Facility: Peach Bottom Unit 2 & 3		Date of Examination: Week of Feb. 5, 2001
Examination Level (circle one): RO / **SRO**		Operating Test Number: SRO - 1
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Procedure Change JPM	Review and approve a Temporary Procedure Change - Alternate Path (JPM)
	Parameter Verification JPM	Perform a Manual Heat Balance (JPM)
A.2	Equipment Control JPM	Manually complete required Technical Specification Action Log entries for inoperable equipment (JPM)
A.3	Control of Radiation Releases JPM	Review and approve a Liquid Radwaste Discharge – Alternate Path (JPM)
A.4	Emergency Classification JPM	Make a Protective Action Recommendation (PAR) (JPM)

PECO NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 3421130302 K/A: 2.1.2

URO: 4.3 SRO: 4.2

TASK DESCRIPTION: Review a Temporary Procedure Change.

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Copy of ST-O-080-520-2 marked-up with a proposed Temporary Change to step 6.1.2 for reactor vessel flange and head flange to be greater than 75 deg. F.

2. A-3 Rev. 18, Temporary Changes to Procedures and Partial Procedure Use.

3. Copy of Exhibit A-3-3 Rev. 0, with Part A and B (for the SQR) filled out.

C. REFERENCES

1. ST-O-080-520-2 Reactor Vessel Head Flange Temperature Surveillance.

2. A-3 Rev. 18, Temporary Changes to Procedures and Partial Procedure Use.

D. TASK STANDARD

1. Satisfactory task completion of this task is indicated when the Shift Management review has been completed , the errors in the procedure have been identified and the Temporary Change is disapproved pending resolution of the problems.

2. Estimated time to complete: 10 minutes Non-time critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to review a Temporary Change, using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A refuel outage is in progress on Unit 2.

2. Refueling has been completed, and reactor vessel reassembly is in progress.

3. An industry notification has been sent to Peachbottom concerning the accuracy and range of temperature elements associated with the reactor vessel head flange.

4. I & C has contacted operations with this concern and the recommendation to not allow vessel flange and head flange temperature to go below 75 deg. F.

5. A Temporary Change has been prepared for ST-O-080-520-2 "Reactor Vessel Head Flange Temperature Surveillance" step 6.1.2, to ensure reactor vessel flange and head flange temperature is greater than 75 deg. F.

G. INITIATING CUE

You have been assigned as the SRO Reviewer for the temporary change to the surveillance procedure. Review and approve the temporary change to ST-O-080-520-2, "Reactor Vessel Head Flange Temperature Surveillance".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Review ST-O-080-520-2 temporary procedure change.	P	Review the procedure change and compare it to the Temporary Change Screening Matrix criteria in exhibit A-3-1.
*2	Identify a change of intent. Note: this is a change to the acceptance criteria in the test.	P	Identify that the proposed change to step 6.1.2 constitutes a "change of intent" in accordance with exhibit A-3-1.
*3	Disapprove the procedure change. (Cue: Acknowledge the disapproval.)	P	Disapprove the temporary procedure change.

***** NOTE *****

Terminate the exercise when the activities listed above are performed.

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the review of ST-O-080-520-2 has been completed, and the temporary procedure change is disapproved, terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. A refuel outage is in progress on Unit 2.

2. Refueling has been completed, and reactor vessel reassembly is in progress.

3. An industry notification has been sent to Peachbottom concerning the accuracy and range of temperature elements associated with the reactor vessel head flange.

4. I & C has contacted operations with this concern and the recommendation to not allow vessel flange and head flange temperature to go below 75 deg. F.

5. A Temporary Change has been prepared for ST-O-080-520-2 "Reactor Vessel Head Flange Temperature Surveillance" step 6.1.2, to ensure reactor vessel flange and head flange temperature is greater than 75 deg. F.

INITIATING CUE

You have been assigned as the SRO Reviewer for the temporary change to the surveillance procedure. Review and approve the temporary change to ST-O-080-520-2, "Reactor Vessel Head Flange Temperature Surveillance".

PORC	NO
SQR	YES
QR	NO
0.59	NO
esp. Mgr.	YES

TEMPORARY CHANGE FORM

PART A - INITIATION | **TC NUMBER -**

1. UNIT APPLICABILITY: 2 ☒ 3 ☐ Common ☐

2. TC CLASSIFICATION (Select one box):
   Conditional (C) (See NOTE) ☐
   Permanent Rev (R) _____ ☐
   Single Use (S) _____ ☒

3. PROCEDURE NUMBER: ST-O-080-520-2 REV: 2

4. PROCEDURE TITLE: REACTOR VESSEL HEAD FLANGE TEMPERATURE SURVEILLANCE.

5. PAGES AFFECTED: 4, 6

6. Does this TC supersede or replace existing TCs? NO ☒ YES ☐
   If YES, list TCs to be DELETED and removed from distribution: _____

NOTE: Enter the activity No. which will restore system/ component & eliminate need for Conditional TC.

(Circle One)
A/R or W/O No: _____

7. TC DESCRIPTION: CHANGE REACTOR VESSEL FLANGE AND HEAD FLANGE RECORDED TEMPERATURE TO GREATER THAN 75°F.

8. REASON for TC: INDUSTRY NOTIFICATION

9. INITIATOR: REACTOR OPERATOR (print name) / RO (initial) 2/xx/01 (date) OPS (work group) 4687 (ext)

PART B - REVIEW & APPROVAL

ITEMS 1 thru 4 MUST BE YES TO OBTAIN TC APPROVAL.

	SQR (Circle One)		SRO (Circle One)	
1. ARE THE CHANGES IN ACCORDANCE WITH THE INTENT OF THE PROCEDURE per Exhibit A-3-1?	(Yes)	No	Yes	No
2. Is the change TECHNICALLY AND OPERATIONALLY CORRECT?	(Yes)	No	Yes	No
3. Is the change SAFE from the standpoint of NUCLEAR & INDUSTRIAL SAFETY?	(Yes)	No	Yes	No
4. Is the change IN CONFORMANCE WITH TECHNICAL SPECIFICATIONS?	(Yes)	No	Yes	No
5. Is the CLASSIFICATION of the Temporary Change PROPERLY ESTABLISHED?	(Yes)	No	Yes	No
*6. Are TCs required to OTHER PROCEDURES (e.g., other unit) as a result of this change?	Yes	(No)	Yes	No
*7. Are SPECIAL ASSIGNMENTS or TRAINING required to implement this TC?	Yes	(No)	Yes	No
8. Does potential Ops Impact of this TC warrant IMMEDIATE DISTRIBUTION to MCR procedures?			Yes	No

*If answered YES, explain here: _____

NOTE: The SQR and SRO shall verify that the above steps are completed prior to signature.

STATION QUALIFIED REVIEWER: STATION QUALIFIED REVIEWER (print name) / SQR (initial) 2/xx/01 (date)

SENIOR REACTOR OPERATOR: _____ (print name) / _____ (initial) _____ (date)

TEMPORARY CHANGE FORM

ART C - TC ADMINISTRATOR CHECK | **TC NUMBER -**

1. All Temporary Change Log entries are complete and TC number assigned.
2. DATE BY WHICH THE TEMPORARY CHANGE MUST BE ACTED UPON BY THE SQR/RS - - - - - - - - - - - - - - - - - - 14TH DAY: ______
   (14 days after the implementation date)

TC ADMINISTRATOR: ______________________ / __________ __________
(print name) (initial) (date)

PART D - POST IMPLEMENTATION REVIEW AND APPROVAL

1. Did the TC meet the requirements of A-3 and Exhibit A-3-1? YES ☐ NO ☐
2. If the answer to number 1 is YES, then enter the required date for permanent revision or the expected removal date for conditional. Required by: ______
3. If the answer to step 1 is NO, then the TC shall be disapproved

3a. SQR: ______________________ / __________ __________
(print name) (initial) (date)

APPROVAL RECOMMENDED: YES ☐ NO ☐

3b. RS: ______________________ / __________ __________
(print name) (initial) (date)

APPROVED: YES ☐ NO ☐

4. If Temporary Change is NOT approved, describe CORRECTIVE ACTION to resolve matter AND complete DS box below to remove the TC from distribution:

DS, pull from distribution: YES ☐

PECO NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2830090101 K/A: 2.1.20

URO: 4.3 SRO: 4.2

TASK DESCRIPTION: Perform a Manual Heat Balance

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Calculator

C. REFERENCES

1. RE-C-05, Rev. 1, "Manual Heat Balance"

D. TASK STANDARD

1. Satisfactory task completion is indicated when Core Thermal power has been calculated and recorded.

2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to calculate a manual heat balance using the appropriate procedure. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. You have been directed to perform a manual heat balance.

2. The "Manual Heat Balance" procedure RE-C-05, is in progress and is complete through step 6.2.

3. The Reactor Engineer has determined that Data Sheet #1 (PMS Computer Data) is to be used for plant data.

G. INITIATING CUE

Perform a manual heat balance in accordance with RE-C-05, "Manual Heat Balance".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure RE-C-05.	P	A copy of procedure RE-C-05 is obtained.
*2	Complete the Preliminary Calculations Worksheet item #16 for feedwater flow.	P	Calculate feedwater flow as 10.26 MLB/HR by adding Data Sheet #1 items 1, 2, and 3. 0 + 5.13 + 5.13 = 10.26 MLB/HR
*3	Complete the Preliminary Calculations Worksheet item #17 for feedwater temperature.	P	Calculate feedwater temperature as 360 deg. F by adding Data Sheet #1 items 4, 5, 6, & 6a, and dividing by four. 360 + 360 + 360 + 360 = 1440/4 = 360
*4	Complete the Preliminary Calculations Worksheet item #23 for total Reactor Water Cleanup (RWCU) flow.	P	Calculate RWCU flow as .144 MLB/HR by adding Data Sheet #1 items 12 & 13. .072 + .072 = .144 MLB/HR
*5	Complete the Preliminary Calculations Worksheet item #24 for CRD flow.	P	Determine CRD flow as .030 MLB/HR by inputting the computer point value for item #7.
*6	Complete the Preliminary Calculations Worksheet item #9A for reactor pressure.	P	Calculate RX pressure as 1000 psia by adding 14.7 psi to Data Sheet #1 item #9. 14.7 + 985.3 = 1000 psia
7	Sign the Preliminary Calculation Worksheet complete.	P	Initial and date step 6.3.
*8	Complete the Steam Table Data sheet item #18.	P	Calculate feedwater Enthalpy h_{fw} as 333.57 BTU/LB by plotting feedwater temperature (item #17) and RX Pressure (item #9A) on Appendix 'B'.
*9	Complete the Steam Table Data sheet item #19.	P	Calculate saturated steam Enthalpy h_{st} by plotting RX Pressure (item #9A) on Appendix 'A'. An interpolation of these numbers will result in 1191.71 BTU/LB (acceptable range from 1186.4 to 1193.2 BTU/LB).

STEP NO	STEP	ACT	STANDARD
*10	Complete the Steam Table Data sheet item #20.	P	Calculate the Enthalpy of Reactor Water Cleanup (RWCU) h_{cuo} from the core as 499.69 BTU/LB, by plotting RWCU inlet temp. (item #14) and RX Pressure (item #9A) on Appendix 'B'
*11	Complete the Steam Table Data sheet item #21.	P	Calculate the Enthalpy of Reactor Water Cleanup (RWCU) h_{cui} into the core as 375.96 BTU/LB, by plotting RWCU inlet temperature (item #15) and RX Pressure (item #9A) on Appendix 'B'.
*12	Complete the Steam Table Data sheet item #22.	P	Calculate the Enthalpy of CRD h_{crd} as 80.57 BTU/LB, by plotting RWCU inlet temp. (item #8) and RX Pressure (item #9A) on Appendix 'B'.
13	Sign the Steam Table Data sheet complete.	P	Initial and Date step 6.4.
*14	Complete the Calculation Worksheet item #25 for the mass flow rate of steam.	P	Calculate the mass flow rate of steam as 10.29 MLB/HR by adding items #16 and 24 from the Preliminary Calculations worksheet. 10.26 + .030 = 10.29MLB/HR
*15	Complete the Calculation Worksheet item #26 for the energy of the steam.	P	Calculate the steam energy rate as 3592.97 MW, by adding multiplying items #25 x #19 x 0.293. 10.29 x 1191.71 x .293 = 3592.97 MW
*16	Complete the Calculation Worksheet item #27 for the RWCU energy rate out of the core.	P	Calculate the RWCU energy rate out of the core as 21.08 MW, by multiplying items #23 x #20 x 0.293. .144 x 499.69 x 0.293 = 21.08 MW
*17	Complete the Calculation Worksheet item #28 for the feedwater energy rate.	P	Calculate the feedwater energy rate as 1002.77 MW, by multiplying items #16 x 18 x 0.293. 10.26 x 333.57 x 0.293 = 1002.77 MW

STEP NO	STEP	ACT	STANDARD
*18	Complete the Calculation Worksheet item #29 for the CRD energy rate.	P	Calculate the CRD energy rate as 0.71 MW, by multiplying items #24 x 22 x 0.293. .030 x 80.57 x 0.293 = 0.71 MW
*19	Complete the Calculation Worksheet item #30 for the RWCU energy rate into the core.	P	Calculate the RWCU energy rate into the core as 15.86 MW, by multiplying items #23 x 21 x 0.293. .144 x 375.96 x 0.293 = 15.86 MW
*20	Complete the Calculation Worksheet item #31 for the power input from the Reactor Recirc. Pumps.	P	Calculate the Recirc. Pumps power input as 1.21 MW, by adding items #10 & 11, and multiplying by .948. (.64 + .64) x .948 = 1.21 MW
*21	Complete the Calculation Worksheet for the Core Thermal Power.	P	Calculate Core Thermal Power as 2595.60 MW, by adding items #26 & 27 + 2.1 and subtracting the sum of items #28, 29, 30, and 31. (3592.97 + 21.08 + 2.1) - (1002.77 + .71 + 15.86 + 1.21) = 2595.60 MW [Acceptable range of 2579 to 2601 MW depending on enthalpy identified in JPM step 9 (procedure step 19)].
*22	Record Core Thermal Power.	P	Record Core Thermal Power in step 6.6, and initial and date.

***** NOTE *****

Terminate the exercise when the activities listed above are performed.

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When Core Thermal Power has been calculated, the evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. You have been directed to perform a manual heat balance.

2. The "Manual Heat Balance" procedure RE-C-05, is in progress and is complete through step 6.2.

3. The Reactor Engineer has determined that Data Sheet #1 (PMS Computer Data) is to be used for plant data.

INITIATING CUE

Perform a manual heat balance in accordance with RE-C-05, "Manual Heat Balance".

Effective Date:

	LGS	PBAPS
PORC	No	No
SQR	Yes	Yes
NQA	No	No
50.59	Yes	Yes

PECO Energy Company
NUCLEAR GENERATION GROUP

MANUAL HEAT BALANCE

1.0 PURPOSE

This procedure provides methods of manually calculating Core Thermal Power using operating parameters.

2.0 SCOPE

This procedure applies to performing manual heat balance calculations by using PMS Computer Points or by using Control Room Instrumentation.

The thermal power of the reactor core is determined by a heat balance on the reactor vessel using operating data. Under steady-state conditions, the reactor vessel heat output is obtained as the difference between the total heat removed from the vessel minus the heat added in the flow streams returning to the vessel. In symbol form the equation is:

$$CTP = (Q_{st} + Q_{cuo} + Q_{rad}) - (Q_{fw} + Q_{crd} + Q_{cui} + W)$$

Where:

CTP = Core Thermal Power

Q_{st} = Steam Energy Rate

Q_{cuo} = Clean-up Energy Rate Out of Core

Q_{rad} = Radiative Losses and unmonitored losses

Q_{fw} = Feedwater Energy Rate

Q_{crd} = Control Rod Drive Cooling Water Energy Rate

Q_{cui} = Clean-up Energy Rate into Core

W = Power Input from Recirc. Pumps

3.0 SOURCES AND REFERENCES

3.1 SOURCES

3.1.1 General Electric Mechanical & Nuclear Training, Station Nuclear Engineering Manual, Volume I NEDO-24810C, September 1986 and Volume II (Process Computer),NEDE-24810, January 1987. (PBAPS)

3.1.2 NSS Design Specifications for Core Thermal Power (CTPSUB), SR-1. (PBAPS)

3.1.3 Station Nuclear Engineering Training Manual, Vol. II Process Computer. (LGS)

4.0 PREREQUISITES

4.1 Reactor should be in a steady state condition with Feedwater flow on scale.

SRO 2/xx/01
INITIALS/DATE

4.2 Verify that no Emergency Core Cooling System (ECCS) is in operation or is being functionally tested.

SRO 2/xx/01
INITIALS/DATE

4.3 IF this procedure is being performed to support RE-C-22, "Core Performance Monitoring Without the NSSS Software Computers", THEN data collection for both procedures shall be performed concurrently.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 PRECAUTIONS

5.1.1 This test should be performed under steady state reactor conditions to ensure a high degree of accuracy. Reactor transients will reduce the accuracy of the thermal power calculation.

5.1.2 Since steam flow measurements are not very accurate, steam flow should be determined used the following equation:

$$\dot{M}_{st} = \dot{M}_{fw} + \dot{M}_{crd}$$

Where:

$\dot{M}_{st}$ = Mass Flow Rate of Steam (MLB/HR)

$\dot{M}_{fw}$ = Mass Flow Rate of Feedwater (MLB/HR)

$\dot{M}_{crd}$ = Mass Flow Rate of Control Rod Drive Water (MLB/HR)

5.1.3 IF the cleanup system is in vessel to vessel mode (valves to condenser and waste surge tank are fully closed and dump flow indicating zero), THEN the core thermal power calculation should be accurate. IF the cleanup system is in dump mode (dumping to condenser), THEN the core thermal power calculation will give an artificially higher value. This is acceptable since the calculated core thermal power will be more conservative (higher) than the actual core thermal power.

5.1.4 Peer checking shall be performed for data collection.

5.2 LIMITATION

5.2.1 IF values obtained from control room indication are used, THEN there is no control room instrumentation to read the CRD temperature. A constant value of 120 °F should be used for the CRD temperature.

NOTE

WHEN required to verify the fulfillment of technical specifications, THEN this calculation will be performed by two different people OR performed by one AND checked by another.

6.0 PROCEDURE

NOTE

This procedure provides two different methods for performing the manual heat balance calculation. The two Tables attached (Data Sheet 1 - PMS Computer Points, and Data Sheet 2 - Control Room Instrumentation) may be completed for comparison or system analysis.

6.1 Have the Reactor Engineer determine which Table is to be used.

RE Data Sheet 1 -(PMS Computer Data)

_____ Data Sheet 2 -(Control Room Instrumentation)

SRO 2/xx/01
INITIALS/DATE

NOTE

IF this procedure is being performed to support RE-C-22, "Core Performance Monitoring Without the NSSS Software Computers", THEN data collection for both procedures shall be performed concurrently.

6.2 Obtain the values listed on the required Data Sheet.

SRO 2/xx/01 PC
INITIALS/DATE

6.3 Complete the Preliminary Calculations Worksheet.

INITIALS/DATE

6.4 Complete Data Sheet 3 - Steam Table Data.

INITIALS/DATE

6.5 Complete the attached Calculation Worksheet.

INITIALS/DATE

6.6 Record CTP from Calculation Worksheet below.

CTP = _____ (MW)

INITIALS/DATE

7.0 DOCUMENTATION

None

8.0 EXHIBITS

8.1 Data Sheet 1 - PMS Computer Data

8.2 Data Sheet 2 - Control Room Instrumentation

8.3 Preliminary Calculations

8.4 Data Sheet 3 - Steam Table Data

8.5 Core Thermal Power Calculation Worksheet

8.6 Appendix A - Steam Table

8.7 Appendix B - Compressed Water Table

9.0 TECHNICAL SPECIFICATIONS

No Technical specifications are applicable to this procedure; however, this procedure can be used to verify that rated power as defined in Tech Specs is not exceeded.

Data Collected on (select one):
LGS1 ____
LGS2 ____
PBAPS2 ____
PBAPS3 ____

DATA SHEET 1

PMS Computer Points

Item #	Parameter	LIMERICK		PEACH BOTTOM	
		Computer Point ID	Data	Computer Point ID	Data
1	Feedwater Flow A	K000NSS	MLB/HR	B*18R	0 MLB/HR
2	Feedwater Flow B	K001NSS	MLB/HR	B*19R	5.13 MLB/HR
3	Feedwater Flow C	K002NSS	MLB/HR	B*20R	5.13 MLB/HR
4	Feedwater Temp A1	K007NSS	°F	B*29R	360 °F
5	Feedwater Temp A2	K008NSS	°F	B*30R	360 °F
6	Feedwater Temp B1	K009NSS	°F	B*31R	360 °F
6a	Feedwater Temp B2	K010NSS	°F	B*32R	360 °F
7	CRD Flow	B020CM	MLB/HR	B*17R	.030 MLB/HR
8	CRD Temp	R000	°F	M*51R	110 °F
9	Reactor Pressure	E*234NSS	PSIG	B*13R	985.3 PSIG
10	A Recirc M/G Pwr	B031	MW	B*23R	0.64 MW
11	B Recirc M/G Pwr	B032	MW	B*24R	0.64 MW
12	RWCU Flow A	B024CM	MLB/HR	B*21R	.072 MLB/HR
13	RWCU Flow B			B*22R	.072 MLB/HR
14	RWCU Inlet Temp (Reac Wtr Out)	B047	°F	B*27R	510 °F
15	RWCU Outlet Temp (Reac Wtr In)	B048	°F	B*28R	400 °F

For LGS * = 1 for Unit 1 and 2 for Unit 2. For PBAPS * = 0 for Unit 2 and 3 for Unit 3.
Date Collected on _____ (Date) at _____ (Time) Person Collecting Data Initials RO

Data Collected on (select one):
LGS1 ____
LGS2 ____
PBAPS2 ____
PBAPS3 ____

DATA SHEET 2

Control Room Instrumentation

Item #	Parameter	LIMERICK			PEACH BOTTOM		
		Instrument	Location	Data	Instrument	Location	Data
1	Feedwater Flow A	FI06-*R604A	*0C603	MLB/HR	FR-*565A or **	*0C005A	MLB/HR
2	Feedwater Flow B	FI06-*R604B	*0C603	MLB/HR	FR-*565B or **	*0C005A	MLB/HR
3	Feedwater Flow C	FI06-*R604C	*0C603	MLB/HR	FR-*565C or **	*0C005A	MLB/HR
4	Feedwater Temp A	TI-03-*01 [46]	*0C668	°F	TR-*151A	*0C005A	°F
5	Feedwater Temp B	TI-03-*01 [47]	*0C668	°F	TR-*151B	*0C005A	°F
6	Feedwater Temp C	TI-03-*01 [48]	*0C668	°F	TR-*151C	*0C005A	°F
7	CRD Flow	FI-46-*R605	*0C603	GPM	FI-*-03-310	*0C005A	GPM
8	CRD Temp	N/A	N/A	120°F	N/A	N/A	120°F
9	Reactor Pressure	PI-42-*R605	*0C603	PSIG	PI-*-06-090A PI-*-06-090B	*0C005A *0C005A	Ave Press PSIG
10	A Recirc M/G Pwr	B32-*R624A	*0C602	MW	XI-*-02-184-024A	*0C004A	MW
11	B Recirc M/G Pwr	B32-*R624B	*0C602	MW	XI-*-02-184-024B	*0C004A	MW
12	RWCU Flow A	FI-44-*R609 ***	*0C602	GPM ***	FI-*-12-141A	*0C004A	GPM
13	RWCU Flow B				FI-*-12-141B	*0C004A	GPM
14	RWCU Inlet Temp (Reac Wtr Out)	TI-44-*R607 TSS44-1N601 [1]	*0C602	°F	TI-*-12-137 SS-*-12-142 (1)	*0C004A	°F
15	RWCU Outlet Temp (Reac Wtr In)	TI-44-*R607 TSS44-1N601 [4]	*0C602	°F	TI-*-12-137 SS-*-12-142 (4)	*0C004A	°F

* = Unit Identifier
** = Feedwater Flow may be obtained from the digital Feedwater Computer (measures in MLB/HR).
***= Only one parameter for LGS, Treat this value as equal to ((12) + (13)) on calc sheets.

Date Collected on _____ at _____ Person Collecting Data Initials _____
Date Time

PRELIMINARY CALCULATIONS

Feedwater Flow:

FW flow = (1) + (2) + (3)

FW flow = _____ (MLB/HR)
(16)

Feedwater Temperature:

FW Temp = $\frac{(4)+(5)+(6)+(6a)}{4}$ (Data Sheet 1) or $\frac{(4)+(5)+(6)}{3}$ (Data Sheet 2)

FW Temp = _____ (°F)
(17)

Total RWCU Flow:

For Computer Point Data use:

$\dot{M}_{cu}$ = (12) + (13)

For Control Room Indication use:

$\dot{M}_{cu} = \frac{((12) + (13))}{\nu} \times 8.021 \times 10^{-6} \frac{MIN - MLB - ft^3}{hr - LB - Gal}$

$\dot{M}_{cu}$ = _____ MLB/HR
(23)

Where:

$\dot{M}_{cu}$ = Total RWCU Flow

ν = Specific Volume of Saturated Liquid at Temperature (14) using Appendix A.

CRD Flow:

For Control Room Indication use the following formula, otherwise input the computer point value for (7) into (24).

$\dot{M}_{crd} = (7) \times (5 \times 10^{-4}) \frac{MIN - MLB - ft^3}{hr - LB - Gal}$

$\dot{M}_{crd}$ = _____ MLB/HR
(24)

Reactor Pressure:

Rx pressure = _____ + 14.7 psi
9

Rx pressure = _____ psia
9A

DATA SHEET 3

Steam Table Data

Item #	Description	Value
18	h_{fw} = Enthalpy of Compressed Water(Feedwater) at temperature (17) and pressure (9A) from Appendix B	BTU/LB
19	h_{st} = Enthalpy of Saturated Steam at pressure (9A) from Appendix A	BTU/LB
20	h_{cuo} = Enthalpy of Compressed Water at temperature (14) and pressure (9A) from Appendix B	BTU/LB
21	h_{cui} = Enthalpy of Compressed Water at temperature (15) and pressure (9A) from Appendix B	BTU/LB
22	h_{crd} = Enthalpy of Compressed Water at temperature (8) and pressure (9A) from Appendix B	BTU/LB

CALCULATION WORKSHEET

$$CTP = (Q_{st} + Q_{cuo} + Q_{rad}) - (Q_{fw} + Q_{crd} + Q_{cui} + W)$$

$$CTP = (M_{st}h_{st}c + M_{cu}h_{cuo}c + Q_{rad}) - (M_{fw}h_{fw}c + M_{crd}h_{crd}c + M_{cu}h_{cui}c + W)$$

Where:

CTP = Core Thermal Power (MW)

Q_{st} = Steam Energy Rate (MW)

Q_{cuo} = Clean-up Energy Rate Out of Core (MW)

Q_{rad} = Radiative Heat Losses and unmonitored losses (assumed to be equal to a constant value of 2.1 MW)

Q_{fw} = Feedwater Energy Rate (MW)

Q_{crd} = Control Rod Drive Cooling Water Energy Rate (MW)

Q_{cui} = Clean-up Energy Rate Into Core (MW)

$\dot{M}_{st}$ = Mass Flow Rate Steam (MLB/HR)

h_{st} = Enthalpy of Steam (BTU/LB)

$\dot{M}_{cu}$ = Mass Flow Rate Reactor Water Cleanup (RWCU) Sys. (MLB/HR)

h_{cuo} = Enthalpy of Reactor Water Out of Vessel to RWCU (BTU/LB)

h_{cui} = Enthalpy of Reactor Water into Vessel from RWCU (BTU/LB)

$\dot{M}_{fw}$ = Mass Flow Rate Feedwater (MLB/HR)

h_{fw} = Enthalpy of Feedwater (BTU/LB)

$\dot{M}_{crd}$ = Mass Flow Rate Control Rod Drive System (MLB/HR)

h_{crd} = Enthalpy of CRD Water (BTU/LB)

W = Power Input from Recirc. Pumps

W = (A + B)

A = A Recirc. Pump Power (MW)
B = B Recirc. Pump Power (MW)

c = Unit Conversion Factor = $0.293 \frac{(MW)\ (hr)\ (LB)}{(BTU)\ (MLB)}$

CALCULATION WORKSHEET (Cont'd)

A. Steam Energy Rate (Q_{st})

Steam mass flow rate is determined by using the following equation:

$\dot{M}_{st} = \dot{M}_{fw} + \dot{M}_{crd}$

$\dot{M}_{st}$ = (16) + (24)

$\dot{M}_{st}$ = _____ (MLB/HR)
(25)

$Q_{st} = \dot{M}_{st} h_{st} c$

Q_{st} = (25) * (19) * 0.293

Q_{st} = _____ (MW)
(26)

B. Clean-up Energy Rate Out of Core (Q_{cuo})

$Q_{cuo} = \dot{M}_{cu} h_{cuo} c$

Q_{cuo} = (23) * (20) * 0.293

Q_{cuo} = _____ (MW)
(27)

C. Feedwater Energy Rate (Q_{fw})

$Q_{fw} = \dot{M}_{fw} h_{fw} c$

Q_{fw} = (16) * (18) * 0.293

Q_{fw} = _____ (MW)
(28)

D. CRD Energy Rate (Q_{crd})

$Q_{crd} = \dot{M}_{crd} h_{crd} c$

Q_{crd} = (24) * (22) * 0.293

Q_{crd} = _____ (MW)
(29)

CALCULATION WORKSHEET (Cont'd)

E. Clean-up Energy Rate into Core (Q_{cui})

$Q_{cui} = \dot{M}_{cu} h_{cui} c$

$Q_{cui} = (23) * (21) * 0.293$

$Q_{cui} =$ _____ (MW)
(30)

F. Power Input from Recirc. Pumps (W)

W = efficiency * (Pump A Power + Pump B Power)

NOTE
The recirc pumps are assigned a 94.8% efficiency value.

$W = .948 * ((10) + (11))$

W = _____ (MW)
(31)

G. Core Thermal Power (CTP)

$CTP = (Q_{st} + Q_{cuo} + Q_{rad}) - (Q_{fw} + Q_{crd} + Q_{cui} + W)$

$CTP = ((26) + (27) + 2.1) - ((28) + (29) + (30) + (31))$

CTP = _____ (MW)
Step 6.6

APPENDIX A

Steam Table

Temp °F	Abs. Press	Specific Volume, ft^3/lbm	Enthalpy, BTU/lbm		Temp °F
	psia	Sat Water	Sat Water	Sat Steam	
100	0.9492	0.01613	67.97	1105.2	100
120	1.6924	0.01620	87.92	1113.7	120
140	2.8886	0.01629	107.89	1122.0	140
160	4.741	0.01639	127.89	1130.2	160
180	7.510	0.01651	147.92	1138.1	180
200	11.529	0.01663	167.99	1145.9	200
220	17.186	0.01677	188.13	1153.4	220
240	24.969	0.01692	208.34	1160.5	240
260	35.429	0.01709	228.64	1167.3	260
280	49.203	0.01726	249.06	1173.8	280
300	67.013	0.01745	269.59	1179.7	300
320	89.66	0.01765	290.28	1185.2	320
340	118.01	0.01787	311.13	1190.1	340
360	153.04	0.01811	332.18	1194.4	360
380	195.77	0.01836	353.45	1198.1	380
400	247.31	0.01864	374.97	1201.0	400
420	308.83	0.01894	396.77	1203.1	420
440	381.59	0.01926	418.90	1204.3	440
460	466.9	0.0196	441.4	1204.6	460
480	566.1	0.0200	464.4	1203.7	480
500	680.8	0.0204	487.8	1201.7	500
520	812.4	0.0209	511.9	1198.2	520
540	962.5	0.0215	536.6	1193.2	540
560	1133.1	0.0221	562.2	1186.4	560
580	1325.8	0.0228	588.9	1177.3	580
600	1542.9	0.0236	617.0	1165.5	600

APPENDIX B
Page 1 of 2

Compressed Water Table
Enthalpy
BTU/lbm

Press psia Temp°F	950	1000	1050	1100
550	_____	_____	549.45	549.33
540	_____	536.69	536.60	536.51
530	524.19	524.12	524.05	523.98
520	511.85	511.79	511.74	511.69
510	499.73	499.69	499.66	499.63
500	487.81	487.79	487.77	487.75
490	476.07	476.06	476.05	476.05
480	464.48	464.49	464.49	464.49
470	453.04	453.05	453.06	453.08
460	441.72	441.74	441.76	441.79
450	430.52	430.55	430.58	430.61
440	419.42	419.45	419.49	419.53
430	408.41	408.46	408.50	408.54
420	397.50	397.55	397.60	397.65
410	386.66	386.72	386.77	386.83
400	375.90	375.96	376.02	376.08
390	365.21	365.27	365.34	365.40
380	354.58	354.65	354.72	354.79
370	344.01	344.08	344.16	344.23
360	333.50	333.57	333.65	333.72
350	323.03	323.11	323.19	323.27
340	312.61	312.69	312.78	312.86
330	302.24	302.32	302.41	302.49
320	291.91	291.99	292.08	292.17
310	281.61	281.70	281.79	281.88

APPENDIX B
Page 2 of 2

Compressed Water Table
Enthalpy
BTU/lbm

Press psia Temp°F	950	1000	1050	1100
300	271.35	271.44	271.54	271.63
290	261.12	261.22	261.32	261.41
280	250.93	251.03	251.13	251.22
270	240.76	240.86	240.96	241.06
260	230.62	230.72	230.83	230.93
250	220.50	220.61	220.71	220.82
240	210.41	210.52	210.62	210.73
230	200.34	200.44	200.55	200.66
220	190.28	190.39	190.50	190.61
210	180.24	180.35	180.46	180.58
200	170.22	170.33	170.44	170.56
190	160.20	160.32	160.44	160.55
180	150.21	150.32	150.44	150.56
170	140.22	140.34	140.45	140.57
160	130.24	130.36	130.48	130.60
150	120.27	120.39	120.51	120.63
140	110.30	110.43	110.55	110.67
130	100.34	100.47	100.59	100.72
120	90.39	90.52	90.65	90.77
110	80.44	80.57	80.70	80.83
100	70.50	70.63	70.76	70.90

PECO NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 3410170302 K/A: 2.2.23

URO: 2.6 SRO: 3.8

TASK DESCRIPTION: Ability to track limiting conditions for operation

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Blank copy of Technical Specification Action Log (Exhibit NOM-P-6.4:1) from the Nuclear Operations Manual

C. REFERENCES

1. Technical Specification 3.1.7, "Standby Liquid Control (SLC) System".

2. Nuclear Operations Manual Section 6.4, "Operation Action Log" Rev. 1.

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Technical Specification Action Log entries have been completed.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, evaluate and perform any actions required to be taken for information obtained from the chemistry department. I will describe initial plant conditions and provide you access to the materials required to complete this task.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 is operating at rated power.

2. A Chemistry Tech has just reported that a sample on the Unit 2 Standby Liquid Control Tank shows the concentration of boron in solution at 9.84% weight and a temperature of 72 deg. F.

3. Chemistry has initiated AR# A1127359.

4. All other Tech Spec plant equipment is operable.

5. The Unified Control Room Log Computer is not operating.

G. INITIATING CUE

Determine the impact of this condition and make a manual Tech Spec Action Log entry as required in accordance with the Nuclear Operations Manual. Submit any required forms to the Shift Manager for review.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of Tech Spec.	P	A copy of Tech Spec is obtained.
*2	Determine Tech Spec action.	P	Review Tech Spec 3.1.7 and determine that Condition 'A' applies: • A solution >9.82% weight requires verifying the concentration and temperature of the boron and pump suction piping temperature on figure 3.1.7-1 within 8 hrs and once per 12 hrs thereafter. • Review figure 3.1.7-1 and determine concentration and temperature plot "Acceptable". • Restore concentration of boron in solution to ≤9.82% weight within 72 hrs.
*3	Complete Tech Spec Action Log. • Unit – "unit experiencing inoperability" Entry # - sequential number consisting of year, unit and sequential TSA # **CUE: next sequential TSA# is 009 (01-2-009)** • Tech Spec Number – "Tech Spec number for inoperability" • Discovery Date/Time – "date and time inoperability discovered" • Equipment ID – "alpha-numeric designator for inop equipment" • System Number – "system number for equipment inop"	P	Using Exhibit NOM-P-6.4:1, complete the following Tech Spec Action Log data entries: • Unit - Unit 2 • Entry # "01-2- (next TSA number)" • Tech Spec # - "3.1.7" • Discovery date/time - today's date/time of notification • Equipment ID - 20T18 • System # - "11"

STEP NO	STEP	ACT	STANDARD
	• Reference # - "AR number associated with the INOP feature" • Condition – "applicable Tech Spec condition letter and condition statement" • Reason – "short reason system is inop" • Required Action 1 – "Applicable required action statement" • Completion Time Date/Time – "Date and time for required action to be completed"		• Reference # - A1127359 • Condition - "A", concentration of boron in solution >9.82% weight. • Reason - concentration of boron in solution >9.82% weight. • Required Action 1 - restore concentration of boron in solution ≤9.82% weight. • 72 hours (from time of discovery listed above)
4	Submit the completed form. (Cue: acknowledge receipt of the completed Tech Spec Action Log)	P	Submit the completed Tech Spec Action Log to the Shift Manager for review.

***** NOTE *****

Terminate the exercise when the activities listed above are performed.

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the Tech Spec Action Log has been completed and submitted to the Shift Manager, the evaluator will terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 is operating at rated power.

2. A Chemistry Tech has just reported that a sample on the Unit 2 Standby Liquid Control Tank shows the concentration of boron in solution at 9.84% weight and a temperature of 72 deg. F.

3. Chemistry has initiated AR# A1127359.

4. All other Tech Spec plant equipment is operable.

5. The Unified Control Room Log Computer is not operating.

INITIATING CUE

Determine the impact of this condition and make a manual Tech Spec Action Log entry as required in accordance with the Nuclear Operations Manual. Submit any required forms to the Shift Manager for review.

REVIEW	PB
PORC	NO
SQR	YES
QR	NO
50.59	NO

TECHNICAL SPECIFICATION ACTION LOG

UNIT _____ (2 OR 3)

Entry #	TS#	Discovery Date/Time	Equipment ID	System #	Reference #

Condition	Reason	Required Action 1
Is a SFD required? YES / NO Are any other SFDs currently active? YES / NO (If YES, verify SFD is still valid.)		Completion Time Date/Time

Required Action 2	Required Action 3	Required Action 4	Required Action 5
Completion Time Date/Time	Completion Time Date/Time	Completion Time Date/Time	Completion Time Date/Time

Exit Justification	Exit Date/Time	Exit Entries Made By

REVIEW	PB
PORC	NO
SQR	YES
QR	NO
50.59	NO

TECHNICAL SPECIFICATION ACTION LOG

UNIT _____ (2 OR 3)

Entry #	TS#	Discovery Date/Time	Equipment ID	System #	Reference #

Condition	Reason	Required Action 1
Is a SFD required? YES / NO Are any other SFDs currently active? YES / NO (If YES, verify SFD is still valid.)		Completion Time Date/Time

Required Action 2	Required Action 3	Required Action 4	Required Action 5
Completion Time Date/Time	Completion Time Date/Time	Completion Time Date/Time	Completion Time Date/Time

Exit Justification	Exit Date/Time	Exit Entries Made By

REVIEW	PB
PORC	NO
SQR	YES
QR	NO
50.59	NO

TECHNICAL SPECIFICATION ACTION LOG

UNIT _____ (2 OR 3)

Entry #	TS#	Discovery Date/Time	Equipment ID	System #	Reference #

Condition	Reason	Required Action 1
Is a SFD required? YES / NO Are any other SFDs currently active? YES / NO (If YES, verify SFD is still valid.)		Completion Time Date/Time

Required Action 2	Required Action 3	Required Action 4	Required Action 5
Completion Time Date/Time	Completion Time Date/Time	Completion Time Date/Time	Completion Time Date/Time

Exit Justification	Exit Date/Time	Exit Entries Made By

PECO NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

5

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 27301300202 K/A: 2.3.6

URO: 2.1 SRO: 3.1

TASK DESCRIPTION: Knowledge of the requirements for reviewing and approving release permits.

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Calculator

2. Copy of ST-C-095-805-2 "Liquid Radwaste Discharge", Rev. 8, completed through step 6.11.

3. A calculation error made in step 6.10.1.2.

C. REFERENCES

1. ST-C-095-805-2, Rev. 8, "Liquid Radwaste Discharge".

D. TASK STANDARD

1. Satisfactory task completion of this task is indicated when the Shift Management review has been completed , the errors in the procedure have been identified and the release is disapproved pending resolution of the problems.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to review a Liquid Radwaste discharge, using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 is operating at 100% power.

2. The Floor Drain Sample Tank (FDST) needs to be discharged.

3. Chemistry has completed ST-C-095-805-2, "Liquid Radwaste Discharge" through step 6.11.

4. RIS-0-17-350 "Radwaste Effluent" Radiation Monitor is operable.

5. FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot and the associated flow control valve are operable.

6. The discharge Canal-To-Intake Pond crosstie gate is closed.

7. The Shift Management review and approval has not been completed.

G. INITIATING CUE

You are the Control Room Supervisor. Complete Section 6.12 of ST-C-095-805-2, "Liquid Radwaste Discharge".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Review ST-C-095-805-2 for completeness.	P	Visually verify all CT actions in steps 6.1 through 6.11 have been completed satisfactorily and initial step 6.12.1 SAT.
*2	Verify calculations.	P	Perform all calculations that were done in section 6.8 and 6.10 and verify they are correct and recorded on Data Sheet 3 & 4.
*3	Recognize Calculation error.	P	Recognize error in step 6.10.1.2 for High Flow Discharge setting. Initial step 6.12.2 UNSAT.
*4	Disapprove the Radwaste Discharge. Cue: Acknowledge the disapproval.)	P	Disapprove the discharge and return the paperwork to the Chemistry Department.
	***** NOTE *****		
Terminate the exercise when the activities listed above are performed.			

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the review of ST-C-095-805-2 has been completed, and the release is disapproved, terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 is operating at 100% power.

2. The Floor Drain Sample Tank (FDST) needs to be discharged.

3. Chemistry has completed ST-C-095-805-2, "Liquid Radwaste Discharge" through step 6.11.

4. RIS-0-17-350 "Radwaste Effluent" Radiation Monitor is operable.

5. FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot and the associated flow control valve are operable.

6. The discharge Canal-To-Intake Pond crosstie gate is closed.

7. The Shift Management review and approval has not been completed.

INITIATING CUE

You are the Control Room Supervisor. Complete Section 6.12 of ST-C-095-805-2, "Liquid Radwaste Discharge".

ST-C-095-805-2 LIQUID RADWASTE DISCHARGE

12/10/99

TEST FREQUENCY: Unscheduled (See Section 1.0)
TECH SPEC: 5.5.1 **AND** ODCMS Sections 4.8.B.1.1, 4.8.B.1.2, 4.8.B.1.3, 4.8.B.3.1, 4.8.B.3.2, Table 4.8.B.1. Func. 1 **AND** Func. 4,4.8.B.4.3, 4.8.B.4.4, **AND** 4.8.B.4.5
APPLICABILITY: At all times

1

TANK To Be DISCHARGED:	SOURCE: FAST CSAR No: 021-01

Approved By SMgt: N/A (Printed Name) _____ (Time) __/__/__ (Date) _____ (Initials)

2 **INITIAL** one of the following Test Results:

A: All * steps are **SATISFACTORY** _____

B: One **OR** More * steps are **UNSATISFACTORY** [redacted]
Refer to Section 9.0 for Tech Spec LCO's

	Printed Name	Time	Date	Initials
Performed By: (CT)	CHEMISTRY TECH	XXXX	2/XX/01	CT
Reviewed By: (SMgt)			__/__/__	
Completed By: (CTR)			__/__/__	

UNSAT Notification: (**N/A IF** SAT) _____ SMgt Discretion: Plant Mgr **OR** Others

Notified By: (**N/A IF** SAT) _____ _____ __/__/__ _____

3 **IF** other portions of the test did **NOT** function properly, **OR** other discrepancies were noted, **THEN COMPLETE** the following:

DESCRIBE discrepancies/actions taken: A/R **OR** ETT #: _____

_____

4 Reviewed/Approved CHEM Staff: _____ (Printed Name) _____ (Time) __/__/__ (Date) _____ (Initials)

1.0 PURPOSE

This procedure prescribes normal methods to be used for the discharge of planned batch releases of liquid radioactive waste to the discharge canal. Also provided is the mechanism to verify initial conditions, complete required calculations **AND** record specified data associated with radioactive liquid effluents. This procedure satisfies Offsite Dose Calculation Manual (ODCM) surveillance requirements for 4.8.B.1.1, 4.8.B.1.2, 4.8.B.1.3, 4.8.B.3.1, 4.8.B.3.2, Table 4.8.B.1.Func. 1 **AND** Func. 4, 4.8.B.4.3, 4.8.B.4.4, **AND** 4.8.B.4.5. This procedure may be TC'ed. However, a thorough review of the UFSAR (for example, Section 9.2, Liquid Radioactive Waste System) must be completed as part of the TC process. **WHEN** TCing **OR** revising this document, **THEN** ensure that the requirements of the procedure, as described in the UFSAR, are satisfied.

2.0 TEST EQUIPMENT

None

3.0 PREREQUISITES

Initial

3.1 Document Review

3.1.1 **ENSURE** procedure is current revision. CT / CT

3.1.2 **OBTAIN** CH-401 "Sampling and Analysis of Liquid Radioactive Waste" for tank to be released. CT / CT

3.2 Other Prerequisite Activities

3.2.1 **RECORD** the tank to be discharged Source **AND** CSAR No. in Section 1 of this test's cover sheet. CT / CT

3.3 Test Initiation

3.3.1 This test has been initiated in accordance with CH-401.

3.4 Equipment Configuration

None

3.5 Required Redundant Safety Related Equipment

None

3.6 Approval to Start Test

None

4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS

4.1 Plant Impact Statement

4.1.1 This procedure does **NOT** impact plant availability in any manner **AND** may be performed in any Reactor Mode.

4.2 Precautions

None

4.3 Limitations

4.3.1 **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** the following alarms shall be clear prior to **AND** during release:

1. Alarm Panel 204 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL"

2. Alarm Panel 304 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL"

4.3.2 **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** the "E" cooling Tower shall **NOT** be in operation at any time during discharge.

4.3.3 **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** a minimum of three circulating water pumps must be in operation during the release of radioactive liquid to the discharge canal.

4.3.4 **IF** the release is terminated for lack of dilution flow, **THEN** it only may be restarted **WHEN** the calculated release conditions are reestablished.

4.4 General Instructions

4.4.1 The Chemistry Technician (CT) initiates this test as required by CH-401 criteria **AND** performs all CT initialed steps. The CT forwards this test to Shift Supervisor (SMgt) for review **AND** approval; completing all SMgt initialed steps. SMgt **THEN** forwards test to Plant Reactor Operator (PRO). The PRO performs all PRO initial steps **AND** forwards to Radwaste Operator (RWO). The RWO **THEN** performs all RWO initialed steps **AND** forwards this test to SMgt for review of all Operations' responsible steps. The SMgt places this test in the Chemistry bin in the Main Control Room for retrieval **AND** review by Chemistry Technician Reviewer (CTR).

4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS (Continued)

4.4.2 **IF** any procedure step can **NOT** be completed **OR** produces an unexpected response, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO **OR** SMgt **AND** Chemistry Supervision.

4.4.3 **IF** any Black Box is initialed, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO **OR** SMgt **AND** Chemistry Supervision.

4.4.4 This procedure shall be aborted **WHEN** it is discovered that a Tank is **NOT** going to be released.

4.4.5 **IF** procedure is aborted, **THEN NOTIFY** SMgt **AND WRITE "TEST ABORTED"** in Section 3 of Cover Page.

4.4.6 All persons who initial steps in Sections 3.0, 6.0, **OR** 7.0 are responsible for completing Section 10.0.

4.4.7 All applicable * steps are identified immediately in front of the initials.

5.0 ACCEPTANCE CRITERIA

The following conditions must be met:

1. Copy of Gamma Isotopic Analysis Report attached to this procedure.

2. Tank to be released has been processed through one **OR** more of these systems: Waste Collector Filter **AND** Demineralizer, Floor Drain Filter, Fuel Pool Filter Demineralizer, Chemical/Oily Waste Cleanup. (Epicore oil/water emulsion), Laundry Drain Filter **OR** Projected Body Dose for Month is less than 0.12 mRem **AND** Projected Organ Dose for Month is less than 0.40 mRem.

3. RIS-0-17-350 "Rad Waste Effluent" Rad Monitor operable.

4. FR-0-20-441 "RWS Low Purity Waste" Flow Recorder/Monitor operable.

5. FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot **AND** associated Flow Control Valve are operable.

6. Actual No. of Circ Pumps Providing Dilution is greater than **OR** equal to the Required No. of Circ Pumps Providing Dilution.

7. RIS-0-17-350 HI Trip Setpoint is less than **OR** equal to Required HI Trip CPS.

5.0 ACCEPTANCE CRITERIA (Continued)

8. RIS-0-17-350 HI HI Trip Setpoint is less than **OR** equal to Required HI HI Trip CPS.

9. Actual Maximum Release Rate GPM is less than **OR** equal to the Required Maximum Release Rate value.

10. Actual % Setting for Discharge is less than **OR** equal to the Required Maximum % Setting for Discharge.

11. Sample retained for Monthly Composite.

12. Every release Start **AND** Stop Time has been recorded on the appropriate data chart.

6.0 PERFORMANCE STEPS

Initial
Sat UnSat

> **NOTE**
>
> Steps 6.1 and 6.2 may be performed in any order or concurrently

6.1 **RECORD** chemistry data from the Chemistry Sampling **AND** Analysis Record (CSAR) of CH-401, the tank source **AND** the associated CSAR No. on Data Sheet 1 below. **CM-1**

CT _____
CT

6.2 **RECORD** the tank source **AND** its associated CSAR No. on all other applicable data sheets. **CM-1**

CT _____
CT

6.0 PERFORMANCE STEPS

Initial
Sat Unsat

NOTE

1. **IF** water is transferred per RW-591, Transfer of Processed Waste Water to the "B" Laundry Drain Tank (Documented on RW-625 Exhibit 9.3), **THEN** all Laundry Drain Tank contents are considered processed liquid radwaste.

2. Laundry Drain Tank Water that is **NOT** processed by the Epicore Water Emulsion System shall be dispositioned per RW-592, "Transfer of Unprocessed Waste Water to the "B" Laundry Drain Tank". In this case, the Laundry Drain Tank contents are considered as either unprocessed water **OR** water that will be processed by the Laundry Drain Filter. (Documented on RW-592 Exhibit 9.1.)

6.3 **IF** tank to be discharged has **NOT** been processed through a Radwaste system, as specified in ODCMS 3.8.B.4, **THEN CALCULATE AND RECORD** Projected Body Dose **AND** Projected Organ Dose for Month on Data Sheet 1. **OTHERWISE**, **N/A** the applicable blocks for this step **AND** on Data Sheet 1. (ODCMS 3.8.B.4) CT CT

6.3.1 **VERIFY** Projected Organ Dose is less than 0.40 mRem. * N/A CT ☐

6.3.2 **VERIFY** Projected Body Dose is less than 0.12 mRem. * N/A CT ☐

DATA SHEET 1			
TANK TO BE DISCHARGED SOURCE: FDST		**CSAR No.** 021 - 01	
REASON FOR DISCHARGE			
ANALYSIS	**ANALYSIS RESULT**	**LIMIT FOR DISCHARGE**	**REMARKS**
CONDUCTIVITY	80 uS/cm	< 2500 uS/cm [V]	
pH	7.2	4.0 - 10.0 [A]	
TEMPERATURE	30 C	AS READ	
TURBIDITY	27 NTU	< 30 NTU [V]	
GAMMA SCAN TOTAL ACTIVITY	$2.57E^{-7}$ µCi/mL	<1 N4 µCi/mL [V]	
ESTIMATED BODY DOSE	0 mRem	0.05 mRem [V]	
ESTIMATED ORGAN DOSE	0 mRem	0.15 mRem [V]	
THE FOLLOWING IS REQUIRED FOR RELEASE OF UNPROCESSED TANKS ONLY (ODCM ACCEPTANCE CRITERIA)			
PROJECTED BODY DOSE FOR MONTH	N/A mRem	0.12 mRem [D]	
PROJECTED ORGAN DOSE FOR MONTH	N/A mRem	0.40 mRem [D]	

[V] = AN ADMINISTRATIVE LIMIT FOR WHICH A VARIANCE MAY BE OBTAINED FROM CHEMISTRY SUPERVISION **OR** ON-CALL INDIVIDUAL.

[A] = CORRECTION OF pH FOR RELEASES MAY BE MADE BY DILUTION. THE pH LIMIT DOES **NOT** APPLY **IF** CONDUCTIVITY OF TANK IS LESS THAN 2.5 µS/cm.

[D] = THIS LIMIT APPLIES ONLY TO RELEASES **WHEN** THE SAMPLED TANK'S CONTENTS HAVE **NOT** BEEN PROCESSED THROUGH AT LEAST ONE RADWASTE SUBSYSTEM **OR** EQUIVALENT PER ODCMS BASES B 3.8. (See CH-401)

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.4 **VERIFY** tank sample results recorded on Data Sheet 1 are Satisfactory for release to discharge canal per CH-401.

CT ____ CT

NOTE

1. Variances may **NOT** be granted for any projected dose limit which has been exceeded.

2. **IF** a Variance is Required **AND NOT** granted, **THEN** this test should be aborted.

6.5 **IF** any chemical analysis exceeds its Limit For Discharge, **THEN RECORD** "Variance Required" in remarks section of Data Sheet 1 **AND** obtain approval for Discharge with a "Variance". **OTHERWISE, N/A** this Step. **CM-2**

N/A ____ CT

6.5.1 **IF** a "Variance" was required for discharge, **THEN CONTACT** Chemistry Supervision **OR** on-call individual for Variance **AND RECORD** Name of Chemistry Supervisor **OR** responsible Staff person granting "Variance(s)" below:

(**IF** a Variance is **NOT** required, **THEN N/A** these spaces for this step.)

N/A (Name) N/A (Time) N/A (Date) N/A ____ CT

6.6 **ATTACH** a copy of the Gamma Isotopic Analysis Report to this test. (ODCMS 4.8.B.1.1, 4,8.B.1.2, 4.8.B.1.3, Table 4.8.B.1 Func. 1 & 4)

* CT [redacted] CT

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.7 **VERIFY** a portion of sample (approx 1 Liter) retained for Monthly composite. CT ____ CT

> **NOTE**
>
> Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow setpoints (Section 6.10).

6.8 **OBTAIN** the Background Count Rate for RIS-0-17-350 in counts per second (CPS) from the PRO **AND CALCULATE** RIS-0-17-350 "Rad Waste Effluent" Monitor HI Trip **AND** HI HI Trip Settings using formulas below. (Calculations are in accordance with ODCM.)

6.8.1 **CALCULATE** Monitor Net CPS.

0.532 X (Well Counter net cpm/mL) 3 = (Monitor Net CPS) 1.59

CT ____ CT

6.8.2 **CALCULATE** Gross CPS

150 (RIS-0-17-350 CPS Background Count Rate) + 1.59 (Monitor Net CPS) = 151.6 (Gross CPS)

CT ____ CT

6.8.3 **DETERMINE** log CPS from Gross CPS.

log (151.6 / Gross CPS) = 2.18 log CPS

CT ____ CT

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.8.4 **CALCULATE** Adjusted Log CPS

1.37 X 2.18 = 2.99
Log CPS Adjusted Log CPS

CT
CT

6.8.5 **CALCULATE** RIS-0-17-350 HI Trip Setpoint **AND RECORD** results as Required RIS-0-17-350 HI Trip Value on Data Sheet 3. (ODCMS 3.8.B.3.C)

1.44 + 2.99 = 4.43
Adjustment Log CPS Hi Trip Setting

CT
CT

6.8.6 **CALCULATE** RIS-0-17-350 HI HI Trip Setpoint **AND RECORD** results as Required RIS-0-17-350 HI HI Trip Value on Data Sheet 3. (ODCMS 3.8.B.3.C)

1.47 + 2.99 = 4.46
Adjustment Log CPS Hi Hi Trip Setting

CT
CT

NOTE
Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow set points (Section 6.10).

6.8.7 **PERFORM** a Worker Verification of calculations made in Section 6.8. Any discrepancies between the results of section 6.8 **AND** the worker verification shall be resolved prior to the release of the affected tank.

CT
CT

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.9 **CALCULATE** the Maximum Allowed Tank Release Rate as follows: (ODCMS 4.8.B.1.1)

6.9.1 **OBTAIN** position of Discharge Canal-To-Intake crosstie gate from the PRO **AND CIRCLE** the position (OPEN **OR** CLOSED) in Section 1.0 of Data Sheet 2. CT ____ CT

1. **IF** Crosstie Gate is CLOSED, **THEN PERFORM** the following to complete Data Sheet 2 **AND** Data Sheet 3, **OTHERWISE, N/A** the spaces in this step.

   a. **RECORD "N/A"** in spaces of Section 2.0 of Data Sheet 2. CT ____ CT

   b. **OBTAIN** the Actual Number of Circ Pumps Operating from the PRO **AND RECORD** this number in Sections 3.0 **AND** 5.0 of Data Sheet 2 **AND ENTER** "1" for the "Required No. of Circ Pumps Operating" on Data Sheet 3. CT ____ CT

2. **IF** the Crosstie Gate is OPEN, **THEN PERFORM** the following to complete Data Sheet 2 **AND** Data Sheet 3, **OTHERWISE, N/A** the spaces in this step.

   a. **OBTAIN** the River-To-Intake Pond Differential Level Readings from the PRO **AND RECORD** in Section 2.0 of Data Sheet 2. N/A ____ CT

6.0 **PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

b. **OBTAIN** the Actual Number of Circ Pumps Operating from the PRO **AND RECORD** in Section 3.0 of Data Sheet 2. Also **RECORD** "3" for the "Required No. of Circ. Pumps Operating" on Data Sheet 3. (A minimum of three circ pumps must be operating.)

N/A CT

c. Using Section 4.0 of Data Sheet 2, **DETERMINE** the No. Of Circ. Pumps Providing Dilution **AND RECORD** this value in Section 5.0.

N/A CT

DATA SHEET 2
CALCULATION OF NUMBER OF CIRC PUMPS PROVIDING DILUTION
(PRE-RELEASE DATA)

TANK TO BE DISCHARGE SOURCE: FDST **CSAR No.** 021 - 01

1.0 Discharge Canal-To-Intake crosstie gate	**POSITION:** OPEN OR (CLOSED) (Circle current position)
	Traveling Screens Outer Screens ΔL
2.0 RIVER-TO-INTAKE POND DIFFERENTIAL LEVEL READINGS	< At Control Room >
	DLI-2207 @ Console 20C007A: N/A "H_2O"
	DLI-3207 @ Console 30C007A: N/A "H_2O"
3.0 NUMBER OF CIRC PUMPS OPERATING	6

4.0 USING THE CHART BELOW DETERMINE THE NUMBER OF PUMPS PROVIDING DILUTION FOR THIS RELEASE. TAKE THE ACTUAL NUMBER OF CIRC PUMPS OPERATING FROM SECTION 3.0 OF THIS DATA SHEET, READ DOWN THE COLUMN TO THE HIGHEST DIFFERENTIAL LEVEL RECORDED IN SECTION 2.0 OF THIS DATA SHEET, MOVE ACROSS THE ROW AND FIND THE NUMBER OF CIRC PUMPS PROVIDING DILUTION.

	ACTUAL NUMBER OF CIRC PUMPS OPERATING				No. OF CIRC PUMPS PROVIDING DILUTION
	3	4	5	6	
Δ LEVEL " WATER	----	----	----	0 - 1.8	5
	----	----	0 - 2.4	1.8 - 10	4
	----	0 - 2.7	2.4 - 10	----	3
	0 - 3.1	2.7 - 10	----	----	2
	3.1 - 10	----	----	----	1

5.0 No. OF CIRC PUMPS PROVIDING DILUTION	6

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.9.2 **OBTAIN** the Max Discharge Flow (gpm) from the Gamma Isotopic Analysis Report **AND ENTER** for maximum rate to discharge canal on Data Sheet 4. CT ____ CT

6.10 **CALCULATE** the High **AND** Low Flow Set Points as directed below: (Calculations are in accordance with the ODCM.)

> **NOTE**
>
> **IF** the calculated value is greater than 100%, **THEN RECORD** 100% for the setting values.

6.10.1 **DETERMINE** Maximum Allowable discharge settings as follows **AND RECORD** as "High Flow" **AND** "Low Flow" in applicable spaces on Data Sheet 4. (ODCMS 3.8.B.3c)

1. High Flow Discharge

$$\frac{1.2 \times \text{Max Release Rate}}{3.0} \quad \frac{300 \text{ GPM}}{} = \frac{100\ \%}{\text{Setting}}$$

CT ____ CT

2. Low Flow Discharge

$$\frac{1.2 \times \text{Max Release Rate}}{0.15} \quad \frac{300 \text{ GPM}}{} = \frac{24\ \%}{\text{Setting}}$$

CT ____ CT

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

NOTE

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow set points (Section 6.10).

6.10.2 **PERFORM** a Worker Verification of calculations made in Section 6.10. Any discrepancies between the results of section 6.10 **AND** the worker verification shall be resolved prior to the release of the affected tanks. CT ____ CT

6.11 **REVIEW** all CT responsible steps in Sections 6.1 through 6.10 for completeness, **RECORD** name **AND** initials in Section 10.0, Participants Record, **SIGN** cover sheet of this test at "Performed By:" **AND FORWARD** this procedure to SMgt. CT ____ CT

6.12 SMgt Review **AND** Signature

6.12.1 **VERIFY** all CT steps to this point have been Initialed **AND** completed Satisfactorily. ____ ____ SMgt

6.12.2 **VERIFY**, using an appropriate calculating device, the calculations performed in Section 6.8 **AND** Section 6.10 by the CT are correct **AND** that the correct results have been recorded on Data Sheet 3 **AND** Data Sheet 4. ____ ____ SMgt

6.12.3 **VERIFY** that the sample tank named on the cover sheet of this test is intended to be released. ____ ____ SMgt

6.12.4 **GRANT** Permission to operate HV-0-20C-144 "Waste Sample PP Disch To Pond" **AND** HV-0-20C-146 "Outer Block Valve for Waste Sample Tank Disch to River". **OTHERWISE, N/A** this step. ____ ____ SMgt

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.12.5 **VERIFY** RIS-0-17-350 "Rad Waste Effluent" Rad Monitor is operable. (ODCMS 3.8.B.3a)

* _____ [redacted]
SMgt

6.12.6 **VERIFY** FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot **AND** associated Flow Control Valve are operable (This means that there are **NO** ETTs **OR** A/Rs against this equipment). (ODCMS 3.8.B.3c)

* _____ [redacted]
SMgt

6.12.7 **RECORD** name **AND** initials in Section 10.0, Participants Record.

_____ _____
SMgt

6.12.8 **FORWARD** this test to the PRO.

_____ _____
SMgt

DATA SHEET 3		
TANK TO BE DISCHARGED SOURCE: FDST **CSAR No.** 021-01		
PLANT SYSTEM REQUIRED PARAMETERS FOR LIQUID RADWASTE RELEASE	REQUIRED VALUE	
Required No. of Circ. Pumps Operating	6	PUMPS
Required RIS-0-17-350 HI Trip Setpoint	4.43	POT SETTING
Required RIS-0-17-350 HI HI Trip Setpoint	4.46	POT SETTING

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.13 PRO Review **AND** set-up of Plant in Preparation For Discharge

6.13.1 **RECORD** the Actual No. of Circ. Pumps Operating below **AND VERIFY** the Actual No. of Circ. Pumps Operating is greater than **OR** equal to the required No. of Circ. Pumps as recorded on Data Sheet 3. (ODCMS 4.8.B.1.1)

Actual No. of Circ. Pumps Operating ____

* _____ ☐
PRO

6.13.2 **SET** RIS-0-17-350 HI Trip Setpoint to less than **OR** equal to Required value from Data Sheet 3 **AND RECORD** Actual Setpoint POT value below: (ODCMS 3.8.B.3.c)

Actual HI Trip Pot Setting _____ * _____ ☐
PRO

6.13.3 **SET** RIS-0-17-350 HI HI Trip Setpoint to less than **OR** equal to Required value **AND RECORD** the Actual HI HI Setpoint Pot value below: (ODCMS 3.8.B.3.c)

Actual HI HI Trip Pot Setting _____ * _____ ☐
PRO

6.13.4 **IF** the discharge Canal-To-Intake Pond crosstie gate is OPEN, **THEN VERIFY** the following. **OTHERWISE, N/A** the spaces in this step.

1. Alarm Panel 204 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL" is CLEAR.

_____ _____
PRO

2. Alarm Panel 304 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL" is CLEAR.

_____ _____
PRO

3. "E" Cooling Tower is **NOT** in Operation.

_____ _____
PRO

6.0 PERFORMANCE STEPS (Continued)

Initial
Sat UnSat

6.13.5 **REVIEW** all PRO steps, to this point, in Section 6.13 for completeness. _____ _____ PRO

6.13.6 **RECORD** name **AND** initials in Section 10.0, Participants Record, **AND FORWARD** this test to the Radwaste Operator (RWO). _____ _____ PRO

DATA SHEET 4	
TANK TO BE DISCHARGED SOURCE: FAST **CSAR No.** 021-01	
RADWASTE SYSTEM REQUIRED PARAMETERS PRIOR TO LIQUID RADWASTE RELEASE	REQUIRED VALUE
FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot	100 %
FS-0-20-493 "RWS Low Purity Waste" Low Flow Trip Set Pot	24 %
MAXIMUM Release Rate to Discharge Canal	300 GPM

6.14 RWO ESTABLISHMENT OF RADWASTE DISCHARGE
(At Radwaste Control Room Panel 00C077)

6.14.1 **VERIFY** tank to be discharged, as written in Section 1 of the coversheet, is the same tank intended to be released. * _____ [redacted] RWO

6.14.2 **VERIFY** tank to be discharged has been processed through one **OR** more of these systems: Waste Collector Filter **AND** Demineralizer, Floor Drain Filter, Fuel Pool Filter Demineralizer, **AND** Chemical/Oily Waste Cleanup (EPICORE Oil/Water Emulsion), Laundry Drain Filter **OR** Projected Body Dose **AND** Projected Organ Dose for the Month have been recorded on Data Sheet 1. (ODCMS 3.8.B.4) * _____ [redacted] RWO

PECO NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007540502 / PLOR-165C K/A: 2.4.44
URO: 2.1 SRO: 4.0

TASK DESCRIPTION: Protective Action Recommendation Determination 90° Wind

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Copy of ERP-200 Appendix 5, Rev. 3, "PAR Development and Issuance"

2. Copy of ERP-101, Rev. 22, "Classification of Emergencies"

C. REFERENCES

1. ERP-200, Rev. 16, "Emergency Director (ED)"

2. ERP-200 Appendix 5, Rev. 3, "PAR Development and Issuance"

3. ERP-101, Rev. 22, "Classification of Emergencies"

D. TASK STANDARD

1. Satisfactory task completion is indicated when state agencies have been notified of the PAR to evacuate a full 360 degrees for 2 miles and sectors W, WNW, and WSW for 2 to 5 miles.

2. Estimated time to complete: 15 minutes Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, determine the Protective Action Recommendation (PAR), and perform necessary steps to complete ERP-200 Appendix 5, "PAR Development and Issuance" using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 is shutdown with a reactor level of -176" and reactor pressure of 20 psig

2. Containment pressure on PR-2508 is 50 psig and slowly rising.

3. Containment radiation on RI-8103A-D is 9.1 E4 R/hr.

4. No release in progress.

5. Wind direction (at the site) is "from" 90 degrees at 10 mph.

5. The Primary containment is expected to remain intact.

6. Using ERP-101, Table 3.2 "Fission Product Barrier Status", a General Emergency has just been declared based on Drywell pressure and radiation.

7. No dose assessment information from either the Dose Assessment Advisor or the MESOREM printout is available at this time.

8. The TSC and EOF are not yet activated.

G. INITIATING CUE

You are directed to determine the Protective Action Recommendation (PAR), and complete ERP-200 Appendix 5, "PAR Development and Issuance".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of ERP-200 Appendix 5.	P	A copy of ERP-200 Appendix 5 is obtained.
2	Complete ERP-200 Appendix 5 step 1 for a completion time.	P	Set a time of 15 minutes (from the GE) for the PAR to be completed, and initial step 1.
3	Complete ERP-200 Appendix 5 step 2.	P	A Dose Assessment Advisor is not available (as stated in the task condition/prerequisite).
4	Complete the ERP-200, Appendix 5 step 3 PAR worksheet for PAR data.	P	Fill in Plant status as based on ERP-101, table 3.2.
*5	Complete the ERP-200, Appendix 5 step 3 PAR worksheet for Meteorological Data.	P	Fill in wind speed as 10 mph. Fill in wind direction "from" as 90 degrees. Determine wind direction "to" as 270 degrees, by adding 180 to 90 degrees.
*6	Complete the ERP-200, Appendix 5 step 3 PAR worksheet for PAR Sectors/AREA.	P	Determine: • Evacuate all sectors 360 degrees 2 miles. • Evacuate sectors W, WNW, and WSW, 2 to 5 miles.
7	Sign for PAR worksheet complete in step 3 of Appendix 5.	P	Initial step 3 of ERP-200, Appendix 5.
	*** NOTE *** When the candidate attempts to contact Maryland and Pennsylvania role play as these state agencies to receive the PAR notification. Note the time of the notifications and verify that the elapsed time has not exceeded 15 minutes.		
*8	Notify Pennsylvania and Maryland. (Cue: Acknowledge receipt of report.)	S	Notify Pennsylvania Senior State Official at OMNI extension 216 and Maryland Department of Environment at OMNI extension 235 or 292.

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When Maryland MDE or Pennsylvania BRP has been notified of the PAR the evaluator will terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 is shutdown with a reactor level of -176" and reactor pressure of 20 psig

2. Containment pressure on PR-2508 is 50 psig and slowly rising.

3. Containment radiation on RI-8103A-D is 9.1 E4 R/hr.

4. No release in progress.

5. Wind direction (at the site) is "from" 90 degrees at 10 mph.

5. The Primary containment is expected to remain intact.

6. Using ERP-101, Table 3.2 "Fission Product Barrier Status", a General Emergency has just been declared based on Drywell pressure and radiation.

7. No dose assessment information from either the Dose Assessment Advisor or the MESOREM printout is available at this time.

8. The TSC and EOF are not yet activated.

INITIATING CUE

You are directed to determine the Protective Action Recommendation (PAR), and complete ERP-200 Appendix 5, "PAR Development and Issuance".

Effective Date:_____

PAR DEVELOPMENT AND ISSUANCE

(This is a complete rewrite)

1. _____ Set time requirement for delivery of PAR. (Within 15 minutes of General Emergency Declaration)

2. _____ Consult with Dose Assessment, if available, to determine if PAR will be based on Plant Conditions or Dose Projections.

3. _____ Complete PAR worksheet.

4. _____ Deliver PAR to Pennsylvania Senior State Official at OMNI Extension 216 and Maryland Department of the Environment at OMNI Extension 235 or 292.

5. _____ If PAR cannot be delivered to either state, then provide PAR directly to affected counties as listed in ERP-110.

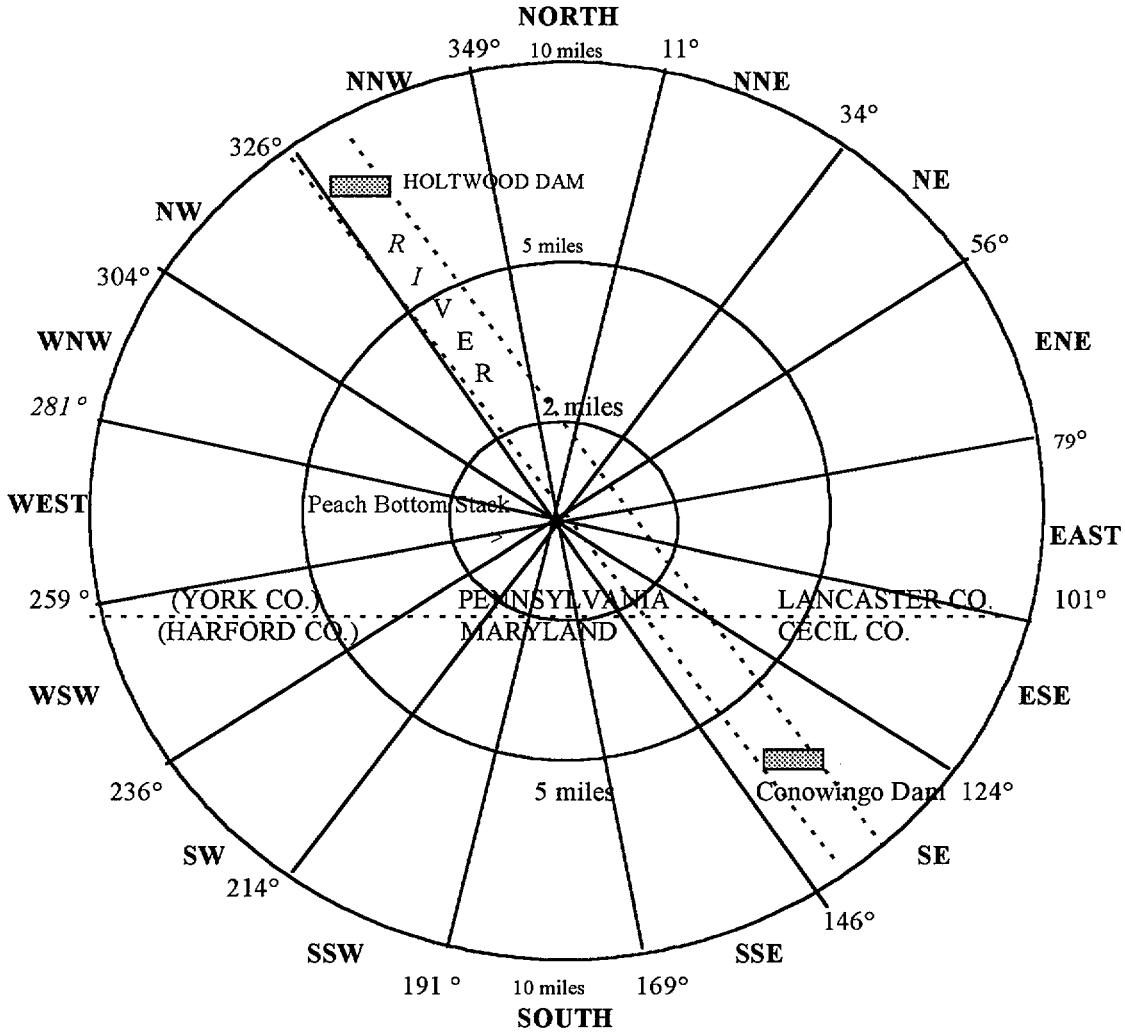
PAR WORKSHEET

PAR DATA: _____ Plant Status (based on ERP-101, table _____)
_____ Dose Projection (based on MESOREM run _____ , _____)
Time Date

METEOROLOGICAL DATA: Wind Direction "from" instrumentation _____ degrees
Windspeed _____ mph Wind Direction "to" +/- 180 = _____ degrees

PAR SECTORS: AREA	SHELTER	EVACUATE	NO ACTION
0-2 miles			
2-5 miles			
5-10 miles			
* >10 miles			

* Not required for pre-determined PAR's from ERP-101.



	PERSON NOTIFIED	TIME	DATE
PENNSYLVANIA SENIOR STATE OFFICIAL (Ext. 216)			
MARYLAND MDE (Ext. 235 or 292)			