

Facility: PILGRIM Task No.: 356-01-07-004  
Task Title: Perform a Short Form Heat Balance JPM No.: 2007 NRC JPM RO A1r

K/A Reference: 292008 K1.21 2.9 / 3.0

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X  
Classroom \_\_\_\_\_ Simulator X 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: Plant conditions are as follows:

- The plant is at 50% power.
- Plant conditions are stable.
- The plant process computer is out of service.

Task Standard: Attachment 4 of PNPS 2.1.10 is completed with no errors. The system procedure shall be followed without failure of critical tasks. Critical steps must be performed in order. Other steps may be performed out of sequence.

Note: PNPS 9.3 Attachment 3 is an alternate method for performing a short form heat balance and provides the same results.

Required Materials: Steam Tables

General References: PNPS 2.1.10, revision 33

Initiating Cue: Perform a Short Form Heat Balance per PNPS 2.1.10.



Time Critical Task: NO

Validation Time: 5 minutes



**SIMULATOR SETUP**

Reset to a 50% power IC. . This JPM will be performed concurrently with JPM-A2. When conditions are set for JPM-A2, freeze the simulator.



## PERFORMANCE INFORMATION

*(Denote Critical Steps with a check mark)*

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

**Performance Step: 1** Operator reviews the applicable sections of the procedure.

**Standard:** Operator reviews the applicable sections of the procedure.

**Comment:**

**Performance Step: 2** Operator fills out date/time and performed by on Attachment 4.

**Standard:** Date/time and performed by recorded on Attachment 4.

**Comment:**

**Performance Step: 3** Find and record reading for Feedwater Flow A from FI-640-24A on Panel C905.

**Standard:** FI-6240-24A reading recorded.

**Comment:** **Approximately 1.8 Mlb/hr.**

**Performance Step: 4** Find and record reading for Feedwater Flow B from FI-640-24B on Panel C905.

**Standard:** FI-640-24B reading recorded.

**Comment:** **Approximately 1.9 Mlb/hr.**



## PERFORMANCE INFORMATION

**Performance Step: 5** Find and record reading for Feedwater Temperature A from TR-3496A on Panel C1.

**Standard:** TR-3496A reading recorded (RED pen).

**Comment:** **Approximately 310°F.**

**Performance Step: 6** Find and record reading for Feedwater Temperature B from TR-3496B on Panel C1.

**Standard:** TR-3496B reading recorded (BLUE pen).

**Comment:** **Approximately 310°F.**

**Performance Step: 7** Calculate Total Feedwater flow by adding the A and B Feedwater Flows.

**Standard:** Total Feedwater flow calculated.

**Comment:** **Approximately 3.7 Mlb/hr.**

**Performance Step: 8** Average the A and B Feedwater Temperatures loops together.

**Standard:** Average Feedwater temperature calculated.

**Comment:** **Approximately 310°F.**

**Performance Step: 9** Using steam tables, determine Feedwater enthalpy.

**Standard:** Feedwater enthalpy is recorded.

**Comment:** **H<sub>f</sub> 310°F ≈ 280 BTU/lb.**



PERFORMANCE INFORMATION

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✓ **Performance Step: 10** Determine Core Thermal Power  $3.7 \times (1189.6 - 280) / 3.413 + 9.02 = 995.07$

**Standard:** Core Thermal Power is calculated [995 MWth (+/- 50 mw)].

**Comment:**

**Terminating Cue:** When the candidate has completed the core thermal power calculation, the examiner shall inform him/her that the task is complete.

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

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







## VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM RO/SRO A1r

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:

Plant conditions are as follows:

- The plant is at 50% power.
- Plant conditions are stable.
- The plant process computer is out of service.

## INITIATING CUE:

Perform a Short Form Heat Balance per PNPS 2.1.10.



Facility: PILGRIM Task No.: 356-01-07-004

Task Title: Perform a Short Form Heat Balance Comparison JPM No.: 2007 NRC JPM SRO A1s

K/A Reference: 292008 K1.21 2.9 / 3.0

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

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

Classroom \_\_\_\_\_ Simulator X 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: Plant conditions are as follows:

- The plant is at 50% power.
- Plant conditions are stable.
- The plant process computer is out of service.

Task Standard: Attachment 4 of PNPS 2.1.10 is completed with no errors. The system procedure shall be followed without failure of critical tasks. Critical steps must be performed in order. Other steps may be performed out of sequence.

Note: PNPS 9.3 Attachment 3 is an alternate method for performing a short form heat balance and provides the same results.

Required Materials: Steam Tables

General References: PNPS 2.1.10, revision 33

Initiating Cue: Perform a Short Form Heat Balance per PNPS 2.1.10.  
Compare with baseline heat balance and take any appropriate actions if required.



Time Critical Task: NO

Validation Time: 5 minutes



**SIMULATOR SETUP**

Reset to a 50% power IC. This JPM will be performed concurrently with JPM-A2. When conditions are set for JPM-A2, freeze the simulator.



## PERFORMANCE INFORMATION

*(Denote Critical Steps with a check mark)*

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

**Performance Step: 1** Operator reviews the applicable sections of the procedure.  
**Standard:** Operator reviews the applicable sections of the procedure.

**Comment:**

**Performance Step: 2** Operator fills out date/time and performed by on Attachment 4.  
**Standard:** Date/time and performed by recorded on Attachment 4.

**Comment:**

**Performance Step: 3** Find and record reading for Feedwater Flow A from FI-640-24A on Panel C905.

**Standard:** FI-6240-24A reading recorded.

**Comment:** **Approximately 1.8 Mlb/hr.**

**Performance Step: 4** Find and record reading for Feedwater Flow B from FI-640-24B on Panel C905.

**Standard:** FI-640-24B reading recorded.

**Comment:** **Approximately 1.9 Mlb/hr.**



## PERFORMANCE INFORMATION

**Performance Step: 5** Find and record reading for Feedwater Temperature A from TR-3496A on Panel C1.

**Standard:** TR-3496A reading recorded (RED pen).

**Comment:** **Approximately 310°F.**

**Performance Step: 6** Find and record reading for Feedwater Temperature B from TR-3496B on Panel C1.

**Standard:** TR-3496B reading recorded (BLUE pen).

**Comment:** **Approximately 310°F.**

**Performance Step: 7** Calculate Total Feedwater flow by adding the A and B Feedwater Flows.

**Standard:** Total Feedwater flow calculated.

**Comment:** **Approximately 3.7 Mlb/hr.**

**Performance Step: 8** Average the A and B Feedwater Temperatures loops together.

**Standard:** Average Feedwater temperature calculated.

**Comment:** **Approximately 310°F.**

**Performance Step: 9** Using steam tables, determine Feedwater enthalpy.

**Standard:** Feedwater enthalpy is recorded.

**Comment:** **H<sub>f</sub> 310°F ≈ 280 BTU/lb.**



## PERFORMANCE INFORMATION

- √ **Performance Step: 10** Determine Core Thermal Power  $3.7 \times (1189.6 - 280) / 3.413 + 9.02 = 995.07$
- Standard:** Core Thermal Power is calculated [995 MWth (+/- 50 mw)].
- Comment:** **Provide candidate with baseline data which shows CTP at 968 on previous short form heat balance (baseline).**
- √ **Performance Step: 11** Compares data obtained above with baseline data provided. Baseline data will show that CTP was 968 MWth
- Standard:** Compares data and determines that reactor power must be reduced by ~27 MWth (995 – 968) with recirc flow. PNPS step 7.5[2](c)and(d)
- Examiner Note:**
- Comment:**
- Terminating Cue:** **When the candidate has completed the comparison and determined that CTP must be reduced, the examiner shall inform him/her that the task is complete.**

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

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



SHORT FORM HEAT BALANCE

Date/Time 2-27-07 / ONE HOUR AGO

Performed By SRO

OPERATING DATA:

Item	Panel	Instrument	Reading	Units
① Feedwater Flow A	C905	FI-640-24A	<u>1.8</u>	MIb/hr
② Feedwater Flow B	C905	FI-640-24B	<u>1.8</u>	MIb/hr
③ Feedwater Temp A	C1	TR-3496A	<u>310</u>	°F
④ Feedwater Temp B	C1	TR-3496B	<u>310</u>	°F

CALCULATION:

NOTE

The circled numbers are item numbers; i.e., Total Feedwater Flow is equal to Item ① (Feedwater Flow A) plus Item ② (Feedwater Flow B).

⑤ Total Feedwater Flow: ① + ② 3.6 MIb/hr

⑥ Ave. Feedwater Temp:  $1/2(③ + ④)$  310 °F

⑦ Feedwater Enthalpy: Stm. Tables, ⑥ 280 Btu/lb

⑧ Core Thermal Power:  $⑤ \times \frac{(1189.6 - ⑦)}{3.413} + 9.02 =$  968.46 MWth

Comments:

CRS Craig T. Byrd

Date/Time 2-27-07 / 50 minutes ago



SHORT FORM HEAT BALANCE

Date/Time 2-27-07 / 1

Performed By SRO

OPERATING DATA:

Item	Panel	Instrument	Reading	Units
① Feedwater Flow A	C905	FI-640-24A	<u>1.8</u>	Mlb/hr
② Feedwater Flow B	C905	FI-640-24B	<u>1.9</u>	Mlb/hr
③ Feedwater Temp A	C1	TR-3496A	<u>310</u>	°F
④ Feedwater Temp B	C1	TR-3496B	<u>310</u>	°F

CALCULATION:

NOTE

The circled numbers are item numbers; i.e., Total Feedwater Flow is equal to Item ① (Feedwater Flow A) plus Item ② (Feedwater Flow B).

⑤ Total Feedwater Flow: ① + ② 3.7 Mlb/hr

⑥ Ave. Feedwater Temp:  $1/2(③ + ④)$  310 °F

⑦ Feedwater Enthalpy: Stm. Tables, ⑥ 280 Btu/lb

⑧ Core Thermal Power:  $⑤ \times \frac{(1189.6 - ⑦)}{3.413} + 9.02 =$  995.11 MWth

Comments:

$$3.7 \left( \frac{1189.6 - 280}{3.413} \right) + 9.02 = 995.11$$

CRS \_\_\_\_\_

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



VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2007 NRC JPM SRO A1s

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:

Plant conditions are as follows:

- The plant is at 50% power.
- Plant conditions are stable.
- The plant process computer is out of service.

## INITIATING CUE:

Perform a Short Form Heat Balance per PNPS 2.1.10. Compare with baseline heat balance and take any appropriate actions if required.



Facility: PILGRIM

Task No.:

Task Title: Verify Recombiner OperationJPM No.: 2007 NRC RO/SRO  
JPM A.2

K/A Reference: 2.1.25 2.8 / 3.1

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: \_\_\_\_\_ Actual Performance: X  
Classroom \_\_\_\_\_ Simulator X 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 plant is operating at 50% power. High hydrogen concentration is suspected downstream of the AOG Recombiners.

Task Standard: Determines recombinder delta-temperature indicates recombinder is overheated.

Required Materials: N/A

General References: PNPS 2.4.141

Initiating Cue: You have been directed to verify recombinder operation IAW PNPS 2.4.141. and identify any abnormal conditions.

**SRO ONLY** - Take appropriate actions for abnormal conditions, if any.

Time Critical Task: NO

Validation Time:



**SIMULATOR SETUP**

Initialize simulator to 50% power. Insert malfunction **OG05** from page gc0532. Allow the simulator to run until the hydrogen recorder AR-R603 on CP600 reads 2% hydrogen. Place Danger tags on the MO-9205 and MO-9204. Freeze the simulator. This JPM will be run concurrently with JPM A1r/s.



## PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

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

- √ **Performance Step: 1** Proceeds to PNPS 2.4.141 Section 4.2 - High Hydrogen Concentration Downstream of the Recombiners.
- Standard:** Enters PNPS 2.4.141 Section 4.2
- Comment:**
- 
- Performance Step: 2** Section 4.2 Step [1] - TRIP the ETS using "ETS SHUTDOWN" push button on Panel CP600.
- Standard:** Depresses "ETS SHUTDOWN" pushbutton
- Comment: CUE** **Simulator is in freeze. Once the PB is depressed, give cue that alarm window CP-600R-A10 "extended test system shutdown" is in alarm.**
- 
- √ **Performance Step: 3** Section 4.2 Step [2] - If both H2 analyzers are indicating greater than or equal to 4%....
- Standard:** Determines that they are not greater than 4%
- Comment:**



## PERFORMANCE INFORMATION

- √ **Performance Step: 4** Section 4.2 [3] - Verify recombiner operation for the power level being maintained by referring to Att. 1 or Att. 2 as applicable
- Standard:** Refers to Att. 1
- Comment: CUE** **If ATT.2 is used and they conclude it is within the prescribed limits for the current power level, direct use of Att. 1.**
- √ **Performance Step: 5** Evaluate recombiner delta-temperature utilizing Attachment 1 of PNPS 2.4.141.
- Standard:** Determines recombiner delta-temperature is approximately 80°F. Determines recombiner is questionable.
- Comment:** **Termination for RO ONLY, SRO continues to next step**
- Performance Step: 6** Direct placing the standby recombiner in service.
- Standard:** AOG will be directed to be bypassed IAW PNPS 2.2.106 while maintaining steam dilution and air purge through the recombiner and the charcoal beds
- Cue:** If the standby recombiner is directed to be placed in service, **"the 'B' recombiner is unavailable"**
- √ Direct maintaining steam dilution and air purge on the 'A' recombiner.
- Cue:** **An operator has been assigned to initiate air purge on 'A' recombiner and the charcoal beds.**
- Evaluator Note:** The candidate may indicate a power reduction is necessary when performing the following step. If so, it has been directed to the 905 operator.
- √ Direct bypassing the AOG system IAW PNPS 2.2.106
- Cue:** **An operator is bypassing AOG IAW PNPS 2.2.106**



## PERFORMANCE INFORMATION

**Performance Step: 7** Step 4.2 [5]a,b,c - whenever the H2 concentration downstream of the recombiner is greater than or equal to 2% continuously monitor...

**Standard:** Continuously monitors parameters at step 4.2[5] a,b,c at Panel CP 600.

**Comment:**

√ **Performance Step: 8** Step 4.2 [5]d,e - whenever the H2 concentration downstream of the recombiner is greater than or equal to 2% continuously monitor...

**Standard:** Directs a field operator to continuously monitor the parameters for recombiner operations locally at Panel C75.

**Comment:** SRO termination.

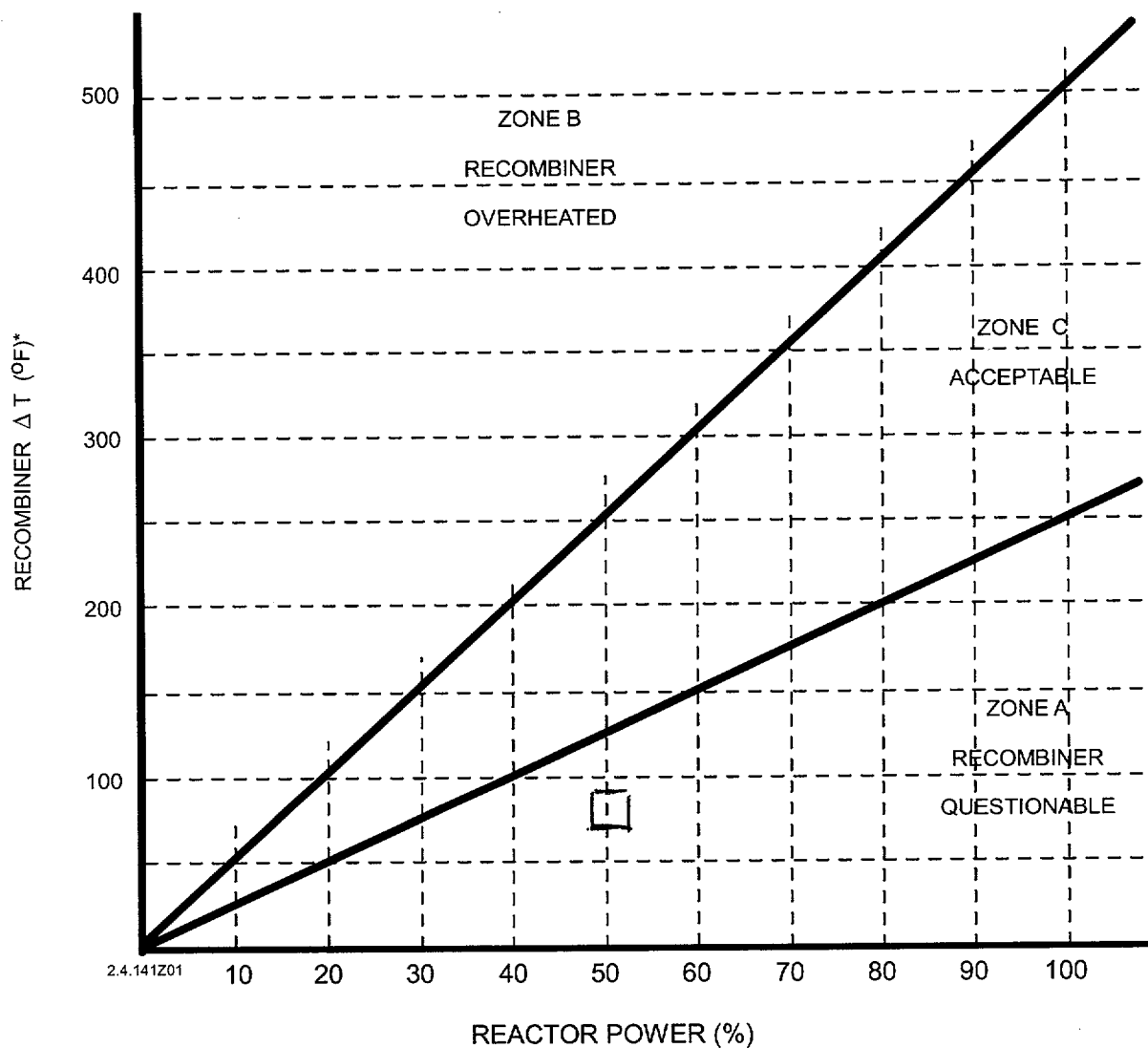
**Terminating Cue:** This JPM is complete.

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

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



PILGRIM NUCLEAR POWER STATION AUGMENTED OFFGAS SYSTEM  
RECOMBINER  $\Delta T$  VERSUS REACTOR POWER



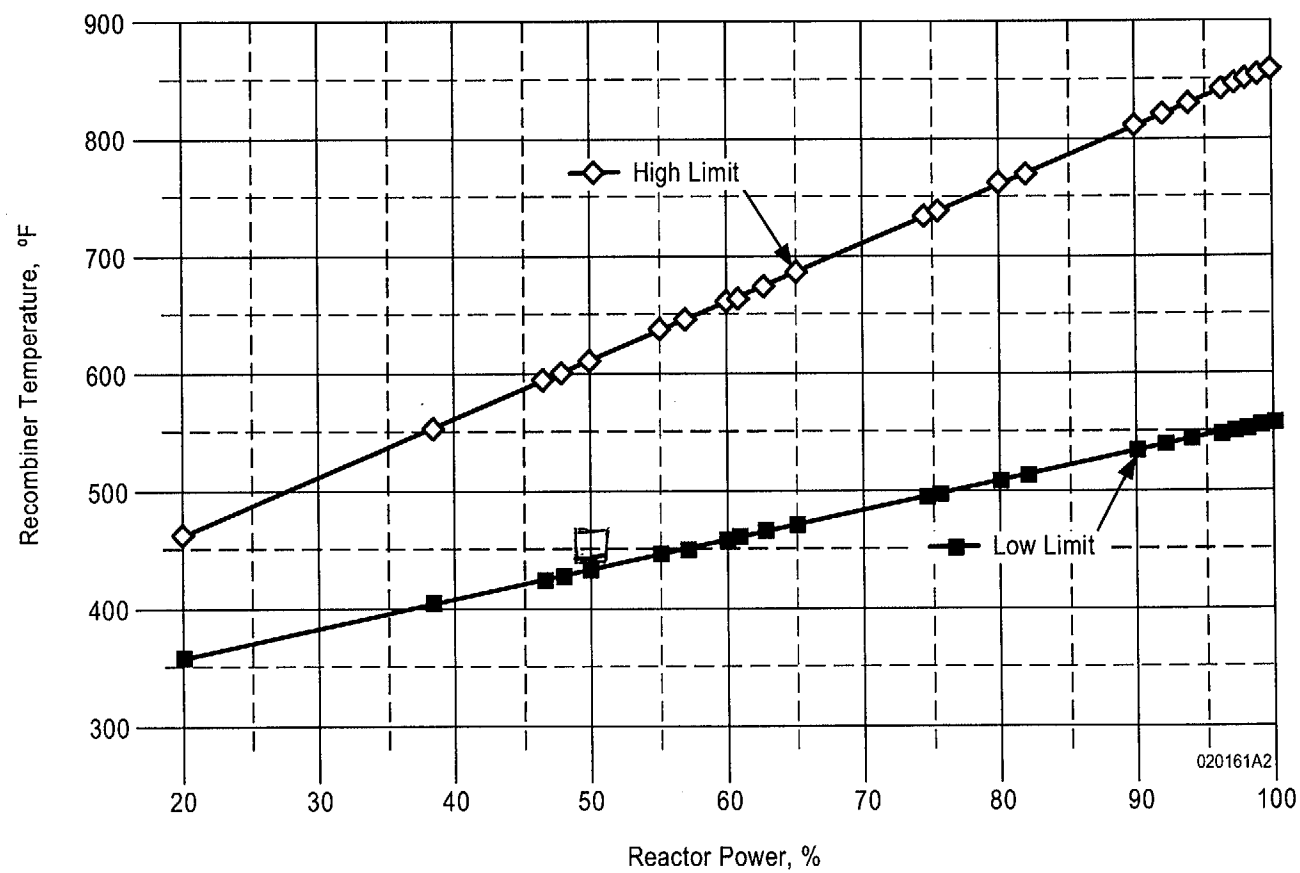
\*Recombiner Exit Temperature minus Preheater Exit Temperature



RECOMBINER TEMPERATURE VERSUS REACTOR POWER

High Limit, °F =  $360 + (5 \times \% \text{ Power})$

Low Limit, °F =  $310 + (2.5 \times \% \text{ Power})$





## VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM RO/SRO A.2

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 plant is operating at 50% power. High hydrogen concentration is suspected downstream of the AOG Recombiners.

## INITIATING CUE:

You have been directed to verify recombiner operation IAW PNPS 2.4.141 and identify any abnormal conditions.

**SRO ONLY** - Take appropriate actions for abnormal conditions, if any.



Facility: PILGRIM

Task No.: 299-03-04-010

Task Title: Conduct a Danger TagoutJPM No.: 2007 NRC JPM RO A3

K/A Reference:

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X    
Classroom \_\_\_\_\_ Simulator   X   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: Maintenance has determined that the spectacle flange on the RHR suction piping from the Fuel Pool Cooling system requires repair.

Task Standard: The operator shall prepare a tagout properly isolating the spectacle flange on the RHR suction piping from the Fuel Pool Cooling system with an isolation valve.

Required Materials: P&ID M231 and M241 sh. 2

General References: EN-OP-102

Initiating Cue: Prepare a tagout (SOMS is unavailable) to isolate the spectacle flange on the RHR suction piping from the Fuel Pool Cooling System.

Time Critical Task: NO

Validation Time:



**SIMULATOR SETUP**

N/A



## PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

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

**Performance Step: 1** Review the applicable sections of the procedure.  
**Standard:** Operator reviews the applicable section of the procedure.

**Evaluator's Note:** This task is covered in EN-OP-102.  
**Comment:**

**Performance Step: 2** Develop a tagout (SOMS is unavailable) which isolates the spectacle flange.  
√ **Standard:** Operator develops tagout which isolates the spectacle flange. Isolation points are required to be 1001-103, 19-HO-167 and 19-HO-186 (at the least). May also include drain valve 19-HO-122

**Evaluator's NOTE:** If drain valve is tagged, it must be sequenced after the other 3 blocking points.

**Comment:**

**Terminating Cue:** This JPM is complete.



PERFORMANCE INFORMATION

**Terminating Cue:**            **This JPM is complete.**

**STOP TIME:**            \_\_\_\_\_

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



VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2007 NRC JPM SRO A3

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: Maintenance has determined that the spectacle flange on the RHR suction piping from the Fuel Pool Cooling system requires repair.

INITIATING CUE: Prepare a tagout to isolate the spectacle flange on the RHR suction piping from the Fuel Pool Cooling System.



Facility: PILGRIM Task No.: 299-03-04-010

Task Title: Conduct a Danger Tagout /  
Temporarily Lift Tags JPM No.: 2007 NRC JPM SRO  
A3s

K/A Reference:

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: \_\_\_\_\_ Actual Performance: X  
Classroom \_\_\_\_\_ Simulator X 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 spectacle flange on the RHR suction piping from the Fuel Pool Cooling system requires repair and has been tagged.

Task Standard: The operator shall review a tagout properly isolating the spectacle flange on the RHR suction piping from the Fuel Pool Cooling system with an isolation valve. Following this task, the operator will prepare a temporary lift allowing manual cycling of 19-HO-167.

Required Materials: P&amp;ID M231 and M241 sh. 2

General References: EN-OP-102

Initiating Cue: Review the tagout isolating the spectacle flange on the RHR suction piping from the Fuel Pool Cooling System. Determine that it is an adequate tagout. **THEN**, review a temporary lift that maintenance has prepared and determine what needs to be done prior to you approving the temporary lift.

Time Critical Task: NO



**SIMULATOR SETUP**

N/A



## PERFORMANCE INFORMATION

*(Denote Critical Steps with a check mark)*

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

**Performance Step: 1** Review the applicable sections of the procedure.  
**Standard:** Operator reviews the applicable section of the procedure.

**Evaluator's Note:** This task is covered in EN-OP-102.  
**Comment:**

**Performance Step: 2** Review the temporary lift to permit cycling the 19-HO-167.  
**Standard:** Operator reviews tagout which isolates the spectacle flange. Isolation points should be 1001-103, 19-HO-167 and 19-HO-186, and depressurizes and drains the affected piping through 19-HO-122.

**Evaluator's Cue:** When the operator has reviewed the tagout, cue him/her that the tagout is hung, the spectacle flange has been cut out and maintenance has installed a new spectacle flange per their MR. 19-HO-167 now needs to be manually cycled for another MR.

**Evaluators Note:** The candidate must approve the temporary lift maintenance has prepared to allow cycling the valve. Ensure that the RHR or FPC system cannot be pumped out the opening.

**Comment:**

**Performance Step: 3** Reviews tagouts to determine who needs to accept the Temporary Lift.

√ **Standard:** Operator determines that all Tagout Holders and Work Order currently signed on to the tagout need to accept the Temporary Lift.

**Comment:**



## PERFORMANCE INFORMATION

The following two steps can be performed in any order.

**Performance Step: 3** Obtains required signatures to permit the temporary lift

√ **Standard:** Operator obtains required signatures

**Examiner NOTE:**

Role Play as various personnel required to be contacted for the temp lift approval and signature.

Ensure applicant reviews tagout sheet which shows who signed the tagout as tagout holder. These will be the signatures required for the temp lift. Work order holders who have already signed off the tagout are not required to accept the Temp. Lift.

The following names of tagout holders must be included: Kristian, Ohrenberger(4)

The following names of work order holders must be included: Hogan, Callahan, Ohrenberger(4), Felliciano, Burt, Holmes. NOT Podolski.

**Comment:**

**Performance Step: 4** Operator checks temporary lift tag removal sequence to ensure plant and industrial safety.

√ **Standard:** Operator reviews the temporary lift to ensure no undesirable system responses, boundary changes for vent/drain path impact, Tech Spec impact, and removal sequence.

**Comment:**

**Terminating Cue:** This JPM is complete.

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

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



## VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM SRO A3s

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: Maintenance has determined that the spectacle flange on the RHR suction piping from the Fuel Pool Cooling system requires repair.

INITIATING CUE: Review the tagout isolating the spectacle flange on the RHR suction piping from the Fuel Pool Cooling System. Determine that it is an adequate tagout. **THEN**, review a temporary lift that maintenance has prepared and determine what needs to be done prior to you approving the temporary lift.



Facility: PILGRIM

Task No.:

Task Title: RCA Entry and Response to ADA  
AlarmJPM No.: 2007 NRC JPM RO A9

K/A Reference: G2.3.10 2.9/3.3

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

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

**READ TO THE EXAMINEE**

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

Initial Conditions: You have been directed to make an RCA entry to support shifting CRD Flow Control Valves.

Evaluator Note: This Admin JPM is designed to be performed in conjunction with JPM P-3, Shift Flow Control Valves.

- The reactor is operating at 92% power.
- The in-service CRD Flow Control Valve, FCV-302-6A has failed CLOSED.

Task Standard: A RCA entry shall be made to shift CRD flow Control Valves. The operator shall demonstrate compliance with all critical requirements for an RCA entry and response to an Accumulated Dose Alarm.

Required Materials: None

Note: all required materials are available at the access point.

General References: EN-RP-100, Radworker Expectations  
EN-RP-101, Access Control For Radiologically Controlled Areas

Initiating Cue: Make a RCA entry to shift Flow Control Valves. Radiological Control practices and procedures will be evaluated.



Time Critical Task: NO

Validation Time: N/A – Refer to CRD flow control valve JPM.



**SIMULATOR SETUP**

N/A



## PERFORMANCE INFORMATION

*(Denote Critical Steps with a check mark)*

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

- √ **Performance Step: 1**      Operator reviews radiological survey maps
- Standard:**      Operator locates and reviews appropriate radiological survey maps for areas to be entered. At a minimum the CRD mezzanine area should be reviewed.
- Comment:**      **Survey maps are located at the Red Line**
- 
- √ **Performance Step: 2**      Reviews applicable RWP
- Standard:**      Operator locates and reviews requirements of RWP.
- Comment:**      **RWP 07-5002 is the expected RWP based on task to be performed.**
- 
- Evaluator Note:**      Step 3 may not be performed if the operator has successfully passed a hearing test. A "yellow or blue dot" on the operator's security badge signifies that the operator HAS NOT passed the hearing test and MAY require a 'screamer' for the RCA entry.
- 
- Performance Step: 3**      Checks in with RP personnel to determine if "SCREAMER" is required based on task to be performed.
- Standard:**      Operator informs RP of the task to be performed and whether a screamer is required.
- Comment:**      **Given that the CRD flow control valves are in a high noise area, it is expected that RP will issue the screamer if the operator has previously failed the hearing test.**



## PERFORMANCE INFORMATION

- √ **Performance Step: 4** Operator logs into RCA via computer terminal.  
**Standard:** Utilizing the appropriate bar code logs into RCA.

**Comment:**

**Evaluator Note:** RWPs are legal documents. Rad workers are required to be knowledgeable of RWP requirements. The evaluator should probe the operator in one or more of the following areas to ascertain the operator's familiarity with the RWP:

1. Electronic dosimeter dose rate alarm
2. Electronic dosimeter accumulated dose alarm
3. General knowledge of radiological conditions in areas to be entered.

**Performance Step: 5** Operator checks electronic dosimeter periodically to verify operation and to remain cognizant of dose.  
**Standard:** Approximately every 10 to 15 minutes while in RCA

**Comment:**

**Evaluator Note:** The following cue should be provided following the conclusion of the CRD flow control valve shift.

**Evaluator Cue:** The Accumulated Dose Alarm has just alarmed on your electronic dosimeter.



## PERFORMANCE INFORMATION

- √ **Performance Step: 5** Operator immediately initiates actions to exit the RCA.  
**Standard:** Operator takes action to exit the RCA and reports to RP.

**Comment:**

**Terminating Cue:** When the candidate has at a minimum, initiated steps to exit the RCA then Cue, "this JPM is complete".

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

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



Job Performance Measure No.: 2007 NRC JPM RO/SRO A9

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

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

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



Facility: PILGRIM Task No.: 015-05-05-003

Task Title: Perform Dose Assessment Using  
Dapar Software JPM No.: 2007 NRC JPM SRO  
A5

K/A Reference: EK1.02 4.2 / 4.4

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: \_\_\_\_\_ Actual Performance: X  
Classroom \_\_\_\_\_ Simulator X 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 LOCA has occurred. The Emergency Plan is activated. Today is Wednesday, July 7<sup>th</sup>. Weather is sunny with no chance of rain. You are required to perform a Dose Assessment and make Protective Action Recommendations.

Task Standard: Protective Action Recommendations shall be completed without assistance using the DAPAR software. The dose assessment shall be accomplished in accordance with EP-IP-300. There shall be no failure of any critical elements.

Required Materials: Computer with DAPAR software installed.

General References: EP-IP-300, Revision 2B

Initiating Cue: Perform an offsite dose assessment using the DAPAR computer software in accordance with EP-IP-300. Utilize the available Met tower and Main Stack high range effluent monitor data as is stated in the supplied Data Sheet to perform your dose assessment. Inform me when you have determined if any subareas are required to be evacuated based on the dose assessment."



Time Critical Task: NO

Validation Time: 10 minutes



**SIMULATOR SETUP**

NONE. This JPM will be performed using the supplied Data Sheet. No simulator data will be required.



*(Denote Critical Steps with a check mark)*

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

**Performance Step: 1** Review the applicable sections of the procedure  
**Standard:** Operator reviews the applicable section of the procedure.

**Evaluator's Note:**

- **This task is covered in EP-IP-300 section 5.0.**
- **All functions are located on the control room dose assessment computer unless noted.**
- **All critical steps must be performed in order unless otherwise noted.**

**Comment:**

**Performance Step: 2** If the computer is OFF, turn the computer ON. After the initial diagnostic checks the Windows Program Manager window will appear with the "DAPAR2.1" program group open on the workspace. DAPAR can be chosen from the Window "DAPAR2.1" program group by double clicking the mouse on the DAPAR icon.

**Standard:**

- Operator turns the computer ON, if it is not already on.
- Operator double-clicks the mouse on the DAPAR icon.

**Evaluator's Note:** Computer is ON.

**Evaluator's Note:** DAPAR is started.

**Comment:**

**Evaluator's Note:** Introduction screen appears.

**Comment:**



**Performance Step: 3**

The introduction screen shows the application version and directs program flow to the desired assessment method. The "Quick Assessment" option is designed for use in the control room. The "Full Assessment" option is designed for use by a qualified dose assessment engineer. Four methods of dose assessment are available; monitored release, containment leakage/failure, field team analysis, and release point sample analysis. In the case of "Full Assessment", multiple assessments can be performed simultaneously during a session. Once an assessment option is selected, the introduction screen cannot be recalled without quitting the application and beginning a new session.

**Standard:**

Operator selects "Quick Assessment" option.

**Evaluator's Note:**

**Quick Assessment screen appears.**

**Comment:**



## PERFORMANCE INFORMATION

**Performance Step: 12** Quick assessment operation and calculation is identical to the full assessment method for a monitored release, but utilizes default release path and core damage assumptions for the determination of offsite doses. Default values incorporating a design basis LOCA accident are applied to allow a rapid assessment from within the control room during situations involving a monitored release. The quick assessment option takes monitor release and meteorological information inputs to determine a protective action recommendation. Information is entered directly into the appropriate text box or by selecting a choice from a group of option buttons. The quick assessment option window also contains an area for main application functions called the command bar. Base information is grouped into areas, release information and meteorological data.

**Standard:** Operator enters the following information to complete the Quick Assessment screen:

**Evaluator's Note:** This data is collected from the supplied Data Sheet.

**Evaluator's Note:** DAPAR accepts the following information until the PARs Command Button is enabled.

**Standard:**

- Monitor – Main Stack is selected

**SAT / UNSAT**

**Standard:**

- Range – High Range is selected

**SAT / UNSAT**

√ **Standard:**

- Effluent Reading from Data Sheet – 300R/hr

**SAT / UNSAT**

**Standard:**

- Vent Flow Rate – automatically sets to 4000 scfm

**SAT / UNSAT**

√ **Standard:**

- Hours After S/D – 1:15 from Data Sheet

**SAT / UNSAT**

**Standard:**

- Tower Used – 220' from Data Sheet

**SAT / UNSAT**



## PERFORMANCE INFORMATION

**Standard:**

- Wind Speed – 6 mph from data sheet

**SAT / UNSAT**✓ **Standard:**

- Wind Direction – from 90°

**SAT / UNSAT****Standard:**

- Delta "T" – 1.6°F

**SAT / UNSAT****Standard:**

- Stability Class – auto loads from previous data entered

**Evaluator's Note:****Should be Stability Class 'F'****SAT / UNSAT****Standard:**

- Weather Conditions – this is all provided in the initiating cue
  - Time of Year – Summer (July 7<sup>th</sup>)
  - Time of Week – Mid-week (Wednesday)
  - Time of Day – in the summer there is no choice (all day)
  - Conditions – Sunny, no chance of rain

**Standard:**

- Release Duration – 5 hours 55 minutes from Data Sheet

**SAT / UNSAT****Standard:**

Operator clicks on the PARs Command Button.

**Evaluator's Note:****Protective Action Recommendation screen appears.****SAT / UNSAT****Comment:**



## PERFORMANCE INFORMATION

**Performance Step: 13**

The Protective Action Recommendation window evaluates the downwind dose estimate in relation to the protective action guides. The window is divided into three sections; key information, geographic evacuation illustration, and downwind radiological conditions. The key information section shows the assessment method utilized to generate the PARs, the current offsite evacuation conditions, meteorological data, and the release duration. The geographic evacuation illustration outlines the subareas within the ten mile EPZ. Subareas in which the projected dose exceeds the protective action guides are shaded to indicate an evacuation recommendation. Downwind radiological conditions provides information in tabular format. Affected subareas and projected doses are given for the three rings surrounding the site. Dose information is color coded to indicate the projected exposure for whole body and thyroid under unprotected and sheltered conditions. A value highlighted in red indicates a whole body dose in excess of 5 Rem and a thyroid dose in excess of 25 Rem. A value highlighted in yellow indicates a whole body dose from 1 to 5 Rem and a thyroid doses from 5 to 25 Rem. Green values indicate whole body doses less than 1 Rem and thyroid doses less than 5 Rem. A command options section is available to allow movement and provide functions within the PAR window.

✓ **Standard:**

Operator determines subareas 6, 7, 8, and 11 require evacuation in addition to subareas 1, 3 and 12.

**Evaluator's Note:**

**Subareas 1, 3, 6, 7, 8, 11 and 12 are recommended for evacuation by DPAR program.**

**Standard:**

Operator informs evaluator that the assigned task is complete.

**Comment:****Terminating Cue:**

**This JPM is complete.**

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



VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2007 NRC JPM SRO A5

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 LOCA has occurred. The Emergency Plan is activated. Today is Wednesday, July 7<sup>th</sup>. Weather is sunny with no chance of rain. You are required to perform a Dose Assessment and make Protective Action Recommendations.

## INITIATING CUE:

Perform an offsite dose assessment using the DAPAR computer software in accordance with EP-IP-300. Utilize the available Met tower and Main Stack high range effluent monitor data as is stated in the supplied Data Sheet to perform your dose assessment. Inform me when you have determined if any subareas are required to be evacuated based on the dose assessment."



## Dose Assessment Results

Time: 15:15 Date: 2/9/07

Assessment Method:

Monitor Reading (Quick)

Conditions:

- 1) Summer      3) All Day  
2) Midweek    4) Good

Stability Class:

F

Wind Direction (from):

090°

Wind Speed (mph):

6.0

Release Duration:

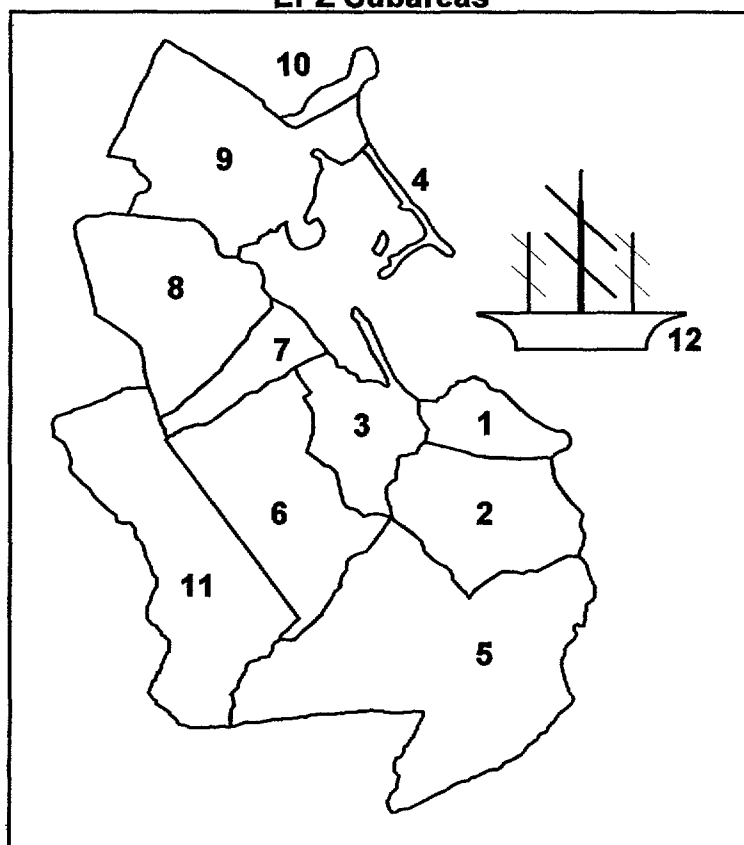
5:55

### PAGS

PAGs are defined as:

- 1) >1 Rem TEDE  
2) >5 Rem CDE Thyroid

### EPZ Subareas



PAGS Exceeded In Subareas:

1

2

3

4

5

6

7

8

9

10

11

12

### Affected Subarea Dose Tables

	Affected Subareas	(Dose in Rem)	TEDE	CDE Thyroid
<b>Ring 1</b> (0-2 miles)	1, 12	No Protection: Sheltered:	3.40E+00 2.98E+00	1.51E+01 1.26E+01
<b>Ring 2</b> (2-5 miles)	3	No Protection: Sheltered:	7.44E+00 6.53E+00	3.32E+01 2.76E+01
<b>Ring 3</b> (5-10 miles)	6, 7, 8, 11	No Protection: Sheltered:	1.39E+01 1.22E+01	6.19E+01 5.14E+01

### Group Release Rates (Ci/sec)

Noble Gases: 2.39E+03

Halogenes: 8.74E+00

Particulates: 2.87E+00



## ATTACHMENT 1

### METEOROLOGICAL AND RADIOLOGICAL DATA FOR DOSE ASSESSMENT

• RR-1001-608, Main Stack Effluent Recorder (C170)	I/O:	293 R/hr
• RI-1001-608, Main Stack Effluent Indicator (C170)	I/O:	300 R/hr
• # Vent Flow Rate	CUE:	"4000 scfm"
• #Hours After S/D	CUE:	"1:15"
• Tower Used	I/O:	220"
• Wind Speed	I/O:	6 MPH
• Wind Direction	I/O:	90° at 220'
• MT1 Temp Recorder Point 1 (Delta "T")	I/O:	1.6°F
• MT1 Temp Recorder Point 2	I/O:	78°F
• # Release Duration	CUE:	"5.55"