WR PRESS PSIG. psig
- f. PI-403, RCS WR PRESS PSIG. Psig

**STEP STANDARD:**

148°F is entered for TI-9201A and 146°F for TI-9203A;  
2.1 % Hydrogen Concentration is entered for CI-8257 and 2.3% for CI-8258;  
310 psig is entered for PI-402 and 320 psig for PI- 403.

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Use the higher of the two readings recorded above to calculate:

a. Reactor Building volume

(at standard temperature and pressure):

RB AIR VOLUME = (1.84E6 ft3) x [492°R/(RB TEMP (°F) + 460)]

RB AIR VOLUME = ft3

**STEP STANDARD:**

Uses 148°F and calculates RB Air Volume as approximately 1.489E6 ft3 (1.45E6 - 1.5E6)

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Maximum hydrogen volume to be vented

(when RB H2 CONC is LESS THAN 3%):

MAX VENTED VOL = (3% - RB H2 CONC %) x (RB AIR VOLUME (STP)) ft3/100%

MAX VENTED VOL = ft3

**STEP STANDARD:**

Uses 2.3 % H2 and the calculated RB Air Volume to calculate the Max Vented Volume as approximately 1.0423E4 ft3. (10150-10500)

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

From the graph on the next page, determine the hydrogen flow rate using the higher RCS pressure recorded from Step 1:

HYDROGEN FLOW RATE = SCFM

**STEP STANDARD:**

SCFM calculated to be approximately 900 SCFM (based on 320 psig). Based on a tolerance of +/- 1/2 the smallest increment, the tolerance for RCS pressure would be 300-350 psig (unacceptable to read below 300 psig line), which results in a hydrogen flow rate tolerance of 800-1000 SCFM.

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

Calculate maximum allowable head venting period:

MAXIMUM ALLOWABLE HEAD VENTING TIME = (MAX VENTED VOL) ft<sup>3</sup> / (HYDROGEN FLOW RATE) SCFM

MAXIMUM ALLOWABLE HEAD VENTING TIME = Minutes

**STEP STANDARD:**

A calculated Maximum Allowable Head Venting Time of approximately 11.6 minutes. Based on the tolerance of 800-1000 SCFM hydrogen flow rate and max hydrogen to be vented 10150-10500 ft<sup>3</sup>, the maximum allowable venting time should be from 10.1 minutes to 13.13 minutes.

**CUES:**

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-026A

***DESCRIPTION:*** 2013 NRC RO A1-a: EOP-18.2 MAXIMUM ALLOWABLE HEAD VENT CALC

***IC SET:***

### ***INSTRUCTIONS:***

Provide the examinee the following information:

1. RB pressure on PI-950 = 0.9psig
2. RB temperature on TI-9201A = 148 degrees F
3. RB temperature on TI-9203A = 146 degrees F
4. H2 concentration on CI-8257 = 2.1%
5. H2 concentration on CI-8258 = 2.3%
6. RCS pressure on PI-402 = 310psig
7. RCS pressure on PI-403 = 320psig

### ***COMMENTS:***

Examinee must use the highest values provided for the calculation.



## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** A LOCA occurred from 100% power.

The crew transitioned to EOP-18.2, RESPONSE TO VOIDS IN REACTOR VESSEL.

The following conditions exist:

1. RB Pressure is 0.9 psig on PI-950.
2. RB Temperature is 148°F on TI-9201A
3. RB Temperature is 146°F on TI-9203A.
4. Hydrogen Concentration is 2.1% on CI-8257
5. Hydrogen Concentration is 2.3% on CI-8258.
6. RCS Pressure is 310 psig on PI-402
7. RCS Pressure is 320 psig on PI-403.

***INITIATING CUES:*** The CRS has directed you to determine the maximum allowable head venting time using EOP-18.2, Attachment 2, CALCULATION OF MAXIMUM ALLOWABLE HEAD VENTING TIME.

Show all work.

**HAND THIS PAPER BACK TO YOUR  
EVALUATOR WHEN YOU FEEL THAT YOU  
HAVE SATISFACTORILY COMPLETED THE  
ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-035**

2013 NRC RO A1-b: PERFORM A QPTR  
CALCULATION WITH DROPPED ROD

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    6

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

015-004-02-01                      PERFORM A QUADRANT POWER TILT RATIO (QPTR) CALCULATIC

***TASK STANDARD:***

QPTR has been calculated between 1.02 and 1.05 This is due to potential rounding errors.

***TERMINATING CUE:***     STP-108.001 completed.

***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOL***

CLASSROOM

PERFORM

***REFERENCES:***

STP-108.001

QUADRANT POWER TILT RATIO

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
015000A104	A1.04	Quadrant power tilt ratio	3.5	3.7
1940012137	2.1.37	Knowledge of procedures, guidelines, or limitations associated with reactivity management.	4.3	4.6

***TOOLS:***

STP-108.001, QUADRANT POWER TILT RATIO  
CALCULATOR  
FIGURE V-3A FROM CURVE BOOK

***EVALUATION TIME***

20

***TIME CRITICAL***

No

***10CFR55:*** 45.a.13

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

TIME FINISH: \_\_\_\_\_

PERFORMANCE TIME: \_\_\_\_\_

***PERFORMANCE RATING:***

SAT: \_\_\_\_\_

UNSAT: \_\_\_\_\_

***CANDIDATE:***

\_\_\_\_\_

***EXAMINER:***

\_\_\_\_\_

SIGNATURE

DATE

## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

### ***SAFETY CONSIDERATIONS:***

***INITIAL CONDITION:*** The plant was operating at 100% power.  
Control Bank B Rod F4 has dropped.  
Control Bank D position is 230 steps.  
IPCS's Tilting Factors function is not available.  
The following detector currents and indicated power readings exist on the power range NI's with them selected to 4000 micro-A/SLOW:

N-41	Detector A: 255	Detector B: 257
N-42	Detector A: 297	Detector B: 307
N-43	Detector A: 254	Detector B: 264
N-44	Detector A: 341	Detector B: 315

U9005, Rx PWR ROLLING 15 MIN. AVERAGE is 2830 MWt

***INITIATING CUES:*** The Shift Supervisor directs you, as the Reactor Operator, to:

1. Perform a QPTR surveillance test, in accordance with STP-108.001, QUADRANT POWER TILT RATIO step 6.2.
2. Determine if acceptance criteria is met in accordance with STP-108.001, QUADRANT POWER TILT RATIO section 8.0.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***

## STEPS

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 1

Record the expected detector current for 100% power for each excore detector using VCS Curve Book Figure V-3A.

### **STEP STANDARD:**

Locates Figure V-3A in the VCS Curve Book. Records the detector current values for 100% power from the Figure V-3A that is provided by the examiner. (Detector A is the upper detector, Detector B is the lower detector.)

N41	Detector A: 264.52	Detector B: 275.75
N42	Detector A: 302.78	Detector B: 322.71
N43	Detector A: 288.02	Detector B: 307.82
N44	Detector A: 346.28	Detector B: 330.10

### **CUES:**

Evaluator Note: FIGURE V-3A should be part of the JPM package for classroom performance.

### **COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Ensure that all detector range selector switches are selected to 4000 microA/SLOW.

### **STEP STANDARD:**

Determines that data given in the initial conditions was taken at the right settings.

### **CUES:**

Evaluator Note: The initial conditions of the JPM provide this information.

### **COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Record the actual excore detector readings from the digital meters on Attachment II.

**STEP STANDARD:**

Records on Attachment II of STP-108.001.

N41 Detector A: 255 Detector B: 257

N42 Detector A: 297 Detector B: 307

N43 Detector A: 254 Detector B: 264

N44 Detector A: 341 Detector B: 315

**CUES:**

Evaluator Note: The initial conditions of the JPM provide this information.

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

Record Reactor Power on Attachment II.

**STEP STANDARD:**

Records reactor power on Attachment II.

**CUES:**

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

Record Control Bank D rod position on Attachment II.

**STEP STANDARD:**

Records "230" on Attachment II.

**CUES:**

Evaluator Note: Control Bank D position is given as part of initial conditions

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 6

Divide actual readings by expected currents to get normalized readings.

**STEP STANDARD:**

Divides actual Detector A current by the Expected Upper Current at 100% for N41, N42, N43 and N44 and records on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 7

Divide the sum of the normalized readings by the number of detectors to obtain average normalized reading.

**STEP STANDARD:**

Adds normalized readings for N41, N42, N43, and N44 (Detector "A"s) and records on Attachment II. Divides that value by 4 to obtain the average normalized reading and records that value on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 8

Divide the highest normalized reading by the average normalized reading to obtain quadrant power til ratio.

**STEP STANDARD:**

Divides the maximum normalized reading by the average normalized reading and records on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**



**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 9

Record the larger of the upper and lower quadrant power tilt ratio.

**STEP STANDARD:**

Record the larger of the upper and lower quadrant power tilt ratio on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 10

Determine if acceptance criteria is met. Complete Attachment I and attach Attachments I and II to the STTS sheet.

**STEP STANDARD:**

Signs and dates Attachment II. Does not sign for acceptance criteria being met on Attachment I.

**CUES:**

Examiner Cue: Cue applicant that another operator will perform the independent verification.

Evaluator Note: It is critical that "Acceptance Criteria met" is not signed on Attachment I since it is not met.

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-035

***DESCRIPTION:*** 2013 NRC RO A1-b: PERFORM A QPTR CALCULATION WITH DROPPED  
ROD

***IC SET:***

***INSTRUCTIONS:***

The values in this JPM will need to be verified for the NI detectors to be from the Curve book Fig. V-3A Revision dated 4/25/2013. If the Curve book contains a later revision, these values will need to be changed.

***COMMENTS:***

The "actual" values will need to be recalculated if the data sheet for expected value from the curve sheet get revised.

## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

**INITIAL CONDITION:** The plant was operating at 100% power.  
Control Bank B Rod F4 has dropped.  
Control Bank D position is 230 steps.  
IPCS's Tilting Factors function is not available.  
The following detector currents and indicated power readings exist on the power range NI's with them selected to 4000 micro-A/SLOW:

N-41	Detector A: 255	Detector B: 257
N-42	Detector A: 297	Detector B: 307
N-43	Detector A: 254	Detector B: 264
N-44	Detector A: 341	Detector B: 315

U9005, Rx PWR ROLLING 15 MIN. AVERAGE is 2830 MWt

**INITIATING CUES:** The Shift Supervisor directs you, as the Reactor Operator, to:

1. Perform a QPTR surveillance test, in accordance with STP-108.001, QUADRANT POWER TILT RATIO step 6.2.
2. Determine if acceptance criteria is met in accordance with STP-108.001, QUADRANT POWER TILT RATIO section 8.0.

**HAND THIS PAPER BACK TO YOUR  
EVALUATOR WHEN YOU FEEL THAT YOU  
HAVE SATISFACTORILY COMPLETED THE  
ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-210**

2013 NRC RO A2: PERFORM BORATION SYSTEM  
VALVE LINEUP VERIFICATION.

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    2

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

004-002-02-04      PERFORM BORATED WATER SOURCE OPERABILITY VERIFICATION

***TASK STANDARD:***

Determines that flowpaths on Attachments IIB and IIC are UNSAT, but that flowpaths on Attachments IIA and IID are SAT. Determines that for current plant conditions that this makes the required flow paths operable.

***TERMINATING CUE:***      Attachment I is complete.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

***REFERENCES:***      STP-104.003      BORATION SYSTEM VALVE LINEUP VERIFICATION

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
1940012212	2.2.12	Knowledge of surveillance procedures.	3.7	4.1

***TOOLS:***      STP-104.003, BORATION SYSTEM VALVE LINEUP VERIFICATION***EVALUATION TIME***      10      ***TIME CRITICAL***      NO      ***10CFR55:***      45.a.13

TIME START: \_\_\_\_\_ TIME FINISH: \_\_\_\_\_ PERFORMANCE TIME: \_\_\_\_\_

**PERFORMANCE RATING:**      SAT: \_\_\_\_\_      UNSAT: \_\_\_\_\_**CANDIDATE:** \_\_\_\_\_**EXAMINER:** \_\_\_\_\_  
SIGNATURE      DATE

## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

***SAFETY CONSIDERATIONS:***       None.

***INITIAL CONDITION:*** Operators are performing a plant startup in GOP-2, PLANT STARTUP AND HEATUP (MODE 5 TO MODE 3) after a refueling outage. Current Tavg is 250°F. "A" boric acid tank is in service with a concentration of 7300 ppm. "B" boric acid tank is at a concentration of 6800 ppm and is currently out of service. Auxiliary Operators are gathering the paperwork to batch to the "B" boric acid tank.

STP-104.003, BORATION SYSTEM VALVE LINEUP VERIFICATION is due.

Operators have performed valve lineups per Attachements IIA, IIB, IIC, and IID. Operators have also verified Gravity Drain Flowpath piping is full of water by venting and returned the vent path to the required operable position.

***INITIATING CUES:*** The CRS directs you to determine boration flowpath operability by performing the remaining steps of STP-104.003 and to record results by filling out Attachment I, TEST DATA SHEET.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***

## STEPS

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 1

Determine flowpath operability as follows:

- a. Evaluate the position and power availability, as appropriate, of components listed on Attachments IIA through IID.
- d. Describe the following in the comments section of the appropriate Attachment:
  - 1) Any valve lineup discrepancies.
  - 2) Description of effect on flowpath operability.

**STEP STANDARD:**

IIA: Determines that the lineup for Attachment IIA is SAT.

**CUES:**

Evaluator Note: Applicant may comment on the fact that PVT-8146, NORM CHG TO RCS LP B is CLOSED with a Test Position of \*\*OPEN and that PVT-8147, ALT CHG TO RCS LP A is OPEN with a Test Position of \*\*CLOSED. The \*\* indicates a note that says, "that one valve, open, the other valve closed", and so the valve lineup is satisfactory.

Evaluator Note: This step is not marked as critical because it may not be observed. The critical step is to properly record if the attachment is SAT or UNSAT on Attachment I. This is step 5 of this JPM.

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Determine flowpath operability as follows:

a. Evaluate the position and power availability, as appropriate, of components listed on Attachments IIA through IID.

D. Describe the following in the comments section of the appropriate Attachment:

- 1) Any valve lineup discrepancies.
- 2) Description of effect on flowpath operability.

**STEP STANDARD:**

IIB: Determines that the lineup for Attachment IIB is UNSAT.

**CUES:**

Evaluator Note: XVD08323B-CS, BORIC ACID TANK B OUTLET ISOL VALVE and XVD08320B-CS, BORIC ACID XFER PP B RECIRC ISOL VLV should be CLOSED since B tank is OOS with a low boron concentration.

Evaluator Note: This step is not marked as critical because it may not be observed. The critical step is to properly record if the attachment is SAT or UNSAT on Attachment I. This is step 5 of this JPM.

**COMMENTS:**



**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Determine flowpath operability as follows:

a. Evaluate the position and power availability, as appropriate, of components listed on Attachments IIA through IID.

D. Describe the following in the comments section of the appropriate Attachment:

- 1) Any valve lineup discrepancies.
- 2) Description of effect on flowpath operability.

**STEP STANDARD:**

IIC: Determines that the lineup for Attachment IIC is UNSAT.

**CUES:**

Evaluator Note: XVD08323B-CS, BORIC ACID TANK B OUTLET ISOL VALVE should be CLOSED since B tank is OOS with a low boron concentration.

Evaluator Note: This step is not marked as critical because it may not be observed. The critical step is to properly record if the attachment is SAT or UNSAT on Attachment I. This is step 5 of this JPM.

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

Determine flowpath operability as follows:

a. Evaluate the position and power availability, as appropriate, of components listed on Attachments IIA through IID.

D. Describe the following in the comments section of the appropriate Attachment:

- 1) Any valve lineup discrepancies.
- 2) Description of effect on flowpath operability.

**STEP STANDARD:**

IID: Determines that the lineup for Attachment IID is SAT.

**CUES:**

Evaluator Note: This step is not marked as critical because it may not be observed. The critical step is to properly record if the attachment is SAT or UNSAT on Attachment I. This is step 5 of this JPM.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

6.5 Record results on Attachment I.

**STEP STANDARD:**

Records the following on Attachment I step 6.5.

Attachement IIA: SAT

Attachement IIB: UNSAT

Attachement IIC: UNSAT

Attachement IID: SAT

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 6

6.6 Record the present Plant Mode on Attachment I.

**STEP STANDARD:**

Records present plant mode as FOUR (4).

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 7

6.7 Compare the operable flowpaths to the required operable flowpaths for the present Plant Mode.

**STEP STANDARD:**

Compares the operable flowpaths to the required operable flowpaths for the present conditions.

**CUES:**

Evaluator Note: Because the plant is in MODE 4 the \* and \*\* apply which differentiates if all RSC Cold Legs are greater >300°F or if any Cold Leg is <300°F. Since Tave is 250°F the requirement is in line with what is required for Modes 5 and 6.

Evaluator Note: If the applicant does not indicate which attachments are used to determine that the lineup is overall sat, ask a followup question as to how it was determined that the lineup verification was overall sat. The answer is that both Attachment IIA and IID are sat which is all that is required for the current conditions.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 8

6.8 Record results on Attachment I.

**STEP STANDARD:**

Indicates SAT on Attachment I on step 6.8.

**CUES:**

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-210

***DESCRIPTION:*** 2013 NRC RO A2: PERFORM BORATION SYSTEM VALVE LINEUP  
VERIFICATION.

***IC SET:***

***INSTRUCTIONS:***

***COMMENTS:***

## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** Operators are performing a plant startup in GOP-2, PLANT STARTUP AND HEATUP (MODE 5 TO MODE 3) after a refueling outage. Current Tavg is 250°F. "A" boric acid tank is in service with a concentration of 7300 ppm. "B" boric acid tank is at a concentration of 6800 ppm and is currently out of service. Auxiliary Operators are gathering the paperwork to batch to the "B" boric acid tank.

STP-104.003, BORATION SYSTEM VALVE LINEUP VERIFICATION is due.

Operators have performed valve lineups per Attachments IIA, IIB, IIC, and IID. Operators have also verified Gravity Drain Flowpath piping is full of water by venting and returned the vent path to the required operable position.

***INITIATING CUES:*** The CRS directs you to determine boration flowpath operability by performing the remaining steps of STP-104.003 and to record results by filling out Attachment I, TEST DATA SHEET.

**HAND THIS PAPER BACK TO YOUR  
EVALUATOR WHEN YOU FEEL THAT YOU  
HAVE SATISFACTORILY COMPLETED THE  
ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-042B**

2013 NRC RO/SRO Common A3: CALCULATE  
EXPOSURE STAY TIMES

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    5

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

343-029-03-02

ASSESS EXPOSURE LIMITS OF PERSONNEL FOR ASSIGNED DUTIES

***TASK STANDARD:***

Determines stay time as follows:

Operator 1: 10.2 hours (10-10.2)

Operator 2: 3.7 hours (3-3.72)

***TERMINATING CUE:*** Applicant has determined stay time for the two workers or has handed in JPM.***PREFERRED EVALUATION LOCATION***

CLASSROOM

***PREFERRED EVALUATION METHOD***

PERFORM

***REFERENCES:***

HPP-153

ADMINISTRATIVE EXPOSURE LIMITS

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
1940012304	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions.	3.2	3.7

***TOOLS:***

Survey map of area.

CALCULATOR

HPP-0153 ADMINISTRATIVE EXPOSURE LIMITS (electronic access only).

***EVALUATION TIME***

10

***TIME CRITICAL***

NO

***10CFR55:*** 45.a.10

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

TIME FINISH: \_\_\_\_\_

PERFORMANCE TIME: \_\_\_\_\_

***PERFORMANCE RATING:***

SAT: \_\_\_\_\_

UNSAT: \_\_\_\_\_

***CANDIDATE:*** \_\_\_\_\_***EXAMINER:*** \_\_\_\_\_

SIGNATURE

DATE



## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

***SAFETY CONSIDERATIONS:***       None.

***INITIAL CONDITION:*** Work is to be done in the IB-412 East Penetration. The location of the work has been indicated on the survey map. Two operators are available to perform the work.  
The work requires 4 hours.  
The following are the doses for the two operators:  
Operator 1 has only worked at VC Summer and has received 510 mr at VC Summer this year.  
And  
Operator 2 worked at another site this year but the exposure records have not been documented yet. Operator 2 has received 395 mr at VC Summer this year.

It is not desired to approve an increase in access exposure limits.

***INITIATING CUES:*** Calculate and report which of the operators can complete the work (if either operator can complete the work at all) without approving an increase in access exposure limits. Assume that all work will be done at 1 foot from the indicated position on the survey map. Assume dose received in transit is negligible. Show all work.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***

## STEPS

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 1

Determines current exposure at VCS of each operator. (Given in initial conditions.)

**STEP STANDARD:**

Operator 1: 510 mr

Operator 2: 395 mr

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Determines initial administrative exposure limits for each operator.

**STEP STANDARD:**

Operator 1: 1000 mr

Operator 2: 500 mr

**CUES:**

Evaluator Note: Limit is 500 mr for Operator 2 because the operator worked at another plant and had not documented exposure yet.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Subtracts current exposure from administrative limit to determine available dose remaining for each operator.

**STEP STANDARD:**

Operator 1: 1000-510 mr = 490 mr  
Operator 2: 500-395 mr = 105 mr

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

Determines exposure rate at work site from survey map.

**STEP STANDARD:**

Determines exposure rate is 35 mr/hr.

**CUES:**

Evaluator Note: The applicant may incorrectly use 110 mr/hr. This is the on contact exposure rate. The initial cue directs that the applicant assume that the exposure rate at 1 foot from the valve be used.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

Determines stay time by dividing exposure left by exposure rate.

**STEP STANDARD:**

Operator 1:  $490 \text{ mr}/35 \text{ mr/hr} = 14 \text{ hours}$ .

Operator 2:  $105 \text{ mr}/35 \text{ mr/hr} = 3 \text{ hours}$ .

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 6

Determines which workers have a stay time that exceeds the estimated time for the work.

**STEP STANDARD:**

Determines that only Operator 1 can complete the work.

**CUES:**

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-042B

***DESCRIPTION:*** 2013 NRC RO/SRO Common A3: CALCULATE EXPOSURE STAY TIMES

***IC SET:***

***INSTRUCTIONS:***

***COMMENTS:***

## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** Work is to be done in the IB-412 East Penetration. The location of the work has been indicated on the survey map. Two operators are available to perform the work.  
The work requires 4 hours.  
The following are the doses for the two operators:  
Operator 1 has only worked at VC Summer and has received 510 mr at VC Summer this year.  
And  
Operator 2 worked at another site this year but the exposure records have not been documented yet. Operator 2 has received 395 mr at VC Summer this year.

It is not desired to approve an increase in access exposure limits.

***INITIATING CUES:*** Calculate and report which of the operators can complete the work (if either operator can complete the work at all) without approving an increase in access exposure limits. Assume that all work will be done at 1 foot from the indicated position on the survey map. Assume dose received in transit is negligible. Show all work.

**HAND THIS PAPER BACK TO YOUR  
EVALUATOR WHEN YOU FEEL THAT YOU  
HAVE SATISFACTORILY COMPLETED THE  
ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-066C**

2013 NRC SRO A1-a: PERFORM NIS POWER  
RANGE HEAT BALANCE

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    5

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

015-007-02-01          PERFORM CALORIMETRIC AND HEAT BALANCE CALCULATION

***TASK STANDARD:***

The applicant determines that reactor power is between 26.3% and 26.5%.

***TERMINATING CUE:***      Reactor Power is calculated or the JPM is returned to the examiner.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

***REFERENCES:***

STP-102.002

NIS POWER RANGE HEAT BALANCE

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
015000A101	A1.01	NIS calibration by heat balance	3.5	3.8
1940012145	2.1.45	Ability to identify and interpret diverse indications to validate the response of another indicator.	4.3	4.3

***TOOLS:***STP-102.002, NIS POWER RANGE HEAT BALANCE  
Steam Tables  
Station Curve Book Figure V-16 (electronically)***EVALUATION TIME***

45

***TIME CRITICAL***

No

***10CFR55:*** 45.a.4

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

TIME FINISH: \_\_\_\_\_

PERFORMANCE TIME: \_\_\_\_\_

***PERFORMANCE RATING:***

SAT: \_\_\_\_\_

UNSAT: \_\_\_\_\_

***CANDIDATE:*** \_\_\_\_\_***EXAMINER:*** \_\_\_\_\_

SIGNATURE

DATE



## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

***SAFETY CONSIDERATIONS:*** NONE.

***INITIAL CONDITION:*** The plant is being started up after an outage. GOP-4A, POWER OPERATION (MODE 1 - ASCENDING), requires that STP-102.002, NIS POWER RANGE HEAT BALANCE be completed. The CALM function on IPCS is not available. An RO has completed STP-102.002, Attachment III to determine Reactor Power in percent.

***INITIATING CUES:*** Review the work of the RO to calculate Reactor Power using STP-102.002, Attachment III, REACTOR POWER CALCULATION and correct any deficiencies in the calculation.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***

## STEPS

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 1

Calculates Feedwater flow rates.

### **STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 9.97E5 - 9.98E5

B Loop: 9.77E5 - 9.78E5

C Loop: 9.87E5 - 9.88E5

### **CUES:**

Evaluator Note: K2002 is found on Figure V-16 of the station curve book to be 987.497.

### **COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Calculates Blowdown Flow Rates.

### **STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 9200 - 9300

B Loop: 8100 - 8200

C Loop: 10000 - 10100

### **CUES:**

Evaluator Note: K2001 is found on Figure V-16 of the station curve book to be 370.680.

### **COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Calculate Main Steam Flow Rates.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 9.87E5 - 9.89E5

B Loop: 9.68E5 - 9.70E5

C Loop: 9.76E5 - 9.78E5

**CUES:**

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

Calculate Average Steam Pressures.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 1058 - 1059

B Loop: 1057 - 1058

C Loop: 1055 - 1056

**CUES:**

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

Convert Steam Pressures to PSIA.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 1075 - 1077

B Loop: 1074 - 1076

C Loop: 1072 - 1074

**CUES:**

Evaluator Note: K2040 is found on Figure V-16 of the station curve book to be 2.470.

Evaluator Note: K2057 is found on Figure V-16 of the station curve book to be 2.700.

Evaluator Note: K2000 is found on Figure V-16 of the station curve book to be 2.270.

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 6

Determine Enthalpies of Saturated Steam.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 1189 - 1191

B Loop: 1189 - 1191

C Loop: 1189 - 1191

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 7

Determines enthalpies of Feedwater.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 290 - 295

B Loop: 290 - 295

C Loop: 290 - 295

**CUES:**

Evaluator Note: This is the first error on the part of the RO. It is expected that the applicant fix this error and carry it forward to the rest of the Attachment.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 8

Determines Steam Generators Enthalpy Rise.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 899 - 901

B Loop: 899 - 901

C Loop: 899 - 901

**CUES:**

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 9

Determine Blowdown Heat Loss

**STEP STANDARD:**

Calculates the following items:

Total Blowdown Flow Rate: 74

Average Feedwater Enthalpy: 290 - 295

Blowdown Heat Loss:  $5.4E-3$  -  $5.6E-3$

**CUES:**

Evaluator Note: The blowdown heat loss is so small that it is not critical to it.

Evaluator Note: K2025 is found on Figure V-16 of the station curve book to be 544.670.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 10

Calculates Steam Generator Powers.

**STEP STANDARD:**

Calculates the following ranges for the various loops:

A Loop: 260 - 261.2

B Loop: 255 - 256.2

C Loop: 257 - 258.3

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 11

Calculate Reactor Power.

**STEP STANDARD:**

Reactor power is calculated to be: 26.3 - 26.5%

**CUES:**

Evaluator Note: K2010 is found on Figure V-16 of the station curve book to be 3.189.

Evaluator Note: K2011 is found on Figure V-16 of the station curve book to be 0.027.

Evaluator Note: K2008 is found on Figure V-16 of the station curve book to be 14.757.

Evaluator Note: K2009 is found on Figure V-16 of the station curve book to be 0.477.

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-066C

***DESCRIPTION:*** 2013 NRC SRO A1-a: PERFORM NIS POWER RANGE HEAT BALANCE

***IC SET:***

***INSTRUCTIONS:***

***COMMENTS:***



## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** The plant is being started up after an outage. GOP-4A, POWER OPERATION (MODE 1 - ASCENDING), requires that STP-102.002, NIS POWER RANGE HEAT BALANCE be completed. The CALM function on IPCS is not available. An RO has completed STP-102.002, Attachment III to determine Reactor Power in percent.

***INITIATING CUES:*** Review the work of the RO to calculate Reactor Power using STP-102.002, Attachment III, REACTOR POWER CALCULATION and correct any deficiencies in the calculation.

**HAND THIS PAPER BACK TO YOUR  
EVALUATOR WHEN YOU FEEL THAT YOU  
HAVE SATISFACTORILY COMPLETED THE  
ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-035A**

2013 NRC SRO A1-b: PERFORM A QPTR  
CALCULATION WITH DROPPED ROD

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    7

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

015-004-02-01          PERFORM A QUADRANT POWER TILT RATIO (QPTR) CALCULATIO

***TASK STANDARD:***

QPTR has been calculated between 1.02 and 1.05 This is due to potential rounding errors.  
Determines TS action required.

***TERMINATING CUE:***    STP-108.001 completed and TS action investigated.***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOL***

CLASSROOM

PERFORM

***REFERENCES:***

STP-108.001

QUADRANT POWER TILT RATIO

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
015000A104	A1.04	Quadrant power tilt ratio	3.5	3.7
1940012137	2.1.37	Knowledge of procedures, guidelines, or limitations associated with reactivity management.	4.3	4.6

***TOOLS:***

STP-108.001, QUADRANT POWER TILT RATIO  
CALCULATOR  
FIGURE V-3A FROM CURVE BOOK  
Technical Specifications

***EVALUATION TIME***

20

***TIME CRITICAL***

No

***10CFR55:*** 45.a.13

TIME START:                      TIME FINISH:                      PERFORMANCE TIME:

***PERFORMANCE RATING:***

SAT:                      UNSAT:

***CANDIDATE:***

\_\_\_\_\_

***EXAMINER:***

\_\_\_\_\_

SIGNATURE

DATE

## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

***SAFETY CONSIDERATIONS:***       None.

***INITIAL CONDITION:***   The plant was operating at 100% power.  
Control Bank B Rod F4 has dropped.  
Control Bank D position is 230 steps.  
IPCS's Tilting Factors function is not available.  
The following detector currents and indicated power readings exist on the power range NI's with them selected to 4000 micro-A/SLOW:

N-41	Detector A: 255	Detector B: 257
N-42	Detector A: 297	Detector B: 307
N-43	Detector A: 254	Detector B: 264
N-44	Detector A: 341	Detector B: 315

***INITIATING CUES:***

1. Perform a QPTR surveillance test, in accordance with STP-108.001, QUADRANT POWER TILT RATIO step 6.2.
2. Determine if acceptance criteria is met in accordance with STP-108.001, QUADRANT POWER TILT RATIO section 8.0.
3. Determine the action(s) required, if any.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***

## STEPS

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 1

Record the expected detector current for 100% power for each excore detector using VCS Curve Book Figure V-3A.

### **STEP STANDARD:**

Locates Figure V-3A in the VCS Curve Book. Records the detector current values for 100% power from the Figure V-3A that is provided by the examiner. (Detector A is the upper detector, Detector B is the lower detector.)

N41	Detector A: 264.52	Detector B: 275.75
N42	Detector A: 302.78	Detector B: 322.71
N43	Detector A: 288.02	Detector B: 307.82
N44	Detector A: 346.28	Detector B: 330.10

### **CUES:**

Evaluator Note: FIGURE V-3A should be part of the JPM package for classroom performance.

### **COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Ensure that all detector range selector switches are selected to 4000 microA/SLOW.

### **STEP STANDARD:**

Determines that data given in the initial conditions was taken at the right settings.

### **CUES:**

Evaluator Note: The initial conditions of the JPM provide this information.

### **COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Record the actual excore detector readings from the digital meters on Attachment II.

**STEP STANDARD:**

Records on Attachment II of STP-108.001.

N41 Detector A: 255 Detector B: 257

N42 Detector A: 297 Detector B: 307

N43 Detector A: 254 Detector B: 264

N44 Detector A: 341 Detector B: 315

**CUES:**

Evaluator Note: The initial conditions of the JPM provide this information.

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

Record Reactor Power on Attachment II.

**STEP STANDARD:**

Records reactor power on Attachment II.

**CUES:**

Evaluator Note: The initial conditions of the JPM provide this information.

**COMMENTS:**

**CRITICAL:** No

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

Record Control Bank D rod position on Attachment II.

**STEP STANDARD:**

Records "230" on Attachment II.

**CUES:**

Evaluator Note: Control Bank D position is given as part of initial conditions

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 6

Divide actual readings by expected currents to get normalized readings.

**STEP STANDARD:**

Divides actual Detector A current by the Expected Upper Current at 100% for N41, N42, N43 and N44 and records on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 7

Divide the sum of the normalized readings by the number of detectors to obtain average normalized reading.

**STEP STANDARD:**

Adds normalized readings for N41, N42, N43, and N44 (Detector "A"s) and records on Attachment II. Divides that value by 4 to obtain the average normalized reading and records that value on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 8

Divide the highest normalized reading by the average normalized reading to obtain quadrant power til ratio.

**STEP STANDARD:**

Divides the maximum normalized reading by the average normalized reading and records on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**



**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 9

Record the larger of the upper and lower quadrant power tilt ratio.

**STEP STANDARD:**

Record the larger of the upper and lower quadrant power tilt ratio on Attachment II.

**CUES:**

Examiner Note: See key for expected numbers.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 10

Determine if acceptance criteria is met. Complete Attachment I and attach Attachments I and II to the STTS sheet.

**STEP STANDARD:**

Signs and dates Attachment II. Does not sign for acceptance criteria being met on Attachment I.

**CUES:**

Examiner Cue: Cue applicant that another operator will perform the independent verification.

Evaluator Note: It is critical that "Acceptance Criteria met" is not signed on Attachment I since it is not met.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 11

Determines action(s) required.

**STEP STANDARD:**

Determines that action a of TS 3.2.4 applies.

A. With the QUADRANT POWER TILT RATIO determined to exceed 1.02 but less than or equal to 1.09:

1. Calculate the QUADRANT POWER TILT RATIO at least once per hour until either:

- a) The QUADRANT POWER TILT RATIO is reduced to within its limit, or
- b) THERMAL POWER Is reduced to less than 50% of RATED THERMAL POWER.

2. Within 2 hours either:

- a) Reduce the QUADRANT POWER TILT RATIO to within its limit, or
- b) Reduce THERMAL POWER at least 3% from RATED THERMAL POWER for each 1% of Indicated QUADRANT POWER TILT RATIO in excess of 1.0 and similarly reduce the Power Range Neutron Flux-High Trip Setpoints within the next 4 hours.

3. Verify that the QUADRANT POWER TILT RATIO is within its limit within 24 hours after exceeding the limit or reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within the next 2 hours and reduce the Power Range Neutron Flux-High Trip setpoints to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.

4. Identify and correct the cause of the out of limit condition prior to increasing THERMAL POWER; subsequent POWER OPERATION above 50% of RATED THERMAL power may proceed provided that the QUADRANT POWER TILT RATIO is verified within its limit at least once per hour for 12 hours or until verified acceptable at 95% or greater RATED THERMAL POWER.

**CUES:**

Evaluator Note: The applicant may call up the GTP-702, SURVEILLANCE ACTIVITY TRACKING AND TRIGGERING, Attachments required to track compliance with TS. The applicable attachments are VI.E, VI.F.

Evaluator Question: To determine if candidate understands application of action a.2, ask the candidate what the maximum power allowed is at 3 hours after the dropped rod if QPTR remains as calculated.

The correct answer should be  $100 - ((\text{Max QPTR} - 1) * 300)$

Thus if their maximum QPTR is 1.03 then it should be 91%, but if their maximum QPTR is 1.04 then it should be 88%.

**COMMENTS:**

--

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-035A

***DESCRIPTION:*** 2013 NRC SRO A1-b: PERFORM A QPTR CALCULATION WITH DROPPED  
ROD

***IC SET:***

***INSTRUCTIONS:***

The values in this JPM will need to be verified for the NI detectors to be from the Curve book Fig. V-3A Revision dated 4/25/2013. If the Curve book contains a later revision, these values will need to be changed.

***COMMENTS:***

The "actual" values will need to be recalculated if the data sheet for expected value from the curve sheet get revised.

## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** The plant was operating at 100% power.  
Control Bank B Rod F4 has dropped.  
Control Bank D position is 230 steps.  
IPCS's Tilting Factors function is not available.  
The following detector currents and indicated power readings exist on the power range NI's with them selected to 4000 micro-A/SLOW:

N-41	Detector A: 255	Detector B: 257
N-42	Detector A: 297	Detector B: 307
N-43	Detector A: 254	Detector B: 264
N-44	Detector A: 341	Detector B: 315

***INITIATING CUES:***

1. Perform a QPTR surveillance test, in accordance with STP-108.001, QUADRANT POWER TILT RATIO step 6.2.
2. Determine if acceptance criteria is met in accordance with STP-108.001, QUADRANT POWER TILT RATIO section 8.0.
3. Determine the action(s) required, if any.

**HAND THIS PAPER BACK TO YOUR  
EVALUATOR WHEN YOU FEEL THAT YOU  
HAVE SATISFACTORILY COMPLETED THE  
ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-209A**

2013 NRC SRO A2: REVIEW "A" TRAIN CONTROL  
ROOM EMERGENCY AIR CLEANUP SYSTEM  
OPERABILITY TEST.

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    3

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

***TASK:***

088-003-02-01

PERFORM CONTROL ROOM EMERGENCY VENT TEST

***TASK STANDARD:***

Determines the following errors/inoperabilities:

- 1) XFN-30 was not run for 15 min.
- 2) XDP-23A-AH did not reposition to CLOSED as desired at the end of the test.
- 3) TRAIN A BYP annunciator status was not clear at the end of the test.
- 4) XVB00003A-AH took too long to close and thus is inoperable.

***TERMINATING CUE:*** Errors/inoperabilities are discovered or the applicant turns in the JPM.***PREFERRED EVALUATION LOCATION***

CLASSROOM

***PREFERRED EVALUATION METHOD***

PERFORM

***REFERENCES:***

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
1940012212	2.2.12	Knowledge of surveillance procedures.	3.7	4.1

***TOOLS:***STP-124.001, CONTROL ROOM EMERGENCY AIR CLEANUP  
SYSTEM OPERABILITY TEST  
GTP-302, INSERVICE TESTING OF VALVES THIRD TEN YEAR  
INTERVAL***EVALUATION TIME*** 15 ***TIME CRITICAL*** NO ***10CFR55:*** 45.a.13

TIME START: \_\_\_\_\_ TIME FINISH: \_\_\_\_\_ PERFORMANCE TIME: \_\_\_\_\_

***PERFORMANCE RATING:***

SAT: \_\_\_\_\_ UNSAT: \_\_\_\_\_

***CANDIDATE:*** \_\_\_\_\_***EXAMINER:*** \_\_\_\_\_

SIGNATURE

DATE

## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

***SAFETY CONSIDERATIONS:***       None.

***INITIAL CONDITION:***   100% power MOL. Monthly testing of the "A" train of control room emergency filtration system was required. RM-A1 remained operable and was not tested in parallel. The crew performed STP-124.001, CONTROL ROOM EMERGENCY AIR CLEANUP SYSTEM OPERABILITY TEST, Section 6.1 and restored the "A" train to operation after the test.

***INITIATING CUES:***   The SS directs you to review the STP-124.001, CONTROL ROOM EMERGENCY AIR CLEANUP SYSTEM OPERABILITY TEST, and to determine if the acceptance criteria have been met. Find all acceptance criteria that were not met, if any, and determine the action(s) required.

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***



## STEPS

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT**

☐

**UNSAT**

☐

**STEP:** 1

Determines that XFN-30 was not run for 15 min.

**STEP STANDARD:**

Determines that XFN-30 was not run for 15 min.

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT**

☐

**UNSAT**

☐

**STEP:** 2

Determines that XDP-23A-AH did not reposition to CLOSED as desired at the end of the test.

**STEP STANDARD:**

Determines that XDP-23A-AH did not reposition to CLOSED as desired at the end of the test.

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 3

Determines that TRAIN A BYP annunciator status was not clear at the end of the test.

**STEP STANDARD:**

Determines that TRAIN A BYP annunciator status was not clear at the end of the test.

**CUES:**

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 4

Determines that XVB00003A-AH took too long to close and to open.

**STEP STANDARD:**

Determines that XVB00003A-AH took too long to close and to open.

**CUES:**

Evaluator Cue: If applicant asks for a retest in the open direction, cue the applicant that the retest will be handled by another operator and to continue to investigate the current test.

**COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 5

Determines action(s) required.

**STEP STANDARD:**

Determines that Technical Specification 3.7.6, Two CREFS trains shall be OPERABLE, is not met. Action required is 3.7.6.a. MODES 1, 2, 3 and 4: 1. With one CREFS train inoperable for reasons other than ACTION 3.7.6.a.2, restore the inoperable train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

**CUES:**

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-209A

***DESCRIPTION:*** 2013 NRC SRO A2: REVIEW "A" TRAIN CONTROL ROOM EMERGENCY AIR  
CLEANUP SYSTEM OPERABILITY TEST.

***IC SET:***

***INSTRUCTIONS:***

***COMMENTS:***

## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** 100% power MOL. Monthly testing of the "A" train of control room emergency filtration system was required. RM-A1 remained operable and was not tested in parallel. The crew performed STP-124.001, CONTROL ROOM EMERGENCY AIR CLEANUP SYSTEM OPERABILITY TEST, Section 6.1 and restored the "A" train to operation after the test.

***INITIATING CUES:*** The SS directs you to review the STP-124.001, CONTROL ROOM EMERGENCY AIR CLEANUP SYSTEM OPERABILITY TEST, and to determine if the acceptance criteria have been met. Find all acceptance criteria that were not met, if any, and determine the action(s) required.

**HAND THIS PAPER BACK TO YOUR  
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ASSIGNED TASK.**

# ***V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE***

***JPM NO:***      **NJPA-805**

2013 NRC SRO A4: CLASSIFY EMERGENCY  
(CLASSROOM - ALERT - LOSS OF AC) (ENF)

***APPROVAL:***

***APPROVAL DATE:***

***REV NO:***    6

CANDIDATE: \_\_\_\_\_

EXAMINER: \_\_\_\_\_

**TIME CRITICAL JPM**

***TASK:***

344-019-03-02

CLASSIFY EMERGENCY EVENTS REQUIRING EMERGENCY PLAN  
IMPLEMENTATION***TASK STANDARD:***

Emergency classification evaluated as an ALERT based on AC power capability to 7.2 KV ESF buses 1DA and 1 DB reduced to a single power source for more than 15 minutes. This is a time critical JPM and the declaration must be made within 15 minutes, and successful completion of EPP-002, Communication and Notification, Attachment I, Nuclear Power Plant Notification Form, must be made within 15 minutes after the emergency declaration.

***TERMINATING CUE:*** Successful completion of the EPP-002, Communication and Notification, Attachment I, Nuclear Power Plant Notification Form.

***PREFERRED EVALUATION LOCATION******PREFERRED EVALUATION METHOD***

CLASSROOM

PERFORM

***REFERENCES:***

EPP-002

COMMUNICATION AND NOTIFICATION

EPP-001

ACTIVATION AND IMPLEMENTATION OF THE  
EMERGENCY PLAN

<b><i>INDEX NO.</i></b>	<b><i>K/A NO.</i></b>		<b><i>RO</i></b>	<b><i>SRO</i></b>
0000562429	2.4.29	Knowledge of the emergency plan.	3.1	4.4
0000562441	2.4.41	Knowledge of the emergency action level thresholds and classifications.	2.9	4.6

***TOOLS:***EPP-002, Communication and Notification, Attachment I, Nuclear  
Power Plant Notification Form.***EVALUATION TIME***

30

***TIME CRITICAL***

YES

***10CFR55:***

45.a.11

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

TIME FINISH: \_\_\_\_\_

PERFORMANCE TIME: \_\_\_\_\_

***PERFORMANCE RATING:***

SAT: \_\_\_\_\_

UNSAT: \_\_\_\_\_

***CANDIDATE:*** \_\_\_\_\_***EXAMINER:*** \_\_\_\_\_

SIGNATURE

DATE

## ***INSTRUCTIONS TO OPERATOR***

### **READ TO OPERATOR:**

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

### ***SAFETY CONSIDERATIONS:***

***INITIAL CONDITION:*** THIS IS A DRILL.

0600:  
The plant was operating at 100%.  
DG "A" is tagged out for bearing repair (Day 1 of 2 Day repair).  
Parr Hydro Plant 13.8 KV power is temporarily supplying ESF Bus 1DA.

0605:  
Electrical Grid problems resulted in a 100% loss of load.  
115 KV power to XTF-4 and XTF-5 is lost.  
230 KV power to XTF-31 is lost.  
The turbine has tripped.  
All RCPs tripped.  
The Reactor tripped  
Reactor Power is < 2% with a negative SUR.  
DG "B" has started and is supplying ESF Bus 1DB.

It is currently 0615:  
DG "B" just tripped on overspeed.

Met Data - Wind Direction is from 290 degrees  
Met Data - Wind Speed is 15 mph  
Met Data - Wind Stability is Class B  
Met Data - Raining - 0.25 inches accumulation.

THIS IS A DRILL.

***INITIATING CUES:***

1. Classify the plant event and write down your declaration on this sheet. Notify an examiner when this is done. You will be provided a package from the examiner at that time.
2. Complete a NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM (ENF) for the plant event to the point that it can be transmitted to offsite agencies.

**THIS IS A TIME CRITICAL JPM!**

***HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!***



## STEPS

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 1

Evaluates plant conditions and classifies per EPP-001.

### **STEP STANDARD:**

Classifies event as an ALERT based on:

1. AC power capability to 7.2 KV ESF buses 1DA and 1 DB reduced to a single power source for more than 15 minutes AND,
2. Any additional single power source failure will result in loss of all AC power to both 7.2 KV ESF buses.

Initiating Condition - SA1.1

Detection Method:

1. Single power source to 1 DA AND,
2. Single power source to 1 DB AND,
3. No backup power source available to 1DA or 1 DB for > 15 minutes

### **CUES:**

Evaluator Note: The applicant has 15 min from the end of the Plant Conditions brief, to event classification. If student does not explain basis for the classification, the evaluator must ask him to describe the basis. If the basis is not justified, this constitutes failure, even if the classification is correct, and within time.

Evaluator Note: After the declaration hand the applicant the necessary paperwork to complete the ENF.

### **COMMENTS:**

**CRITICAL:** Yes

**SEQUENCED:** Yes

**SAT** ☐

**UNSAT** ☐

**STEP:** 2

Completes Notification Form from EPP-002, Attachment I

**STEP STANDARD:**

Successfully completes the Nuclear Power Plant Notification Form, EPP-002, Communication and Notification, Attachment I.

**CUES:**

Evaluator Note: The student has 15 min from the time of the declaration to complete attachment I from EPP-002.

**COMMENTS:**

Examiner ends JPM at this point.

## **JPM SETUP SHEET**

***JPM NO:*** NJPA-805

***DESCRIPTION:*** 2013 NRC SRO A4: CLASSIFY EMERGENCY (CLASSROOM - ALERT - LOSS OF AC) (ENF)

***IC SET:***

### ***INSTRUCTIONS:***

The following items, as indicated on the Emergency Notification Form (ENF), are considered as "Critical Items":

- Class of Emergency
- Description of Emergency
- Wind Direction and Speed
- Whether Offsite Protective Measures are necessary
- Potentially affected population and areas
- Whether a release is taking place
- Date and Time of Emergency Declaration
- Whether the event is a Drill or Actual Event
- An approval signature.

***COMMENTS:***

### ***ASSOCIATED DOCUMENTS:***

N:\Databases\JPM\JPA-805\_ENF.docx

## ***JPM BRIEFING SHEET***

### **OPERATOR INSTRUCTIONS:**

***INITIAL CONDITION:*** THIS IS A DRILL.

0600:

The plant was operating at 100%.

DG "A" is tagged out for bearing repair (Day 1 of 2 Day repair).

Parr Hydro Plant 13.8 KV power is temporarily supplying ESF Bus 1DA.

0605:

Electrical Grid problems resulted in a 100% loss of load.

115 KV power to XTF-4 and XTF-5 is lost.

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Reactor Power is < 2% with a negative SUR.

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It is currently 0615:

DG "B" just tripped on overspeed.

Met Data - Wind Direction is from 290 degrees

Met Data - Wind Speed is 15 mph

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THIS IS A DRILL.

- INITIATING CUES:***
1. Classify the plant event and write down your declaration on this sheet. Notify an examiner when this is done. You will be provided a package from the examiner at that time.
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**HAND THIS PAPER BACK TO YOUR  
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