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TO: ~~GERLACH\*ROSE M~~      06/24/2003  
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THE FOLLOWING CHANGES HAVE OCCURRED TO THE HARDCOPY OR ELECTRONIC MANUAL ASSIGNED TO YOU:

114 - 114 - CHEMISTRY COORDINATOR: EMERGENCY PLAN-POSITION SPECIFIC PROCEDURE

REMOVE MANUAL TABLE OF CONTENTS      DATE: 04/16/2003

ADD      MANUAL TABLE OF CONTENTS      DATE: 06/23/2003

CATEGORY: PROCEDURES      TYPE: EP

ID: EP-PS-114

REPLACE:      REV:9

REPLACE:      REV:9

REMOVE: PCAF 2002-1320 REV: N/A

REMOVE: PCAF 2003-1184 REV: N/A

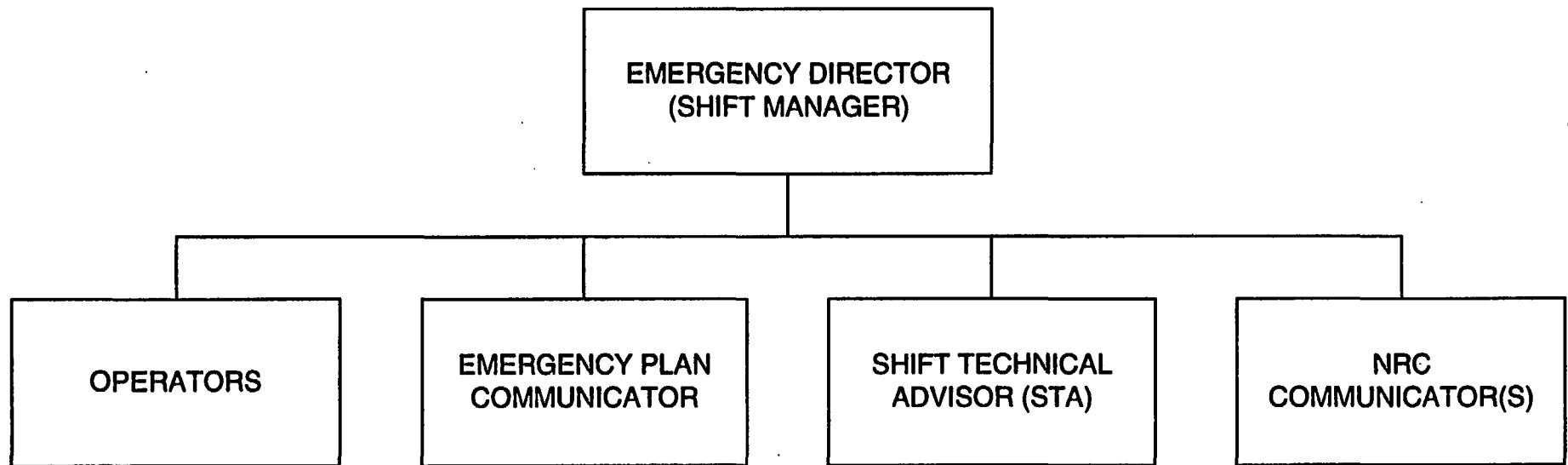
ADD: PCAF 2002-1320 REV: N/A

ADD: PCAF 2003-1184 REV: N/A

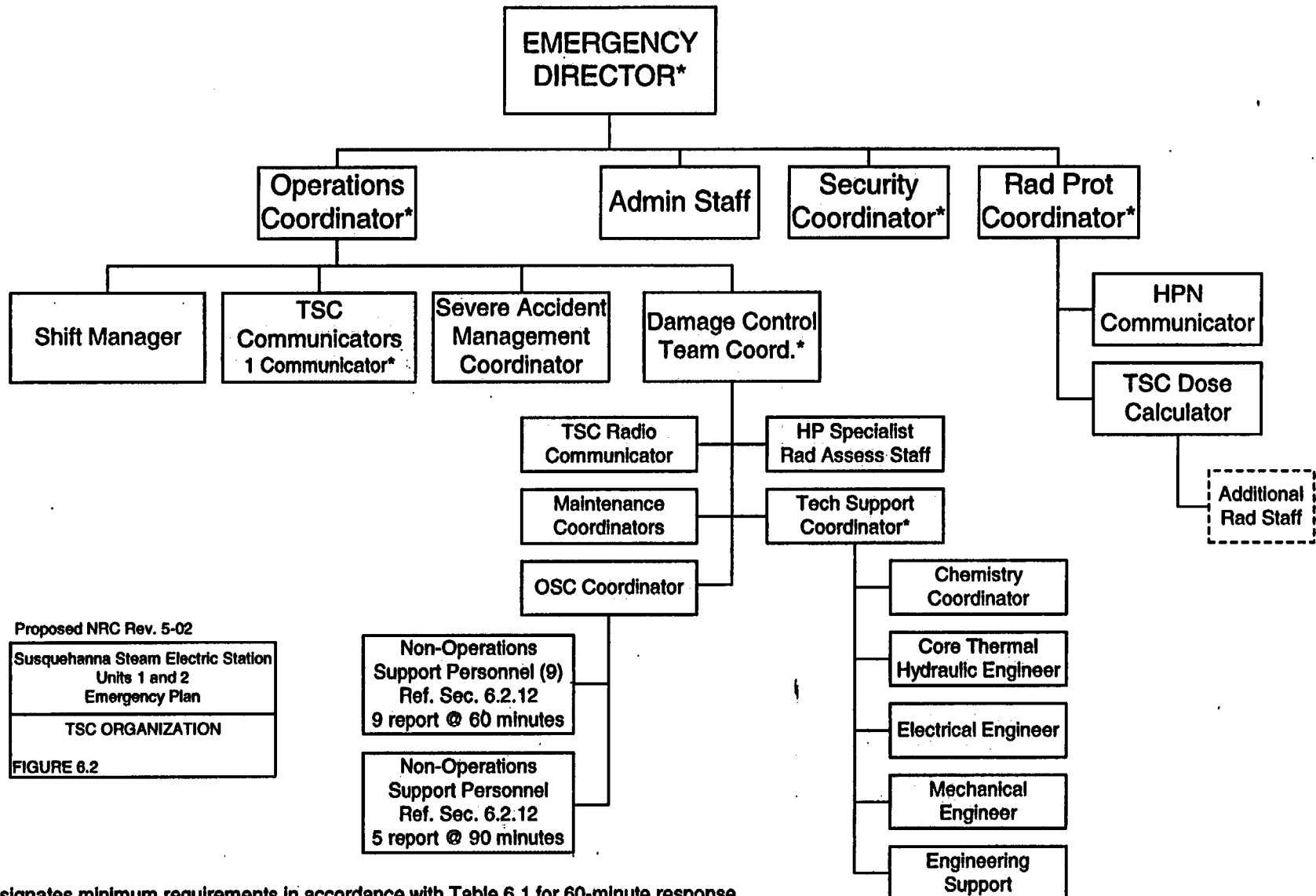
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A045

**EMERGENCY ORGANIZATION  
CONTROL ROOM**



## TSC ORGANIZATION



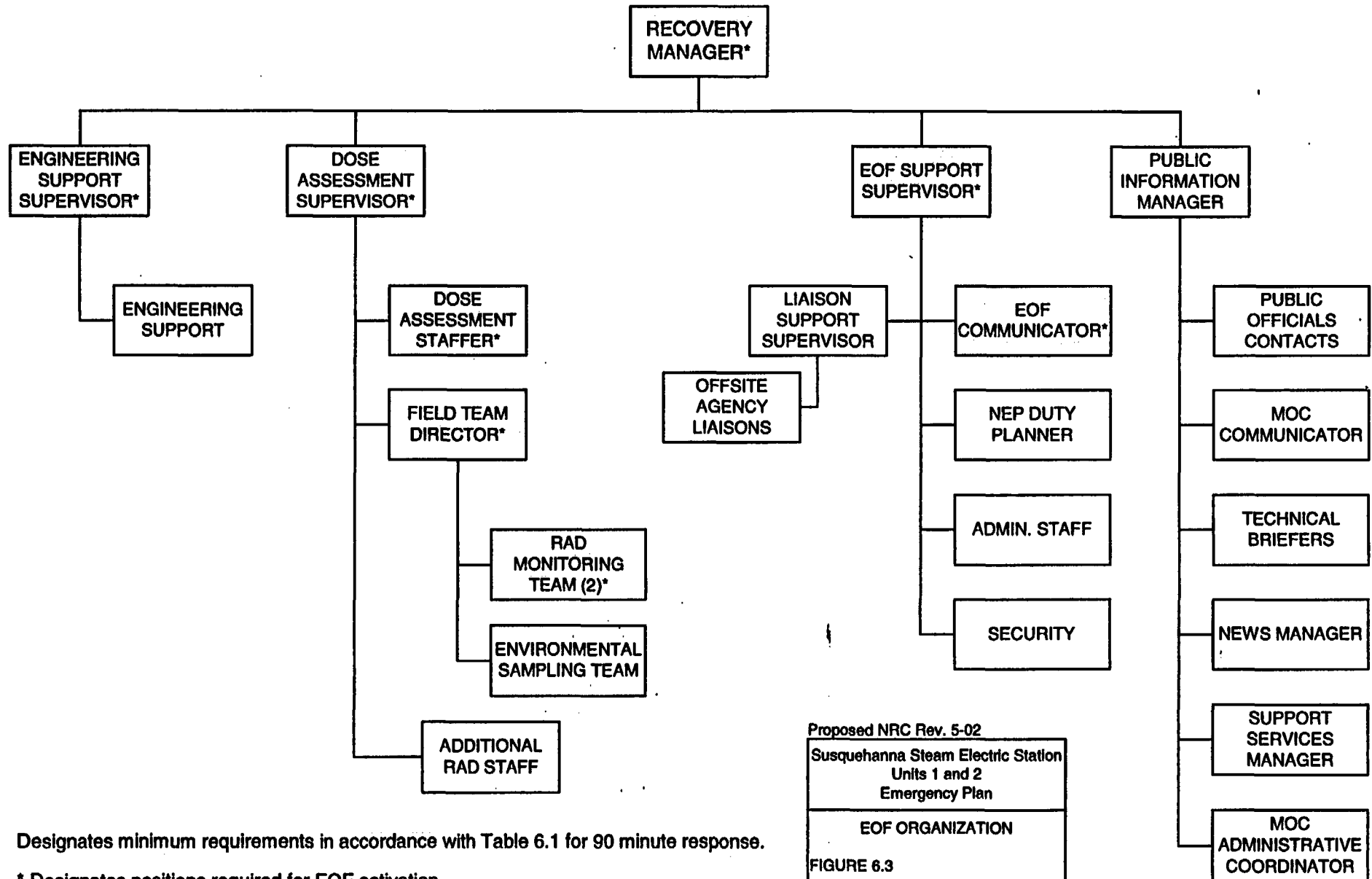
Proposed NRC Rev. 5-02  
Susquehanna Steam Electric Station  
Units 1 and 2  
Emergency Plan  
TSC ORGANIZATION  
FIGURE 6.2

Designates minimum requirements in accordance with Table 6.1 for 60-minute response.

----- Individuals may be located in the OSC, TSC, or Field.

\* Designates positions required for TSC activation.

# EOF ORGANIZATION



Designates minimum requirements in accordance with Table 6.1 for 90 minute response.

\* Designates positions required for EOF activation.

Control # \_\_\_\_\_

**EMERGENCY NOTIFICATION REPORT**

THIS IS A DRILL       THIS IS NOT A DRILL

1. This is: \_\_\_\_\_ at Susquehanna Steam Electric Station.  
(Communicator's Name)

My telephone number is: \_\_\_\_\_ . The time is \_\_\_\_\_ .  
(Callback telephone number) (Time notification initiated)

2. EMERGENCY CLASSIFICATION:

- UNUSUAL EVENT
- ALERT
- The event has been terminated.
- SITE AREA EMERGENCY
- GENERAL EMERGENCY

UNIT:  ONE  
 TWO  
 ONE & TWO

TIME: \_\_\_\_\_  
(Time classification/  
termination declared)

DATE: \_\_\_\_\_  
(Date classification/  
termination declared)

THIS REPRESENTS A/AN:

- INITIAL DECLARATION
- ESCALATION
- NO CHANGE

} IN CLASSIFICATION STATUS

3. BRIEF NON-TECHNICAL DESCRIPTION OF THE EVENT:

- For initial declaration, static update, or escalation, provide current EAL number only.
- For status reports, significant events, or when directed by the ED, RM, or EOFSS, provide a brief description.
- For termination, write emergency has been terminated.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. THERE IS:  No  
 AN AIRBORNE  
 A LIQUID } NON-ROUTINE RADIOLOGICAL RELEASE IN PROGRESS

5. WHEN GENERAL EMERGENCY IS THE INITIAL EVENT, PROVIDE PROTECTIVE ACTION RECOMMENDATIONS BELOW: (Control Room Use only, TSC and EOF mark N/A.)

\_\_\_\_\_  
\_\_\_\_\_

6. WIND DIRECTION IS FROM: \_\_\_\_\_ . WIND SPEED IS: \_\_\_\_\_ mph.  
(Data from 10 meter meteorological tower, available on PICSY.)

THIS IS A DRILL       THIS IS NOT A DRILL

APPROVED: \_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_\_\_  
(ED, RM, or EOFSS) (Time form approved) (Date form approved)

Affected Unit \_\_\_\_\_

Control No. \_\_\_\_\_

**PROTECTIVE ACTION RECOMMENDATION FORM  
SUSQUEHANNA STEAM ELECTRIC STATION**

This is a Drill       This is NOT a Drill      Preparer: \_\_\_\_\_

<b>The EMERGENCY CLASSIFICATION is:</b>			
<input type="checkbox"/> Unusual Event	<input type="checkbox"/> Alert	<input type="checkbox"/> Site Area Emergency	<input type="checkbox"/> General Emergency

Basis: EAL # \_\_\_\_\_

**This represents:**

Initial Classification     Escalation     Reduction     No Change in the Classification Status

**Emergency Action(s) implemented onsite:**

- |  |  |
|--|--|
| <input type="checkbox"/> None                  | <input type="checkbox"/> Evacuation of non-essential personnel |
| <input type="checkbox"/> Local Area Evacuation | <input type="checkbox"/> KI to onsite personnel                |
| <input type="checkbox"/> Site Accountability   | <input type="checkbox"/> Other _____                           |

Bases: \_\_\_\_\_

<b>The PROTECTIVE ACTION RECOMMENDATION is:</b>	
<input type="checkbox"/> No Protective Action Recommendation Required	
<input type="checkbox"/> Evacuate 0-2 miles and Shelter 2-10 miles	<input type="checkbox"/> Relocation
<input type="checkbox"/> Evacuate 0-10 miles	<input type="checkbox"/> Control of Access
	<input type="checkbox"/> Contamination Controls/Decon
<input type="checkbox"/> Divert Danville Drinking Water*	<input type="checkbox"/> Other
*Expected arrival of release at Danville: _____	
This represents: <input type="checkbox"/> Initial <input type="checkbox"/> Change <input type="checkbox"/> No Change in the Protective Action Recommendation	

**The BASIS for the Protective Action Recommendation is:**

**Plant Status**

\_\_\_\_\_

\_\_\_\_\_

**Status of Radioactive Release: Event-related release in progress?  Yes  No**

<b>Total Site Release Rate</b>	<b>Airborne</b>	<b>Liquid</b>
< Tech Requirements Limit	<input type="checkbox"/>	<input type="checkbox"/>
≥ Tech Requirements Limit	<input type="checkbox"/>	<input type="checkbox"/>

**NOTE: TRM Limits ( $\mu\text{Ci}/\text{min}$ ): Noble Gas  $1.00\text{E}+6$ ; Iodine  $1.04\text{E}+2$ ; Particulate  $7.72\text{E}+2$  (Airborne releases)**

**Based on:  Effluent Monitors  Field Measurements  Engineering Judgement**

**Data measured in the field confirm release rate estimations:  Yes  No**

**Weather Conditions: Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_**

**Dose Projections:  TEDE > 1 rem or thyroid CDE > 5 rem at 2 miles  
 TEDE > 1 rem or thyroid CDE > 5 rem at EPB  
 TEDE ≤ 1 rem and thyroid CDE ≤ 5 rem at EPB**

**Other:**

\_\_\_\_\_

**Approval: \_\_\_\_\_ Date/Time: \_\_\_\_\_**

**Emergency Director or Recovery Manager approval required if change in Classification or Protective Action Recommendation.**

**RPC or DASU approval if no change in the Classification or Protective Action Recommendation.**

**Transmittal:  Verbal  Electronic  Both**

**Communicated To:**

\_\_\_\_\_ **NAME**                      \_\_\_\_\_ **AGENCY**                      \_\_\_\_\_ **DATE/TIME**

**LIQUID DISCHARGE DATA SHEETS**

**Section 1: Release Data**

Time of release commencement into river ( $T_1$ ) \_\_\_\_\_

Time of release termination ( $T_2$ ) \_\_\_\_\_

Duration of release ( $T_3 = T_2 - T_1$ , expressed in hours) \_\_\_\_\_ Hours

Sample location(s) \_\_\_\_\_

**NOTE:** Complete PART I, II, or III based on location of sample.

**Section 2: Determination of Radionuclides (from Part IV)**

EC fraction for all radionuclides at Danville ( $S_d$ ) \_\_\_\_\_

**Section 3: Times of Arrival at Danville**

	<u>Transit Time to Danville (from Table 1)</u>	<u>Time of Arrival at Danville</u>
Leading Edge	_____ hrs	_____
Peak Concentration	_____ hrs	_____
Trailing Edge	_____ hrs	_____



**LIQUID DISCHARGE DATA SHEETS**

Tab 8  
EP-PS-114-8

**PART I: Complete this part if the results are for a sample obtained directly from the SSES Cooling Tower Blowdown Discharge (CTBD) line. Otherwise, proceed to Part II of this tab. Upon completion of Part I, proceed to Part IV.**

Radionuclides in Sample	Co-60	Sr-91	Mo-99	Te-132	I-131	I-133	I-134	I-135	Cs-134	Cs-136	Cs-137	Ba-139	Ba-140	Ba-141	Np-239
Radionuclide Activity Concentrations ( $C_i$ ) of the Sample ( $\mu\text{Ci/ml}$ )															
EC Values ( $L_i$ ) for Radionuclides ( $\mu\text{Ci/ml}$ ) <sup>1</sup>	3E-6	2E-5	2E-5	9E-6	1E-6	7E-6	4E-4	3E-5	9E-7	6E-6	1E-6	2E-4	8E-6	3E-4	2E-5
EC Fractions ( $F_i$ ) of Radionuclides <sup>2</sup>															

- 1 The EC (effluent concentration) values ( $L_i$ ) are obtained from Table 2, Column 2 of Appendix B to 10CFR20. These EC values correspond to the PAG value (50 mrem CEDE) for river water at Danville.
- 2 Obtain the EC fractions ( $F_i$ ) by dividing each radionuclide concentration ( $C_i$ ) by its corresponding EC value ( $L_i$ ) as follows:  $F_i = C_i/L_i$ . The EC fractions are those for the water entering the Susquehanna River from the SSES discharge.

**LIQUID DISCHARGE DATA SHEETS**

Tab 8  
EP-PS-114-8

**PART II:** Complete this part if the results are for a sample obtained from a waste stream entering directly into the SSES Cooling Tower Blowdown Discharge (CTBD) line. This includes results for a sample obtained from the SSES Spray Pond or from the SSES Liquid Radwaste System. Otherwise, proceed to Part III of this tab. Upon completion of Part II, proceed to Part IV.

Flow Rate ( $F_1$ ) of Waste Stream into the CTBD line (gpm) <sup>1</sup>	
Flow Rate ( $F_2$ ) of CTBD line (gpm) <sup>2</sup>	
Dilution Factor ( $D_2$ ) for the CTBD line <sup>3</sup>	

- 1 Obtain the flow rate ( $F_1$ ) for the waste stream entering the CTBD line. If the waste stream is the SSES Spray Pond, its flow rate into the CTBD line may be determined as follows: a) Obtain the spray pond level from the Control Room, and b) Using the spray pond level, obtain the flow rate ( $F_1$ ) for the spray pond from Table 2.
- 2 Obtain the flow rate ( $F_2$ ) of the CTBD line from the TSC Chemistry Coordinator or TSC Coordinator, if possible. If the actual flow rate can't be obtained from the TSC Coordinator or TSC Chemistry Coordinator, assume that it is 5,000 gpm.
- 3 The dilution factor ( $D_2$ ) for the CTBD line is obtained by dividing the sum of the waste stream and CTBD line flow rates ( $F_1+F_2$ ) by the waste stream flow rate ( $F_1$ ) as follows:  $D_2 = (F_1+F_2)/F_1$ .

**LIQUID DISCHARGE DATA SHEETS**

Tab 8  
EP-PS-114-8

**PART II** (Continued)

Radionuclides in Sample	Co-60	Sr-91	Mo-99	Te-132	I-131	I-133	I-134	I-135	Cs-134	Cs-136	Cs-137	Ba-139	Ba-140	Ba-141	Np-239
Radionuclide Activity Concentrations ( $C_1$ ) of the Sample ( $\mu\text{Ci/ml}$ )															
Expected Radionuclide Activity Concentration ( $E_2$ ) in the CTBD Line ( $\mu\text{Ci/ml}$ ) <sup>4</sup>															
EC Values ( $L_i$ ) for Radionuclides ( $\mu\text{Ci/ml}$ ) <sup>5</sup>	3E-6	2E-5	2E-5	9E-6	1E-6	7E-6	4E-4	3E-5	9E-7	6E-6	1E-6	2E-4	8E-6	3E-4	2E-5
EC Fractions ( $F_i$ ) of Radionuclides <sup>6</sup>															

- 4 Obtain the radionuclide concentrations expected ( $E_2$ ) in the CTBD line by dividing the radionuclide concentrations ( $C_1$ ) by the CTBD line dilution factor ( $D_2$ ) as follows:  $E_2 = C_1/D_2$ .
- 5 The EC (effluent concentration) values ( $L_i$ ) are obtained from Table 2, Column 2 of Appendix B to 10CFR20. These EC values correspond to the PAG value (50 mrem CEDE) for river water at Danville.
- 6 Obtain the EC fractions ( $F_i$ ) by dividing each expected radionuclide concentration ( $E_2$ ) by its corresponding EC value ( $L_i$ ) as follows:  $F_i = E_2/L_i$ . The EC fractions are those for the water entering the Susquehanna River from the SSES discharge.

**LIQUID DISCHARGE DATA SHEETS**

Tab 8  
EP-PS-114-8

**PART III: Complete this part if the results are for a sample obtained from a waste stream entering into the Spray Pond before being released to the SSES Cooling Tower Blowdown Discharge (CTBD) line. Upon completion of Part III, proceed to Part IV.**

Volume (V) of Release into the Spray Pond (gallons) <sup>1</sup>	
Dilution Factor (D <sub>1</sub> ) for the Spray Pond <sup>2</sup>	
Flow Rate (F <sub>1</sub> ) of Spray Pond into the CTBD line (gpm) <sup>3</sup>	
Flow Rate (F <sub>2</sub> ) of CTBD line (gpm) <sup>4</sup>	
Dilution Factor (D <sub>2</sub> ) for the CTBD line <sup>5</sup>	

- 1 Obtain the volume of the release to the Spray Pond from the TSC Chemistry Coordinator or TSC Coordinator.
- 2 Obtain the dilution factor (D<sub>1</sub>) for the Spray Pond by dividing the volume (V) of the release into the Spray Pond by 2E7 as follows:  
 $D_1 = V/2E7$ .
- 3 Obtain the flow rate (F<sub>1</sub>) from the SSES Spray Pond from Table 2. Spray Pond level can be obtained from the Control Room.
- 4 Obtain the flow rate (F<sub>2</sub>) of the CTBD line from the TSC Chemistry Coordinator or TSC Coordinator, if possible. If the actual flow rate can't be obtained from the TSC Coordinator or TSC Chemistry Coordinator, assume that it is 5,000 gpm.
- 5 Obtain the dilution factor (D<sub>2</sub>) for the CTBD line by dividing the sum of the Spray Pond (waste stream) and CTBD line flow rates (F<sub>1</sub>+F<sub>2</sub>) by the Spray Pond flow rate (F<sub>1</sub>) as follows:  $D_2 = (F_1 + F_2)/F_1$ .

**LIQUID DISCHARGE DATA SHEETS**

Tab 8  
EP-PS-114-8

**PART III** (Continued)

Radionuclides in Sample	Co-60	Sr-91	Mo-99	Te-132	I-131	I-133	I-134	I-135	Cs-134	Cs-136	Cs-137	Ba-139	Ba-140	Ba-141	Np-239
Radionuclide Activity Concentrations (C <sub>i</sub> ) of the Sample (μCi/ml)															
Expected Radionuclide Activity Concentration (E <sub>1</sub> ) in the Spray Pond (μCi/ml) <sup>6</sup>															
Expected Radionuclide Activity Concentration (E <sub>2</sub> ) in the CTBD Line (μCi/ml) <sup>7</sup>															
EC Values (L <sub>i</sub> ) for Radionuclides (μCi/ml) <sup>8</sup>	3E-6	2E-5	2E-5	9E-6	1E-6	7E-6	4E-4	3E-5	9E-7	6E-6	1E-6	2E-4	8E-6	3E-4	2E-5
EC Fractions (F <sub>i</sub> ) of Radionuclides <sup>9</sup>															

- 6 Obtain the radionuclide concentrations expected (E<sub>1</sub>) in the Spray Pond by dividing the radionuclide concentrations (C<sub>i</sub>) of the sample by the dilution factor (D<sub>1</sub>) of the Spray Pond as follows:  $E_1 = C_i/D_1$ .
- 7 Obtain the radionuclide concentrations expected (E<sub>2</sub>) in the CTBD line by dividing the radionuclide concentrations (E<sub>1</sub>) by the CTBD line dilution factor (D<sub>2</sub>) as follows:  $E_2 = E_1/D_2$ .
- 8 The EC (effluent concentration) values (L<sub>i</sub>) are obtained from Table 2, Column 2 of Appendix B to 10CFR20. These EC values correspond to the PAG value (50 mrem CEDE) for river water at Danville.
- 9 Obtain the EC fractions (F<sub>i</sub>) by dividing each expected radionuclide concentration (E<sub>2</sub>) by its corresponding EC value (L<sub>i</sub>) as follows:  $F_i = E_2/L_i$ . The EC fractions are those for the water entering the Susquehanna River from the SSES discharge.

**LIQUID DISCHARGE DATA SHEETS**

Tab 8  
EP-PS-114-8

**PART IV: Complete this part using the results obtained from either Parts I, II, or III, as applicable.**

Undiluted Sum (S) of EC Fractions for all Radionuclides <sup>1</sup>	
River Depth (R <sub>CR</sub> ) Read at the Control Room – 0C653 or ENVR in PICSY <sup>2</sup>	
Dispersion Factor to Danville (M) from Table 1	
Diluted Sum (S <sub>d</sub> ) of EC Fractions for all Radionuclides at Danville <sup>3,4</sup>	

- 1 Obtain the undiluted sum (S) of EC fractions for all radionuclides by adding the EC fractions (F<sub>i</sub>) for all radionuclides as follows:  $S = \sum F_i$ . Obtain the EC fractions from either Part I, II, or III, as appropriate.
- 2 If the river depth (R<sub>EL</sub>) read at the SSES Environmental Lab is available, convert to the depth (R<sub>CR</sub>) read at the Control Room as follows:  $R_{CR} = 12 \times R_{EL} + 126$ .
- 3 Obtain the diluted sum (S<sub>d</sub>) of EC fractions by dividing the undiluted sum (S) of EC fractions by the dispersion factor (M) as follows:  $S_d = S/M$ .
- 4 The diluted sum of EC fractions is at Danville after dilution of the SSES effluent by the Susquehanna River enroute.

**TABLE 1**  
**SUSQUEHANNA RIVER:**  
**DEPTH - DISPERSION FACTOR - TRANSIT TIME TO DANVILLE**

RIVER DEPTH (in)*	DISPERSION AT DANVILLE (M)	TRANSIT TIME (hours)		
		Leading Edge	Peak Conc	Trailing Edge
144	136.4	68.7	74.3	141.2
150	155.5	64.8	70.3	136.5
156	179.2	61.1	66.5	131.9
162	208.3	57.2	62.3	127.2
168	281.3	45.9	52.4	112.9
174	250.6	35.5	41.2	99.7
180	261.5	34.5	40.0	95.6
186	277.8	33.0	38.3	90.2
192	297.3	31.4	36.4	84.0
198	323.6	29.5	34.3	76.7
204	366.7	26.9	31.3	66.7
210	456.6	23.0	27.2	52.7
216	588.2	20.0	24.0	40.8
222	869.6	16.5	20.5	27.5
228	980.4	15.3	19.3	24.3
234	1072	14.7	18.7	23.7
240	1174	14.2	18.2	23.0
246	1285	13.5	17.5	22.5
258	1567	12.2	16.2	21.0
270	2058	10.7	14.7	19.5
282	2597	10.0	14.0	18.7
294	3068	9.8	13.8	18.3
306	3559	9.8	13.8	18.0
318	4082	9.8	13.8	17.7
330	4651	9.7	13.7	17.2
342	5236	9.7	13.7	16.8
354	5882	9.7	13.7	16.3
366	6536	9.5	13.5	16.0
378	7246	9.5	13.5	15.5
390	8000	9.3	13.3	15.0

\* For depth readings found between depths stated above, round to closest figure. If value falls exactly between two depths reported above, round to the lesser value.

TABLE 2

DISCHARGE FROM SPRAY POND TO COOLING TOWER BLOWDOWN LINE  
VS.  
SPRAY POND WATER SURFACE ELEVATION

SPRAY POND WATER SURFACE ELEVATION (feet above msl)	DISCHARGE RATE TO BLOWDOWN CONDUIT (l) (gpm)
678.5	0
.6	541
.7	1,530
.8	2,849
.9	4,445
679.0	6,213
.1	8,166
.2	10,271
.3	12,525
.4	14,804
.5	14,964
.6	15,123
.7	15,279
.8	15,434
.9	15,588
680.0	15,740
.1	15,891
.2	16,040
.3	16,188
.4	16,334
.5	16,480
.6	16,624
.7	16,766
.8	16,907
.9	17,048

SPRAY POND WATER SURFACE ELEVATION (feet above msl)	DISCHARGE RATE TO BLOWDOWN CONDUIT (l) (gpm)
681.0	17,187
.1	17,325
.2	17,462
.3	17,598
.4	17,733
.5	17,867
.6	18,000
.7	18,131
.8	18,262
.9	18,392
682.0	18,521
.1	18,649
.2	18,777
.3	18,903
.4	19,029
.5	19,154
.6	19,278
.7	19,401
.8	19,523
.9	19,645
683.0	19,766
.1	19,886
.2	20,005
.3	20,124
.4	20,242
.5	20,359