

Facility: Shearon Harris Task No.: 301079H401

Task Title: During a Loss of Shutdown Cooling, determine the time that the RCS will reach Core Boiling and Boil-Off JPM No.: 2013 NRC Retake Exam Admin JPM SRO A1-1

K/A Reference: G2.1.20 RO 4.6 SRO 4.6

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

Classroom X Simulator \_\_\_\_\_ Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

The unit was operating at 100% power for the last 15 months.  
On 2/05/14 at 0000 the plant was shut down for a refueling outage.

- While the Reactor cavity was being filled the 'A' RHR pump tripped. Motor repairs are not expected to be completed until 2/25/14.
- The Reactor cavity fill was completed to the normal refueling levels with the 'B' RHR pump.
- No fuel has been moved due to problems with the Manipulator Crane and the Source Range audible count rate.

The current date and time is 2/18/14 at 1200

- Fuel still remains in the vessel due to complications with the Manipulator crane.
- The 'B' RHR pump just tripped.
- The crew is implementing AOP-020, Loss of RCS Inventory or RHR While Shutdown.
- Core exit thermocouples are rising; they are currently reading 135°F.

**Initiating Cue:**

In Accordance with AOP-020 you are directed to determine:

1. The time to reach core boiling  
**and**
2. Core boil-off time

Mark up your curves to indicate where you are determining these times.  
Write your estimates of "time to boil" and "time to boil-off" on the lines at the bottom of this page (below).  
Calculate your times in hours and minutes

Task Standard: Candidate obtains curves and correctly identifies the time to reach core boiling and core boil-off time

Required Materials: Curve Book  
Straight Edge

General References: AOP-020 (Rev. 37) Curve Book curves H-X-8, 9, 10 and 11  
(All Rev. 3)

Time Critical Task: No

Validation Time: 10 minutes

Critical Step Justification	
<b>Step 3</b>	Step required in order to accurately determine “time to boil” using the appropriate curve.
<b>Step 4</b>	Step required in order to accurately determine “time to boil-off” using the appropriate curve.

VERIFICATION OF COMPLETION

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

**Performance Step: 1**      OBTAIN CURVES NEEDED FOR CALCULATION  
(Curve Book will be provided to the candidate)

**Standard:**                      Refers to curves H-X-8 through H-X-11

**Comment:**

**Performance Step: 2**      Refers to provided data and determines that curve H-X-9 is required to calculate "time to boil" and curve H-X-11 is required to calculate "boil-off" time

**Standard:**                      Reviews curves and determines which ones are appropriate to determine the "time to boil" and "boil-off time"

**Comment:**

✓ **Performance Step: 3**      Based on time since shutdown (2/05/14 – 2/18/14) 13 days 12 hours since shutdown and current RCS temperature of 135°F using curve H-X-9 determine "time to boil".  
(Interpolate 125°-150° lines)

**Standard:**                      Reviews curve H-X-9  
Determines that "time to boil" is **~18 minutes**  
(± 2 minutes, 16 – 20 min is acceptable)

**Comment:**

VERIFICATION OF COMPLETION

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✓ **Performance Step: 4**      Based on time since shutdown (2/05/14 – 2/18/14) 13 days 12 hours since shutdown and current RCS temperature of 135°F using curve H-X-11 determine “time to boil-off”

**Standard:**                      Reviews curve H-X-11  
Determines that “time to boil-off” is **4 hrs**  
(± 15 minutes) or (4 hours 15 minutes to 3 hours 45 minutes)

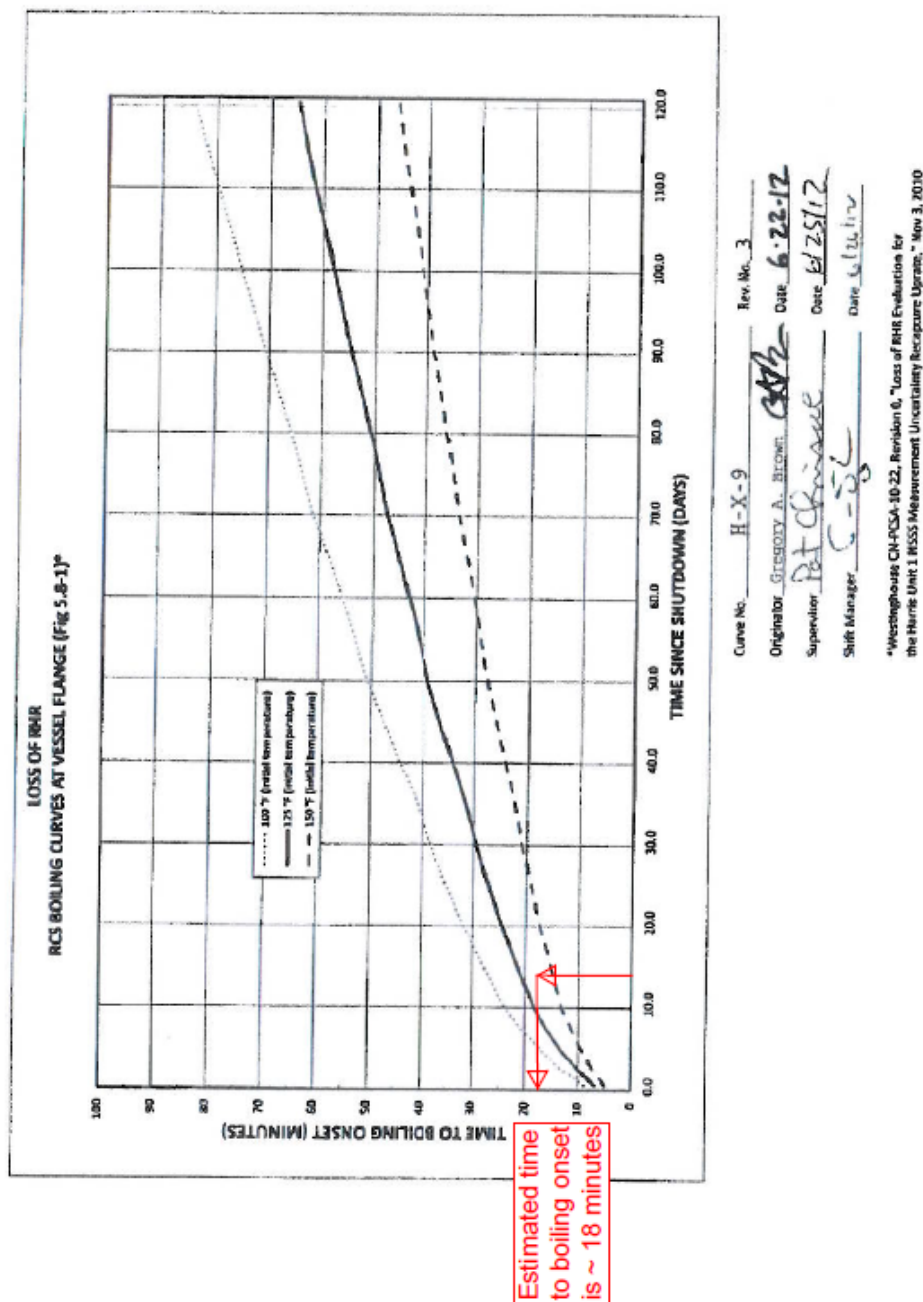
**Comment:**

**Terminating Cue:**            After completing the “time to boil” and “time to boil-off” calculation, the evaluation on this JPM is complete.  
**END OF JPM**

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

## VERIFICATION OF COMPLETION

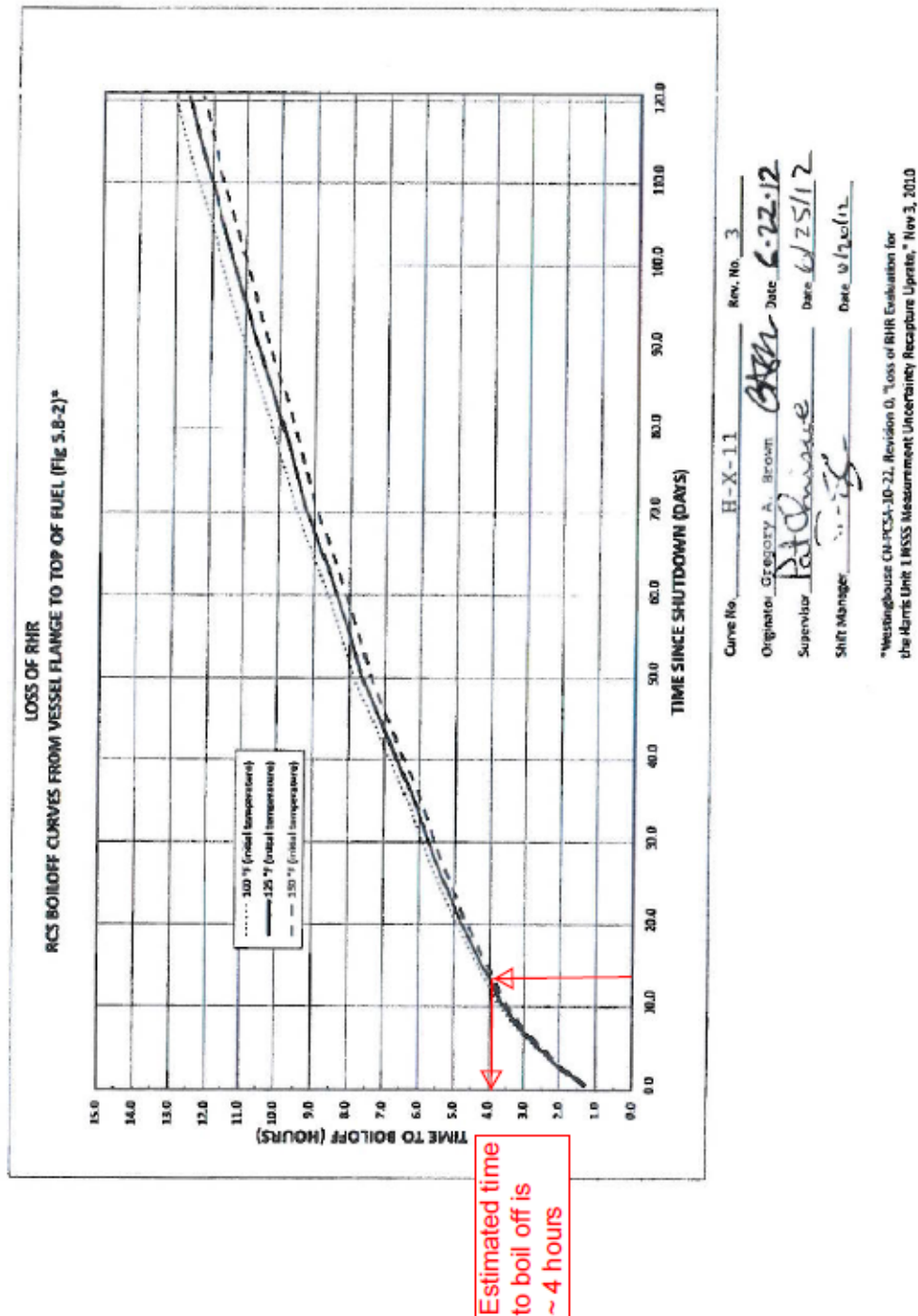
## KEY



Initial conditions: Reactor cavity filled for refueling without fuel movement due to Manipulator Crane and Source Range problems. Core cooling is lost at 1200 and 13 days after shutdown. Core Exit Thermocouples are rising and are currently 135°F. Estimated time to boiling onset will be approximately 18 minutes from the time of the loss of cooling event.

## VERIFICATION OF COMPLETION

## KEY



Initial conditions: Reactor cavity filled for refueling without fuel movement due to Manipulator Crane and Source Range problems. Core cooling is lost at 1200 and 13 days after shutdown. Core Exit Thermocouples are rising and are currently 135°F. Estimated time to reach boil off will be approximately 4 hours from the time of the loss of cooling event.

VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2013 NRC Retake Exam Admin JPM SRO A1-1

During a Loss of Shutdown Cooling, determine the time that the RCS will reach Core Boiling and Boil-Off

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

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

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<p>On 2/05/14 at 0000 the plant was shut down for a refueling outage.</p> <ul style="list-style-type: none"><li>• While the Reactor cavity was being filled the 'A' RHR pump tripped. Motor repairs are not expected to be completed until 2/25/14.</li><li>• The Reactor cavity fill was completed to the normal refueling levels with the 'B' RHR pump.</li><li>• No fuel has been moved due to problems with the Manipulator Crane and the Source Range audible count rate.</li></ul> <p>The current date and time is 2/18/14 at 1200</p> <ul style="list-style-type: none"><li>• Fuel still remains in the vessel due to complications with the Manipulator crane</li><li>• The 'B' RHR pump just tripped.</li><li>• The crew is implementing AOP-020, Loss of RCS Inventory or RHR While Shutdown.</li><li>• Core exit thermocouples are rising; they are currently reading 135°F.</li></ul>
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<b>Initiating Cue:</b>	<p>In Accordance With AOP-020 you are directed to determine:</p> <ol style="list-style-type: none"><li>1. The time to reach core boiling and</li><li>2. Core boil-off time</li></ol> <p>Mark up your curves to indicate where you are determining these times.</p> <p>Return all work including the curves to the examiner with this page.</p> <p>Write your estimates of "time to boil" and "time to boil-off" on the lines at the bottom of this page (below).</p> <p>Calculate your times in hours and minutes</p>
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Name \_\_\_\_\_

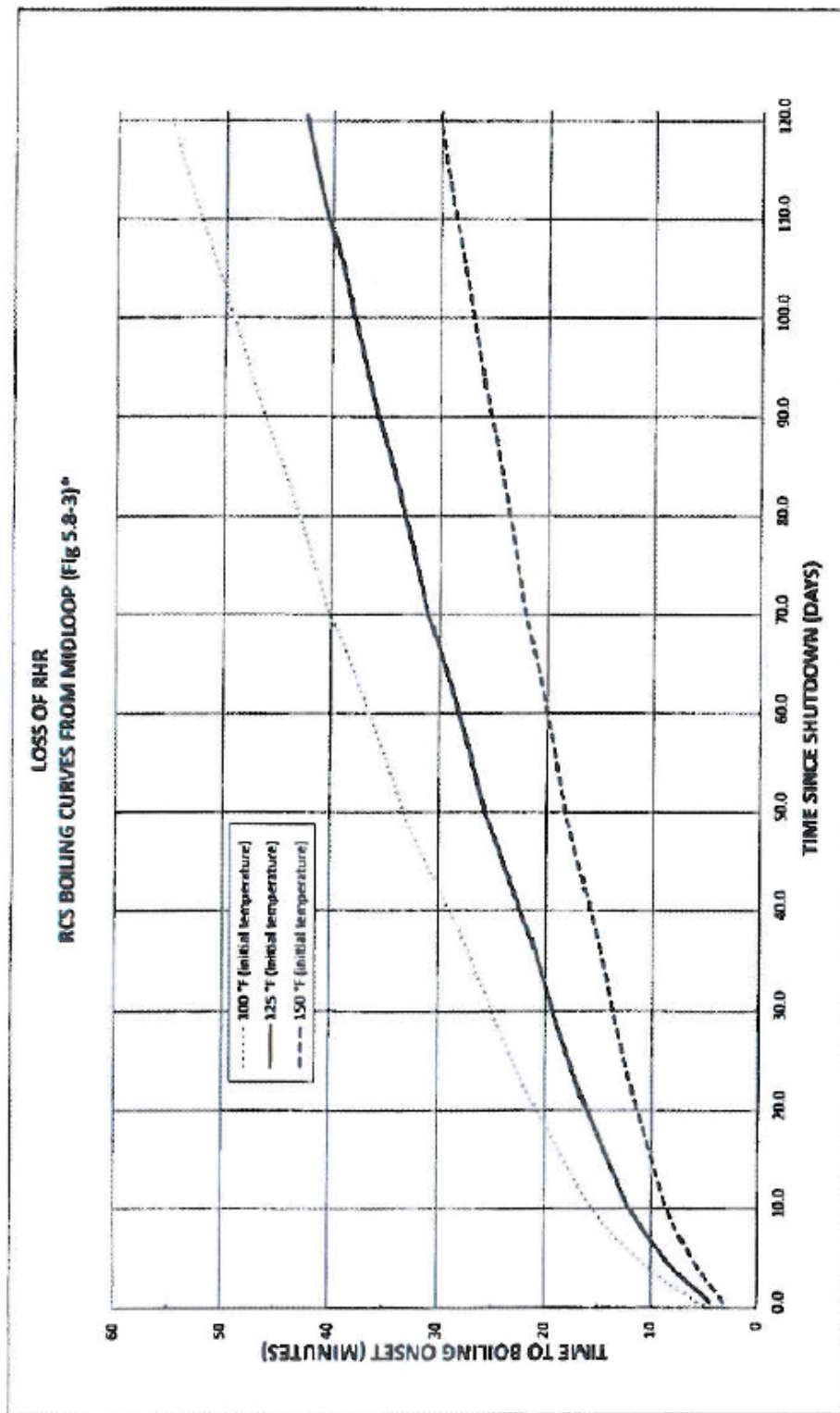
**Record your calculations here and return your curves to the examiner:**

**TIME TO BOIL (hours / minutes)** \_\_\_\_\_

**TIME TO BOIL-OFF (hours / minutes)** \_\_\_\_\_



## JPM CUE SHEET



Curve No. H-X-B Rev. No. 3

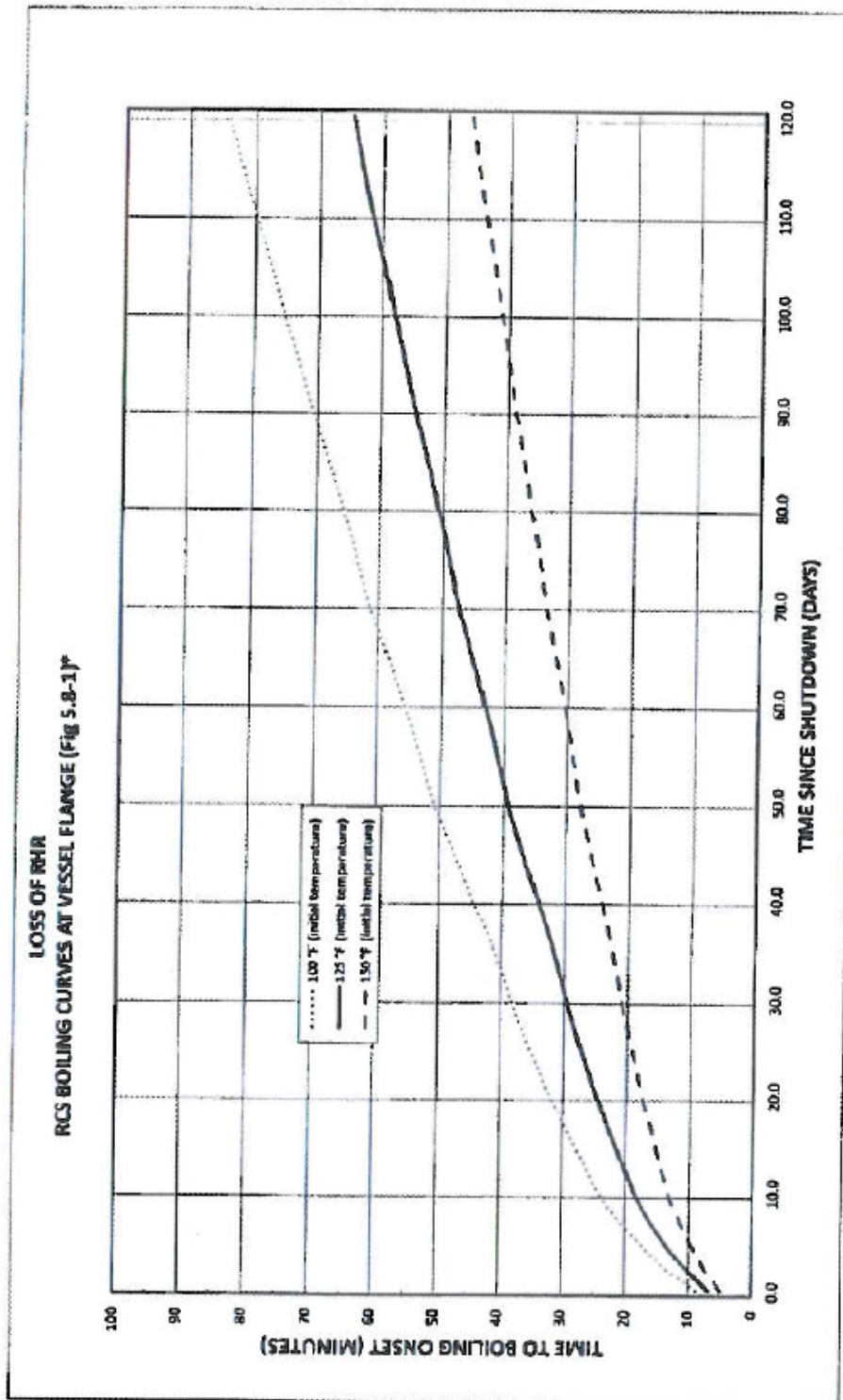
Originator: GREGORY A. BROWN Date 6-22-12

Supervisor: Patricia Date 6/25/12

Shift Manager: S-O Date 6/26/12

\*Westinghouse ON-PESA-10-22, Revision 0, "Loss of RHR Evaluation for the Harris Unit 1 NSSS Measurement Uncertainty Recapture Update," Nov 3, 2010

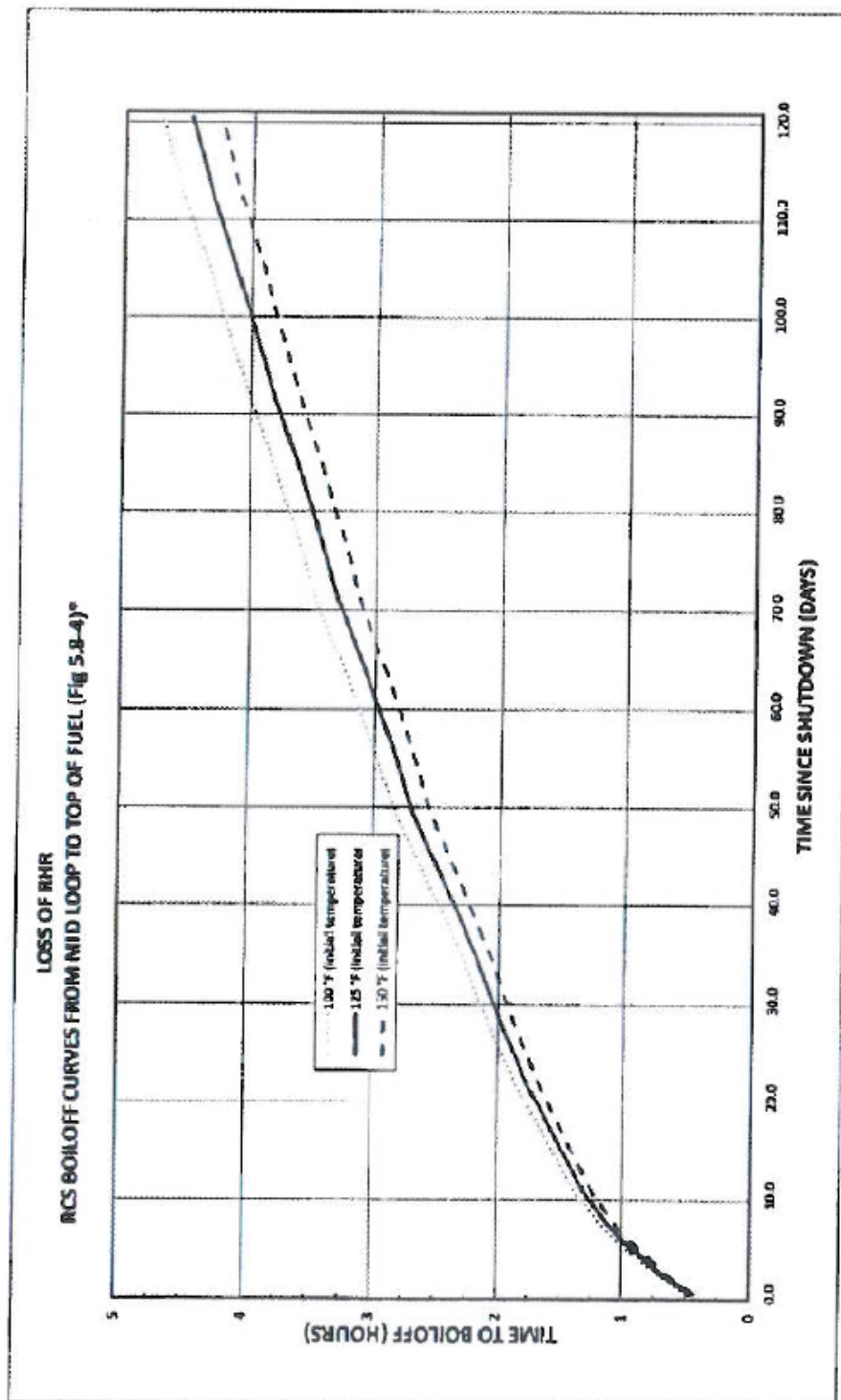
## JPM CUE SHEET



Curve No. H-X-9 Rev. No. 3  
 Originator Gregory A. Brown Date 6-22-12  
 Supervisor Pat O'Rourke Date 6/25/12  
 Shift Manager C-22 Date 6/26/12

\*Westinghouse CN-PCSA-10-22, Revision 0, "Loss of RHR Evaluation for the Harris Unit 1 NSSS Measurement Uncertainty Recapture Update," Nov 3, 2010

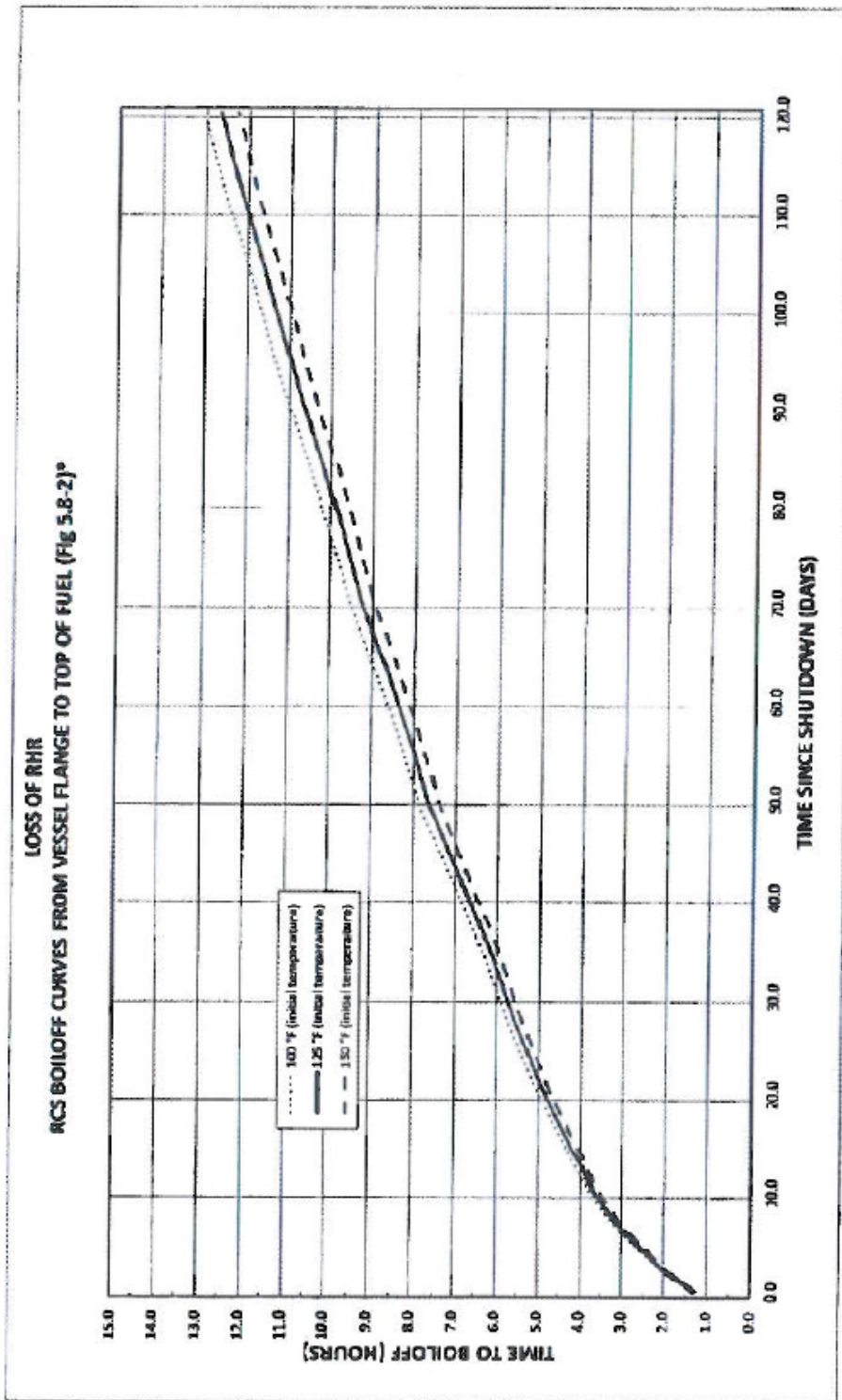
## JPM CUE SHEET



Curve No. H-X-10 Rev. No. 3  
 Originator Gregory A. Brown Date 6-22-12  
 Supervisor Pat Chiswick Date 6/25/12  
 Shift Manager G-E-L Date 6/26/12

\*Westinghouse CH-PCSA-10-22, Revision 0, "Loss of RHR Evaluation for the Harris Unit 1 NSSS Measurement Uncertainty Rescure Update," Nov 1, 2010

## JPM CUE SHEET



Curve No. H-X-11 Rev. No. 3  
 Originator: Gregory A. Brown Date: 6-22-12  
 Supervisor: Pat Chisum Date: 6/25/12  
 Shift Manager: V. J. J. Date: 6/26/12

\*Westinghouse CM-PCS-10-22, Revision 0, "Loss of RHR Evaluation for the Harris Unit 1 NSSS Measurement Uncertainty Recapture Update," Nov 3, 2010

Facility: Shearon Harris

Task No.:

Task Title: Determine the amount of RCS inventory that will be drained from RCS during the performance of GP-008, Draining the RCSJPM No.: 2013 NRC Retake Exam  
Admin JPM SRO A1-2K/A Reference: G2.2.25 RO 3.9 SRO 4.2 ALTERNATE PATH: **No**

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_

Actual Performance:   X  Classroom   X   Simulator \_\_\_\_\_ Plant \_\_\_\_\_**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- A shift turnover is underway
- The previous shift is implementing GP-008, Draining The Reactor Coolant System
- A drain down of the RCS is in progress in preparation for the upcoming Refueling Outage
- The drain is on hold for turnover and level is currently being maintained stable at the Reactor Vessel Flange
- After turnover, the directions are to drain the RCS to -70" in preparation for Nozzle Dam installation
- The Shift Manager has given permission to enter lower inventory conditions.

**Initiating Cue:**

You are the CRS. The Shift Manager wants to know how many gallons of water will be drained from the RCS to ensure adequate drain tank volume.

You are required to calculate the amount of additional water that will be drained from the RCS from the current level to the directed level using GP-008, Draining the Reactor Coolant System, Attachment 5.

Record your total to the nearest gallon.

Task Standard: Determine the calculated amount of RCS to be drained within specified limits.

Required Materials: Calculator, GP-008, Draining the RCS, Attachment 5 – Vessel Volume to Level Comparison

General References: GP-008, RCS, Attachment 5 , Rev. 43

Time Critical Task: No

Validation Time: 10 minutes

Critical Step Justification	
<b>Step 6</b>	Total of RCS drained is required to be provided to the Shift Manager

**START TIME:** \_\_\_\_\_**Step 1****Performance Step: 1**

Obtain procedure

**Standard:**

Obtains GP-008, Draining The Reactor Coolant System, Attachment 5, Vessel Volume to level comparison

**Comment:****Step 2****Performance Step: 2**

Determine current RCS volume

**Standard:**Using GP-008, Attachment 5  
Determines current RCS volume with RCS level at Vessel Flange with SGs FULL to be 60,595 gallons**Comment:****Step 3****Performance Step: 3**

Determine RCS volume Top of Loops with SG's FULL

**Standard:**Using GP-008, Attachment 5  
Determines RCS volume with RCS level at Top of Loops with SGs FULL to be 55,965 gallons**Comment:**

## PERFORMANCE INFORMATION

**Step 4****Performance Step: 4**

Determine RCS volume at Top of Loops after SGs drain

**Standard:**

Using GP-008, Attachment 5

Determines RCS volume with RCS level at Top of Loops with SGs DRAINED to be 28,925 gallons (-65")

**Comment:****Step 5****Performance Step: 5**

Determine RCS volume at -70" with SGs DRAINED

**Standard:**

Using GP-008, Attachment 5

Determines RCS volume with RCS level at -70" with SGs DRAINED to be 28,925 gallons

Mid Loop -82" (24,744 gallons)

Top of Loops -65" (28,925 gallons)

17" (4,181 gallons) between Top of Loops and Mid Loop

245.941 gallons per inch

 $-65" \text{ to } -70" = 5 \text{ inches} \times 245.941 = 1,229.705$ 

1,230 gallons

**Comment:**



## PERFORMANCE INFORMATION

**Performance Step: 6**      **Step 6**  
Determine total RCS volume drained from Vessel Flange with SGs FULL to -70"

✓ **Standard:**      Using GP-008, Attachment 5  
Determines total volume drained to be:  
**32,900 gallons ( $\pm$  1000 gallons since curve could be used)**

Current level Vessel Flange with SGs Full to Top of Loops with SGs FULL  
 $60,595 - 55,965 = 4,630$  gallons

SGs Drained level maintained at Top of Loops  
 $55,965 - 28,925 = 27,040$  gallons

Top of Loops with SGs Drained to -70"  
1,230 gallons

Total drained volume =  $4,630 + 27,040 + 1,230 = 32,900$

**Comment:**

<b>Terminating Cue:</b>	<b>After the total volume of RCS from Vessel Level at Flange with SGs FULL to -70" below the Flange is calculated: Evaluation on this JPM is complete. END OF JPM</b>
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**STOP TIME:** \_\_\_\_\_

VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2013 NRC Retest Exam Admin JPM SRO A1-2

Determine the amount of RCS inventory that will be drained from RCS during the performance of GP-008, Draining the RCS.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

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

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Initial Conditions:**

- A shift turnover is underway
- The previous shift is implementing GP-008, Draining The Reactor Coolant System
- A drain down of the RCS is in progress in preparation for the upcoming Refueling Outage
- The drain is on hold for turnover and level is currently being maintained stable at the Reactor Vessel Flange
- After turnover, the directions are to drain the RCS to -70" in preparation for Nozzle Dam installation
- The Shift Manager has given permission to enter lower inventory conditions.

**Initiating Cue:**

You are the CRS. The Shift Manager wants to know how many gallons of water will be drained from the RCS to ensure adequate drain tank volume.

You are required to calculate the amount of additional water that will be drained from the RCS from the current level to the directed level using GP-008, Draining the Reactor Coolant System, Attachment 5.

Record your total to the nearest gallon.

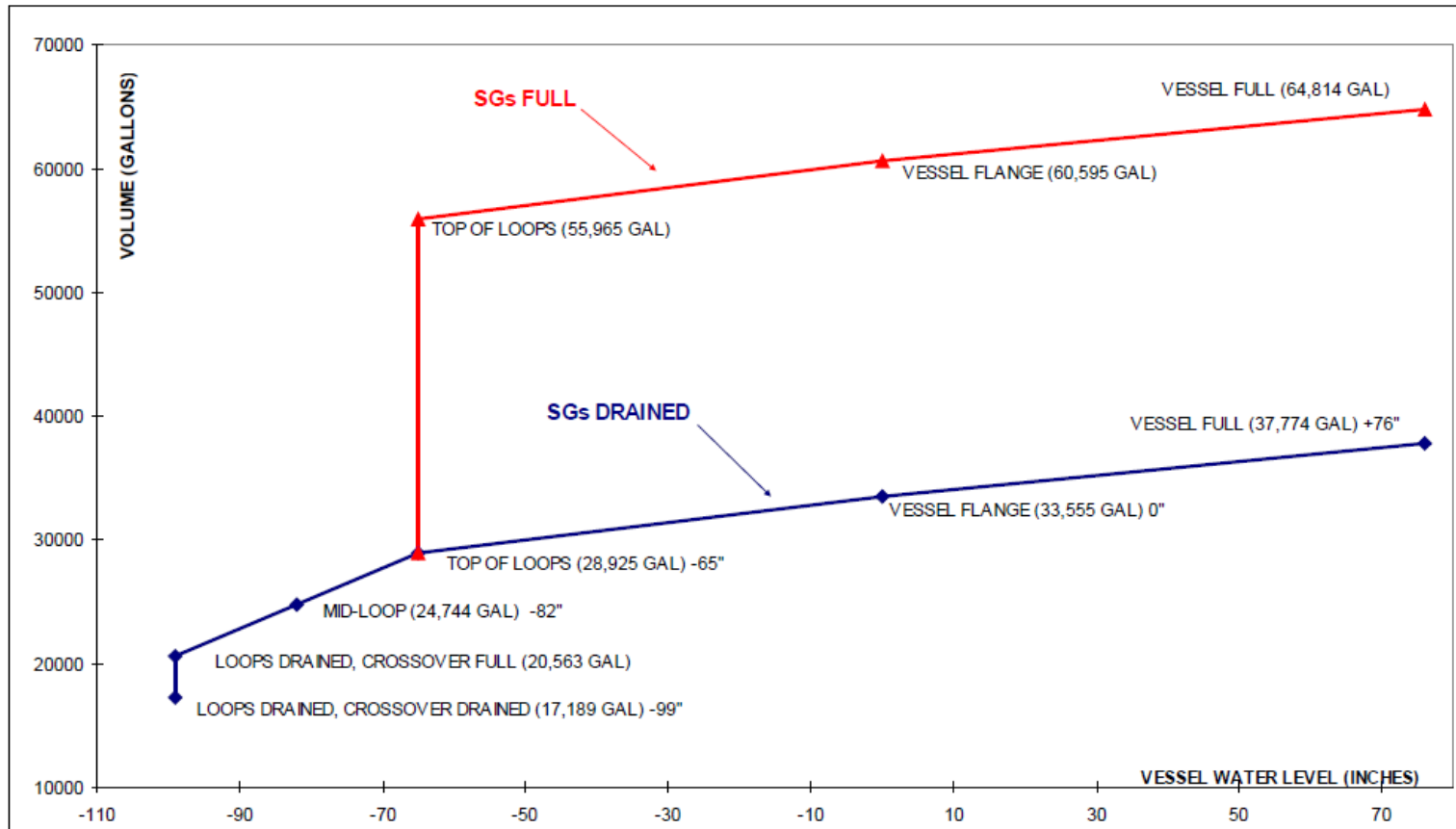
Name: \_\_\_\_\_

Date: \_\_\_\_\_

Show how the calculation was performed in the space provided below:

A large, empty rectangular box with a thick black border, intended for the user to show their calculations.

Total number of RCS gallons to be drained: \_\_\_\_\_

Attachment 5 - Vessel Volume to Level Comparison  
Sheet 1 of 1

## PERFORMANCE INFORMATION

Facility: Shearon-Harris Task No.: 002001H201

Task Title: Review (for approval) a completed surveillance procedure for PORV block valves. JPM No.: 2013 NRC Retest Admin SRO JPM A2

K/A Reference: G2.2.12 (3.4) ALTERNATE PATH - No

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X    
Classroom   X   Simulator \_\_\_\_\_ Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions:

- Today is 2/6/14
- The unit is operating at 100% power.
- PRZ PORV PCV-445B has a failure in the SHUT circuit. RC-115 has been closed and power is removed.
- TS 3.4.4 Action b is in effect. EIR 20130285 has been initiated.
- The control room crew has completed OST-1017, PRESSURIZER PORV BLOCK VALVE FULL STROKE TEST QUARTERLY INTERVAL MODES 1-2-3-4.

Initiating Cue: You are the CRS. Review the completed OST for approval. Identify any discrepancies (if applicable).

Task Standard: All errors identified.

Required Materials: None

General References: OST-1017, PRESSURIZER PORV BLOCK VALVE FULL STROKE TEST QUARTERLY INTERVAL MODES 1-2-3-4, Revision 21

Handout: Completed OST-1017 with errors that align with the JPM content.

Time Critical Task: No

Validation Time: 15 Minutes

	<b>Critical Task Justification</b>
Step 2	Note: There are 2 items that will make the surveillance UNSAT. Either of which when identified would require a performance retest.  The stopwatch is beyond the calibration date –all timing data collected with the use of this out of calibration device is non usable therefore the test is invalid until a satisfactory stop watch calibration check is performed.
Step 4	The shut time for valve 1RC-113 has exceeded the limit – if not identified an inoperable component could be relied upon and possibly fail when needed to perform it's intended action.  Missing the initial on step 4.I indicating that the step was completed is NOT critical since it can be attributed to a place keeping error and would NOT invalidate the surveillance.

**START TIME:** \_\_\_\_\_**Performance Step: 1** Obtain procedure.**Standard:** Reviews Sections 3.0, 4.0, 5.0, 6.0.

<b>Evaluator Cue:</b>	<b>Provide handout for 2013 NRC Retest JPM SRO A2.</b>
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<b>Evaluator Note:</b>	<ul style="list-style-type: none"><li>• The steps of reviewing the procedure can be completed in any order.</li><li>• There are three errors in the procedure. Only the errors are documented in the JPM.</li></ul>
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**Comment:**✓ **Performance Step: 2** Review the completed OST-1017.**Standard:** Identifies Stopwatch beyond calibration date per Prerequisite 3.0.4.**Comment:**✓ **Performance Step: 3** Review the completed OST-1017.**Standard:** Identifies that step 4.I is not initialed.**Comment:**



✓ **Performance Step: 4**      Review the completed OST-1017.

**Standard:**                      Identifies SHUT time for 1RC-113 exceeds LIMITING VALUE.

**Comment:**

**Terminating Cue:**

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

VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2013 NRC Retest Admin SRO JPM A2  
Review (for approval) a completed surveillance procedure for  
PORV block valves. OST-1017

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

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

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Initial Conditions:

- Today is 2/6/14
- The unit is operating at 100% power.
- PRZ PORV PCV-445B has a failure in the SHUT circuit. RC-115 has been closed and power is removed.
- TS 3.4.4 Action b is in effect. EIR 20130285 has been initiated.
- The control room crew has completed OST-1017, PRESSURIZER PORV BLOCK VALVE FULL STROKE TEST QUARTERLY INTERVAL MODES 1-2-3-4.

Initiating Cue:

You are the CRS. Review the completed OST for approval. Identify any discrepancies (if applicable).

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

- IF discrepancies were identified from your review of OST-1017 list them all on the lines below.

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Facility: Shearon Harris

Task No.: 345013H602

Task Title: Given a Declared Emergency,  
Determine the Dose Rate, Dose  
Limit, and the Number of People to  
Perform a Task.JPM No.: 2013 NRC Retake Exam  
Admin JPM SRO A-3K/A Reference: G2.3.4 RO 3.2 SRO 3.7 **ALTERNATE PATH: No**

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_

Actual Performance:   X  Classroom   X   Simulator \_\_\_\_\_ Plant \_\_\_\_\_**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The unit was operating at 100% power when a Reactor Trip and Safety Injection occurred due to RCS leakage.
- An Alert has been declared.
- All Emergency Facilities have been manned and are activated.
- RHR Pump "A" was under clearance for motor replacement.
- RHR Pump "B" has tripped.
- The Emergency Engineering Organization has determined that the RHR Pump "A" can be repaired and restarted with parts available in the storeroom.
- There are 10 mechanics qualified to work the repair of the 'A' RHR pump.
- The repairs do not involve protecting valuable property, lifesaving or protection of large populations.
- The Site Emergency Coordinator has determined this to be an emergency repair which he has ranked as the highest priority. The SEC wants the pump back as soon as possible.
- The general radiation levels in the 'A' RHR pump work area are 16.5 R/hour.
- The OSC estimates that the total task repair time will be 1.75 man-hours.

The 10 site emergency mechanics listed in the table below are available.

Site Emergency Mechanic	Accumulated TEDE Dose This Year
A	680 mr
B	950 mr
C	1060 mr
D	1290 mr
E	1340 mr
F	1480 mr
G	1500 mr
H	1550 mr
I	1680 mr
J	1720 mr

**Initiating Cue:**

They will be utilized from lowest to highest accumulated TEDE dose.

Using the minimum number of workers possible, DETERMINE:

- The total number of workers required to perform the repairs to the 'A' RHR pump

**AND**

- The maximum stay time for each individual who will be utilized for the repairs without exceeding their exposure limits under these emergency conditions.

**ASSUME NO DOSE IN TRANSIT AND ROUND OFF TO THE NEAREST MINUTE BELOW THE LIMIT.**

Task Standard: Number of people and stay times calculated within specified limits.

Required Materials: Calculator

General References: PEP-330, Radiological Consequences, Attachment 1, Rev. 12

Time Critical Task: No

Validation Time: 20 minutes

Critical Step Justification	
<b>Step 3</b>	Must determine the number of people required to complete the task to perform calculations.
<b>Step 4</b>	Must determine the stay time for workers to prevent each worker from exceeding their dose allotments.

## PERFORMANCE INFORMATION

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

**Step 1****Performance Step: 1** Determine total estimated dose for the task.**Standard:** 16.5 R/hour x 1.75 hours = 28.875 Rem**Comment:****Step 2****Performance Step: 2** Determine the dose limit for site emergency workers**Standard:** Per PEP-330 – Attachment 1**Attachment 1- Limitations for Lifesaving and Emergency Reentry/Repair Actions**  
Sheet 1 of 1

1. A Declared Pregnant Woman shall not take part in these actions.
2. Internal exposure should be minimized by the use of the most appropriate respiratory protection or ALARA practice whenever possible, and contamination should be controlled by the use of protective clothing when practical.
3. Emergency worker exposures during lifesaving and repair/reentry efforts should be limited to the following:

DOSE LIMIT (rem TEDE)	ACTIVITY	CONDITION
5	All	All
10	Protecting valuable property	Lower dose not practicable
25	Lifesaving or protection of large populations	Lower dose not practicable
>25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

4. Limit dose to the lens of the eye to three (3) times the above values and doses to any other organ (including thyroid, skin and body extremities) to ten (10) times the above values.
5. Entry into radiation fields of greater than 25 Rem/hr or exposure in excess of 5 Rem TEDE shall not be permitted unless specifically authorized by the SEC.

**Comment:**

## PERFORMANCE INFORMATION

**Step 3**

- ✓ **Performance Step: 3** Determine the number of people required to complete the task

**Standard:** Workers A, B, C, D, E, and F would have to be used (✓) to reach the 28.875 Rem total estimated dose (8 workers total)  
 $(4320 + 4050 + 3940 + 3710 + 3660 + 3520 + 3500 + 3450) =$   
**29.85 Rem**

**Comment:**

**Step 4**

- ✓ **Performance Step: 4** Stay Time for Workers

**Standard:** A:  $4.32/16.5 \times 60$  minutes = 15 minutes  
B:  $4.05/18 \times 60$  minutes = 14 minutes  
C:  $3.94/18 \times 60$  minutes = 14 minutes  
D:  $3.71/18 \times 60$  minutes = 13 minutes  
E:  $3.66/18 \times 60$  minutes = 13 minutes  
F:  $3.52/18 \times 60$  minutes = 12 minutes  
G:  $3.5/16.5 \times 60$  minutes = 12 minutes  
H:  $3.45/16.5 \times 60$  minutes = 12 minutes

**Comment:**

<b>Terminating Cue:</b>	<b>After the maximum stay time for the workers to be used is calculated: Evaluation on this JPM is complete. END OF JPM</b>
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**STOP TIME:** \_\_\_\_\_



## PERFORMANCE INFORMATION

**KEY**

In the table below write YES or NO in the line next to the mechanic if he will be or will not be required to perform repair work and the stay time for those that will perform the repair.  
(8 WORKERS REQUIRED)

Site Emergency Mechanic	YES / NO	Maximum Stay Time
A	YES	15 minutes
B	YES	14 minutes
C	YES	14 minutes
D	YES	13 minutes
E	YES	13 minutes
F	YES	12 minutes
G	YES	12 minutes
H	YES	12 minutes
I	NO	XXX
J	NO	XXX

VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2013 NRC Retest Exam Admin JPM SRO A-3  
Given a Declared Emergency, Determine the Dose Rate,  
Dose Limit, and the Number of People to Perform a Task.

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

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

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Initial Conditions:**

- The unit was operating at 100% power when a Reactor Trip and Safety Injection occurred due to RCS leakage.
- An Alert has been declared.
- All Emergency Facilities have been manned and are activated.
- RHR Pump "A" was under clearance for motor replacement.
- RHR Pump "B" has tripped.
- The Emergency Engineering Organization has determined that the RHR Pump "A" can be repaired and restarted with parts available in the storeroom.
- There are 10 mechanics qualified to work the repair of the 'A' RHR pump.
- The repairs do not involve protecting valuable property, lifesaving or protection of large populations.
- The Site Emergency Coordinator has determined this to be an emergency repair which he has ranked as the highest priority. The SEC wants the pump back as soon as possible.
- The general radiation levels in the 'A' RHR pump work area are 16.5 R/hour.
- The OSC estimates that the total task repair time will be 1.75 man-hours.

**Initiating Cue:**

The 10 site emergency mechanics listed in the table below are available.

Site Emergency Mechanic	Accumulated TEDE Dose This Year
A	680 mr
B	950 mr
C	1060 mr
D	1290 mr
E	1340 mr
F	1480 mr
G	1500 mr
H	1550 mr
I	1680 mr
J	1720 mr

They will be utilized from lowest to highest accumulated TEDE dose.

Using the minimum number of workers possible, DETERMINE:

- The total number of workers required to perform the repairs to the 'A' RHR pump
- AND**
- The maximum stay time for each individual who will be utilized for the repairs without exceeding their exposure limits under these emergency conditions.

**ASSUME NO DOSE IN TRANSIT AND ROUND OFF TO THE NEAREST MINUTE BELOW THE LIMIT.**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Place answer below and show work in space provide** (use back of page if needed):

In the table below write YES or NO in the line next to each of the 10 mechanics if he **will be** or **will not be** required to perform repair work **AND** the stay time for those that will perform the repair.

Site Emergency Mechanic	YES / NO	Maximum Stay Time
A		
B		
C		
D		
E		
F		
G		
H		
I		
J		

WORK IN SPACE BELOW (and on back of page if needed)

Facility:	Shearon-Harris	Task No.:	345001H602 345010H602
Task Title:	<u>Classify an EAL and Determine a PAR</u>	JPM No.:	2013 NRC RetakeExam Admin JPM SRO A4
K/A Reference:	G2.4.41      RO 2.9 SRO 4.6		

Examinee: _____	NRC Examiner: _____
Facility Evaluator: _____	Date: _____

**Method of testing: This JPM can be performed in any setting with the required references available.**

Simulated Performance: _____	Actual Performance: <u>  X  </u>
Classroom <u>  X  </u> Simulator _____	Plant _____

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

(The initial conditions and initiating cue is on the next page)

<p><b>Initial Conditions:</b></p>	<p>You are the Site Emergency Coordinator. The unit was operating at 100% with the 'A' MDAFW pump under clearance At 0801</p> <ul style="list-style-type: none"> <li>- 'A' Main Feedwater pump tripped</li> <li>- The crew attempted to trip the Reactor but the Reactor trip breakers failed to manually open</li> <li>- The crew is implementing FR-S.1, Response to Nuclear Power Generation/ATWS</li> <li>- The BOP has manually tripped the Turbine from the MCB switch</li> <li>- Reactor power is ~32% and slowly lowering</li> </ul> <p>At 0802</p> <ul style="list-style-type: none"> <li>- 'B' Main Feedwater pump tripped on overcurrent</li> <li>- 'B' MDAFW pump has failed to start</li> <li>- Low-Low Steam Generator levels have caused the TDAFW pump to auto start</li> </ul> <p>At 0804</p> <ul style="list-style-type: none"> <li>- The OATC reports RCS pressure is lowering and 'B' SG level is rising slowly uncontrollably. Estimations of leakage is ~ 25 gpm.</li> <li>- All SG PORV's are in auto and open</li> <li>- The AO directed to locally trip the Reactor reports he is unable to locally open the Reactor trip breakers OR the MG set breakers</li> </ul> <p>At 0805</p> <ul style="list-style-type: none"> <li>- The TDAFW pump trips</li> <li>- Reactor power is ~5.5% and slowly decreasing</li> </ul> <p>At 0806</p> <ul style="list-style-type: none"> <li>- All SG levels are ~20% NR and decreasing</li> </ul> <p>At 0807</p> <ul style="list-style-type: none"> <li>- The 'A' Reactor trip breaker is opened, all rods insert and Reactor power is &lt;1% and decreasing</li> <li>- 'B' MDAFW pump has been restarted and is supplying all SG's</li> </ul>
<p><b>Initiating Cue:</b></p>	<p>Evaluate the EAL Matrix and determine the highest classification required for these plant conditions. <b>This is a time critical JPM.</b></p>
<p><b>DO NOT READ THIS TO THE CANDIDATE:</b></p>	<p><b>This is a two (2) part TIME CRITICAL JPM where each part will be timed separately.</b></p>

Task Standard: Classify the highest EAL as a GE and correctly identify the PAR

Required Materials: None

General References: PEP-110 EAL Matrix, Rev. 12  
PEP 110, Rev. 22  
EP-EAL, Rev. 12

Handouts:

- Attached Initial Conditions
- PEP-110 EAL Matrix, Rev. 12
- PEP 110, Rev. 22
- EP-EAL, Rev. 12

Time Critical Task: YES – 15 minutes for classification. 15 minutes for PAR.

Validation Time: 30 minutes (accounts for 15 minute criteria for classification and PAR)

CRITICAL TASK JUSTIFICATION	
<b>Step 1</b>	Classification of the event is critical for determining State and County notifications, public information notices, site information notices, and event reportability to the Nuclear Regulatory Commission.
<b>Step 2</b>	Identification of protective recommendation to the State and County is part of the standard goal of protecting the health and safety of the public.

Evaluator Cue:

**Start Time for this portion of JPM begins when the individual has been briefed.**

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

✓ **Performance Step: 1** Identify EAL Classification for events in progress.**Standard :**The correct EAL is: **General Emergency SG3.1**

At 0801 EAL SS3.1 (Site Area Emergency) was met since an automatic trip failed to shutdown the Reactor (Turbine trip with P-7 either Rx power or Turbine power > 10%) manual actions at the Rx controls failed to shutdown the Reactor and Rx power is > 5%.

At time 0806 CSFST **Heat Sink - RED** entry conditions are met since NO AFW flow exists (<210 KPPH) and ALL SG levels are < 25%

EAL FS1.1 (Site Area Emergency) would be met:

Loss or Potential loss of any two barriers (Table F-1), Potential Loss of BOTH Fuel Clad Barrier and RCS Barrier due to CSFST **Heat Sink-RED**

Additionally at 0806, EAL SG3.1 **General Emergency** is met:

An automatic trip fails to shut down the reactor AND all manual actions do not shut down the reactor as indicated by Reactor power > 5% AND EITHER of the following exist or have occurred due to continued power generation:

CSFST Core Cooling-RED entry conditions met

OR

CSFST **Heat Sink-RED** entry conditions met

**EAL classification is determined in  $\leq$  15 minutes**

**Comments:**

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

Terminating Cue:

**EAL classification(s) completed and provided to evaluator.**



<p><b>Evaluator Cue:</b></p>	<p><b><u>DO NOT ASK THE CANDIDATE FOR A PAR UNLESS A GENERAL EMERGENCY HAS BEEN DECLARED.</u></b></p> <p><b>IF the candidate has determined that a General Emergency is declared then CUE:</b></p> <p><b>Make a protective action recommendation (PAR) based on the wind blowing from 273°.</b></p> <p><b>Provide them page 7 of this JPM to evaluate and write out the associated PAR.</b></p> <p><b>Start Time for this portion of JPM begins when the individual has been provided the directions to make a PAR and given the wind direction.</b></p>
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**START TIME:** \_\_\_\_\_

- ✓ **Performance Step: 2** Determine PAR. Refers to PEP-110 Attachment 3.

**Time of PAR determination:** \_\_\_\_\_

- Standard:** PROTECTIVE ACTION RECOMMENDATION:
- Evacuate 2 Mile Radius & 5 Miles downwind. Shelter all other subzones
  - EVACUATE Subzones: A, C
  - SHELTER Subzones: B,D,E,F,G,H,I,J,K,L,M,N

**PAR is determined  $\leq$  15 minutes from time of classification.**

**Comment:**

<b>Terminating Cue:</b>	<b>After the PAR is specified: This JPM is complete.</b>
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**STOP TIME:** \_\_\_\_\_

Job Performance Measure No.: 2013 NRC Exam Admin JPM SRO A4  
Classify an Event and Identify PAR's

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

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

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Make a protective action recommendation (PAR) based on the wind blowing from 273°**

Protective Action Recommendation:

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## JPM CUE SHEET

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Conditions:</b>	<p>You are the Site Emergency Coordinator.</p> <p>The unit was operating at 100% with the 'A' MDAFW pump under clearance</p> <p>At 0801</p> <ul style="list-style-type: none"> <li>- 'A' Main Feedwater pump tripped</li> <li>- The crew attempted to trip the Reactor but the Reactor trip breakers failed to manually open</li> <li>- The crew is implementing FR-S.1, Response to Nuclear Power Generation/ATWS</li> <li>- The BOP has manually tripped the Turbine from the MCB switch</li> <li>- Reactor power is ~32% and slowly lowering</li> </ul> <p>At 0802</p> <ul style="list-style-type: none"> <li>- 'B' Main Feedwater pump tripped on overcurrent</li> <li>- 'B' MDAFW pump has failed to start</li> <li>- Low-Low Steam Generator levels have caused the TDAFW pump to auto start</li> </ul> <p>At 0804</p> <ul style="list-style-type: none"> <li>- The OATC reports RCS pressure is lowering and 'B' SG level is rising slowly uncontrollably. Estimations of leakage is ~ 25 gpm.</li> <li>- All SG PORV's are in auto and open</li> <li>- The AO directed to locally trip the Reactor reports he is unable to locally open the Reactor trip breakers OR the MG set breakers</li> </ul> <p>At 0805</p> <ul style="list-style-type: none"> <li>- The TDAFW pump trips</li> <li>- Reactor power is ~5.5% and slowly decreasing</li> </ul> <p>At 0806</p> <ul style="list-style-type: none"> <li>- All SG levels are ~20% NR and decreasing</li> </ul> <p>At 0807</p> <ul style="list-style-type: none"> <li>- The 'A' Reactor trip breaker is opened, all rods insert and Reactor power is &lt;1% and decreasing</li> <li>- 'B' MDAFW pump has been restarted and is supplying all SG's</li> </ul>
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<b>Initiating Cue:</b>	<p>Evaluate the EAL Matrix and determine the classification(s) required for these plant conditions.</p> <p><b>This is a time critical JPM.</b></p>
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EAL Classification:

EAL: \_\_\_\_\_