CONTROLLED

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EMERGENCY PLAN IMPLEMENTATION PROCEDURE MANUAL

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EP-IP-029	Activation of TSC	0	6/16/82
EP-IP-030	Activation of Emergency Operations Facility and Transfer of Control From the Technical Support Center	0	6/16/82
EP-IP-031	Public Information Emergency Procedures	0	6/16/82
EP-IP-032	General Office Activation	0	6/16/82
EP-IP-033	Dose Assessment and Protective Actions	0	6/28/82
EP-IP-034	Reactor Building Sample Station Emergency Sampling	0	6/16/82
EP-IP-035	Emergency Vent Monitor Sampling	0	6/16/82
EP-IP-038	Reconstruction and Accident Close out	0	6/16/82
EP-IP-041	Fire Emergencies	0	6/16/82
EP-IP-042	Chemistry Lab Emergency Preparation	0	6/16/82
EP-IP-043	Pass Small Volume Liquid Sample	0	6/16/82
EP-IP-044	Emergency Environmental Sampling	0	6/16/82
EP-IP-045	Pass 10-ML Gas Sampling	0	6/16/82
EP-IP-046	Pass Iodine/Particualte Sample	0	6/16/82
EP-IP-047	Pass Large Liquid/Dissolved Gas Sample	0	6/16/82
EP-IP-048	Estimation of Core Damage During an Emergency	0	9/17/82
EP-IP-101	Inventory, Inspection, Operational Testing and Calibration of Emergency Equipment and Supplies	0	7/16/82

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EMERGENCY PLAN IMPLEMENTATION PROCEDURE MANUAL

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EP-IP-009-2	Overlay Calculation Worksheet	0	6/23/82
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EP-IP-101-3	General Office Nuclear Emergency Support Center Emergency Equipment and Supplies	0	7/16/82
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EP-IP-101-15	Damage Control Equipment Storage Box	0	7/16/82

PROCEDURE COVER SHEET

PENNSYLVANIA POWER & LIGHT CO. SUSQUEHANNA STEAM ELECTRIC STATION	
ON-SITE EMERGENCY MONITORING	EP-IP-012 Revision 1 Page 1 of 18
Effective Date 1-4-83 Expiration Date 1-4-85 Revised Expiration Date	

CONTROLLED

Prepared by Harry L. Ellis Date 12/15/82

Reviewed by Michael R. Bursey Date 12/15/82

PORC Review Required Yes (X) No ( )

Approved by [signature] Date 12/21/82
Section Head

PORC Meeting Number 82-231 Date 11/17/82

[signature] Date 12/30/82
Superintendent of Plant

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ATTACHMENTS

1.0 PURPOSE

The purpose of this procedure is to provide the Emergency Organization with a method of conducting On-Site Emergency Monitoring during an emergency.

2.0 SCOPE

To provide the Emergency Organization with instructions for On-Site Emergency Monitoring during an emergency.

3.0 REFERENCES

3.1 SSES Emergency Plan

3.2 HP-TP-230, Use of Portable Air Samplers

3.3 HP-TP-260, Operation of E-520

3.4 HP-TP-610, Removable Contamination Survey

3.5 HP-TP-720, Airborne Concentration Sampling and Evaluation

3.6 EP-IP-033 Dose Assessment and Protective Actions

4.0 RESPONSIBILITIES

4.1 It is the responsibility of the RADIATION PROTECTION COORDINATOR/OSC COORDINATOR to direct the activities of the ON-SITE EMERGENCY MONITORING TEAM.

4.2 It is the responsibility of the ON-SITE EMERGENCY MONITOR to perform on-site radiological surveys in accordance with this procedure.

5.0 DEFINITIONS

5.1 OSC - Operations Support Center

5.2 ALARA - As Low As Reasonably Achievable

5.3 HP-TP - Health Physics - Technical Procedures

5.4 ON-SITE - Refers to the Emergency Plan Boundary

6.0 INSTRUCTIONS

6.1 The RADIATION PROTECTION COORDINATOR/OSC COORDINATOR will follow the instruction in Attachment A, Action Step - RADIATION PROTECTION COORDINATOR/OSC COORDINATOR.

6.2 The ON-SITE EMERGENCY MONITOR will follow the instructions in Attachment B, Action Step - ON-SITE EMERGENCY MONITOR

ACTION STEP
RADIATION PROTECTION COORDINATOR
OSC COORDINATOR

A.1.0 Upon notification from the EMERGENCY DIRECTOR, the COORDINATOR will:

A.1.1 Call out the ON-SITE MONITOR.

A.1.2 Brief ON-SITE MONITOR on existing emergency.

NOTE: CONSIDER SPECIAL REQUIREMENTS FOR MINIMIZING INTERNAL AND EXTERNAL EXPOSURE PER EP-IP-033.

A.1.3 Secure Transportation for ON-SITE MONITOR (one set of keys for H.P. Van in Unit 2 Shift Supervisor's office key cabinet, one set of keys in H.P. office)

A.1.4 Assign code name of Oscar I to the ON-SITE MONITOR and maintain communications with him.

A.1.5 After examination of proper isopleth overlay, direct the ON-SITE MONITOR to the sector where radiation release is suspected.

A.1.6 Confirm release by obtaining highest radiation reading closest to the access road in that sector.

A.1.7 Notify the EMERGENCY DIRECTOR immediately, of any conditions or survey results that may be of assistance in evaluating the Emergency Condition.

A.1.8 Inform the EMERGENCY DIRECTOR of any significant ON-SITE MONITOR'S results.

ACTION STEP
ON-SITE EMERGENCY MONITOR

CHECK

B.1.0 Upon Notification of an Emergency Condition, a designated on-shift Health Physics Technician will immediately report to the Operations Support Center to be briefed on the conditions of the existing Emergency. If he is directed to perform On-Site Emergency Monitoring, the H.P. Level 1 will become the ON-SITE MONITOR and proceed as follows:

____ B.1.1 Examine meteorological data from control room printout or CRT. See control room meteorological data printout location Attachment C.

____ B.1.2 Using the differential temp or ΔT, determine stability class from (Table 1) Attachment D.

____ B.1.3 Using the stability class, wind direction, and wind speed information, determine the proper isopleth overlay to be used from (Table 2) Attachment E.

NOTE: THE FIRST NUMBER IS THE WHOLE BODY DOSE OVERLAY, THE SECOND IS THE THYROID DOSE OVERLAY. (SELECT THE WHOLE BODY DOSE OVERLAY).

____ B.1.4 Select proper isopleth overlay and orient it correctly on the large 10 mile Emergency Planning Map.

NOTE: THE EMERGENCY PLANNING MAP WILL BE KEPT IN THE SHIFT SUPERVISOR'S OFFICE AND SHOULD BE TAPED TO THE BACK SIDE OF A CONTROL PANEL IN THE CONTROL ROOM

____ B.1.5 Determine the proper sector to be surveyed and determine approximate width of the plume to be anticipated.

____ B.1.6 Confer with the EMERGENCY DIRECTOR on sector to be surveyed. Receive input from EMERGENCY DIRECTOR for any special instructions.

____ B.1.7 Obtain from the COORDINATOR

B.1.7.1 Keys for H.P. van (one set in Unit 2 Shift Supervisor's office, one set in H.P. office)

B.1.7.2 Radio designation of OSCAR I.

____ B.1.8 Proceed to the Health Physics Emergency Equipment Room and obtain the on-site H.P. Van Box which contains an Eberline E-520, an ion chamber, and a Ludlum dual channel analyzer.

B.1.9 Proceed to the Health Physics Office and obtain the portable VHF radio with a fully charged battery pack.

B.1.10 Proceed to the Health Physics Van and check fuel level.

NOTE: THE H.P. VAN WILL HAVE A PREDESIGNATED PARKING LOCATION AT THE ENTRANCE TO THE CENTRAL CONTROL STRUCTURE.

____ B.1.11 Turn on the mobile and portable radios, adjust squelch, and tune to channel 1.

____ B.1.12 Establish communication with the COORDINATOR to verify operation of the radios.

____ B.1.13 Check Hi-range dosimeter (0-5R), zero if necessary, and attach to front of the body. Assure issued TLD and SRD (0-500MR) are also worn.

B.1.14 Perform functional check of the following equipment

____ B.1.14.1 E-520 with SK-1 external speaker.

____ B.1.14.2 Inverter

a. Start engine

b. Turn off headlights

c. Turn on the inverter

d. Meter should read greater than 110V

NOTE: The following steps should be performed in order:

____ B.1.14.3 Ludlum 2218 Dual Channel Analyzer

a. Record analyzer number, efficiency and calibration date on Attachment H, on-site monitoring Team Data Sheet.

b. Verify that all settings are in accordance with instructions on front of the instrument. Refer to Attachment F.

c. Check batteries

d. Push reset button

e. Place check source against detector

f. Analyzer should begin rapid counting

____ B.1.14.4 Low Volume Air Sampler

a. Plug in air sampler

b. Switch toggle to high

c. Motor should begin to run.

d. Turn off inverter before driving.

NOTE: NOTIFY COORDINATOR OF FAULTY EQUIPMENT AND INSTRUMENTS WITHOUT EFFECTIVE CALIBRATION DATES.

____ B.1.15 Examine the On-Site Monitoring Map (Attachment G) for the best access route and proceed to survey area with driver's window down.

B.1.15.1 E-520 should be on the console in the front of the vehicle on X10 scale with beta shield closed and SK-1 on.

B.1.15.2 When approaching the designated sector, slow down and use the audible response of the SK-1 speaker to locate the edge of the plume.

____ B.1.16 When an increased clicking response of the SK-1 occurs, stop the vehicle, at the side of the road and turn on the four-way flashers.

NOTE: If exposure approaches 2500 MREM, retreat to a low radiation background area and notify the Coordinator.

____ B.1.17 Transmit the approximate location of the highest radiation reading obtained (plume center) and record on the data sheet, Attachment H.

____ B.1.18 Move vehicle as close to that area as possible.

____ B.1.19 Take an air sample with the Low Volume Air Sampler facing the plant and off the ground.

NOTE: FLOW RATE SHOULD NOT EXCEED 2.5 CFM. SAMPLE VOLUME SHOULD BE AT LEAST 20 ft^3. (8 MINUTE RUN TIME AT 2.5 CFM)

NOTE: RECORD ALL TIMES USING MILITARY TIME

____ B.1.20 While the Air Sampler is running, take E-520 and locate approximate boundaries of the plume if possible.

B.1.20.1 Transmit these results to the COORDINATOR

____ B.1.21 At the completion of the air sample, record final flow rate and time off.

____ B.1.22 Place all equipment and materials back in the H.P. van and proceed to a low background area out of the plume (Two sectors in either direction should be sufficient)

____ B.1.23 Using the Ludlum Dual Channel Analyzer perform a five (5) minute background count.

____ B.1.24 During background counting period, label two small plastic bags with the following information: Time on, Time off, Initial CFM, Final CFM, Location, Date.

____ B.1.25 Put on a pair of protective gloves and remove the filter and cartridge from the Low Volume Air Sampler.

____ B.1.26 Place the filter in one of the prelabeled plastic bags

____ B.1.27 Remove the cartridge and place in the second prelabeled plastic bag.

____ B.1.28 Remove disposable gloves and place in an empty plastic bag. Mark this bag with a radioactive sticker.

____ B.1.29 At the completion of the background count record the gross counts on the data sheet, Attachment H.

NOTE: IF THE BACKGROUND EXCEEDS 1750 CPM NOTIFY THE COORDINATOR AND RECEIVE INSTRUCTIONS TO PROCEED TO A LOWER BACKGROUND LOCATION.

____ B.1.30 Place the silver zeolite cartridge in the sample holder and count for five (5) minutes.

____ B.1.31 At the completion of the count, note the gross counts for the sample and record the results on the data sheet Attachment H.

NOTE: TURN OFF LUDLUM 2218 when not in use.

____ B.1.32 Place the filter, cartridge, and disposible gloves in one large plastic bag and label this with a radioactive sticker.

____ B.1.33 Calculate the air sample results in accordance with the instructions supplied on the data sheet, Attachment H

____ B.1.34 Record the results on the data sheet, Attachment H and report the results to the COORDINATOR.

B.1.34.1 Report the results as:
Number E Minus Number
Example 1.72 E Minus 6 for 1.72×10^{-6}

____ B.1.35 Read dosimeter, record results on Attachment H, and transmit your exposure to the COORDINATOR.

____ B.1.36 Receive instructions from the COORDINATOR as to the next location to be surveyed (off-site)

B.1.37 Turn off inverter before proceeding to next location.

____ B.1.38 Return E-520 to X10 range and place on the front console of the H.P. van before proceeding to next location.

____ B.1.39 When instructed, return to the HP Office. Perform contamination survey of self and vehicle per EP-IP-014, "Personnel and Vehicle Contamination Survey". Take all samples and data sheets to the HP Lab.

____ B.1.40 Request instructions from COORDINATOR regarding dosimetry to have it checked and receive new dosimetry, as appropriate.

____ B.1.41 Report to the COORDINATOR for debriefing, unless instructions for further monitoring are received.

CONTROL ROOM METEORLOGICAL DATA LOCATIONS

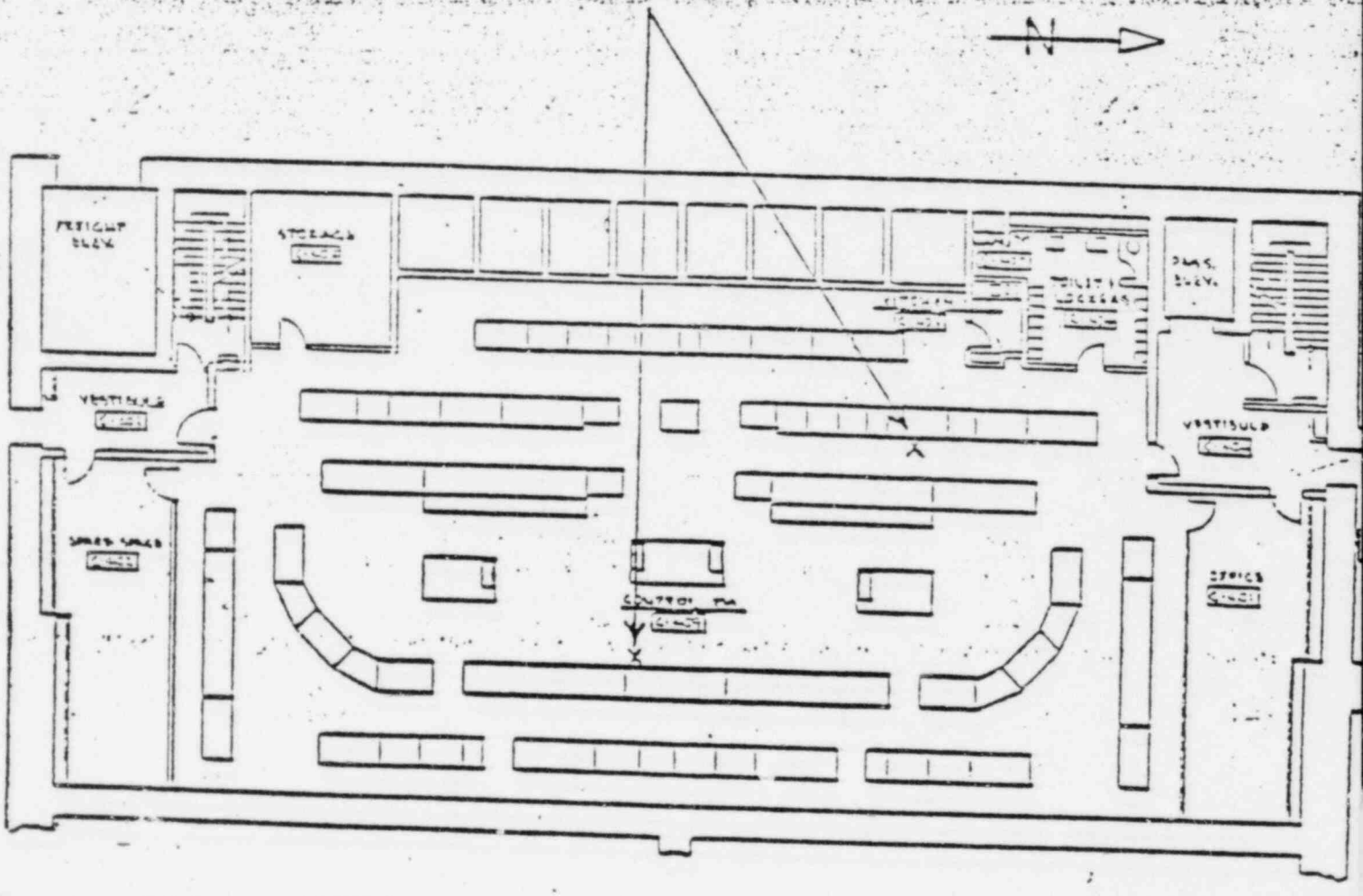


TABLE 1
STABILITY CLASS DETERMINATION

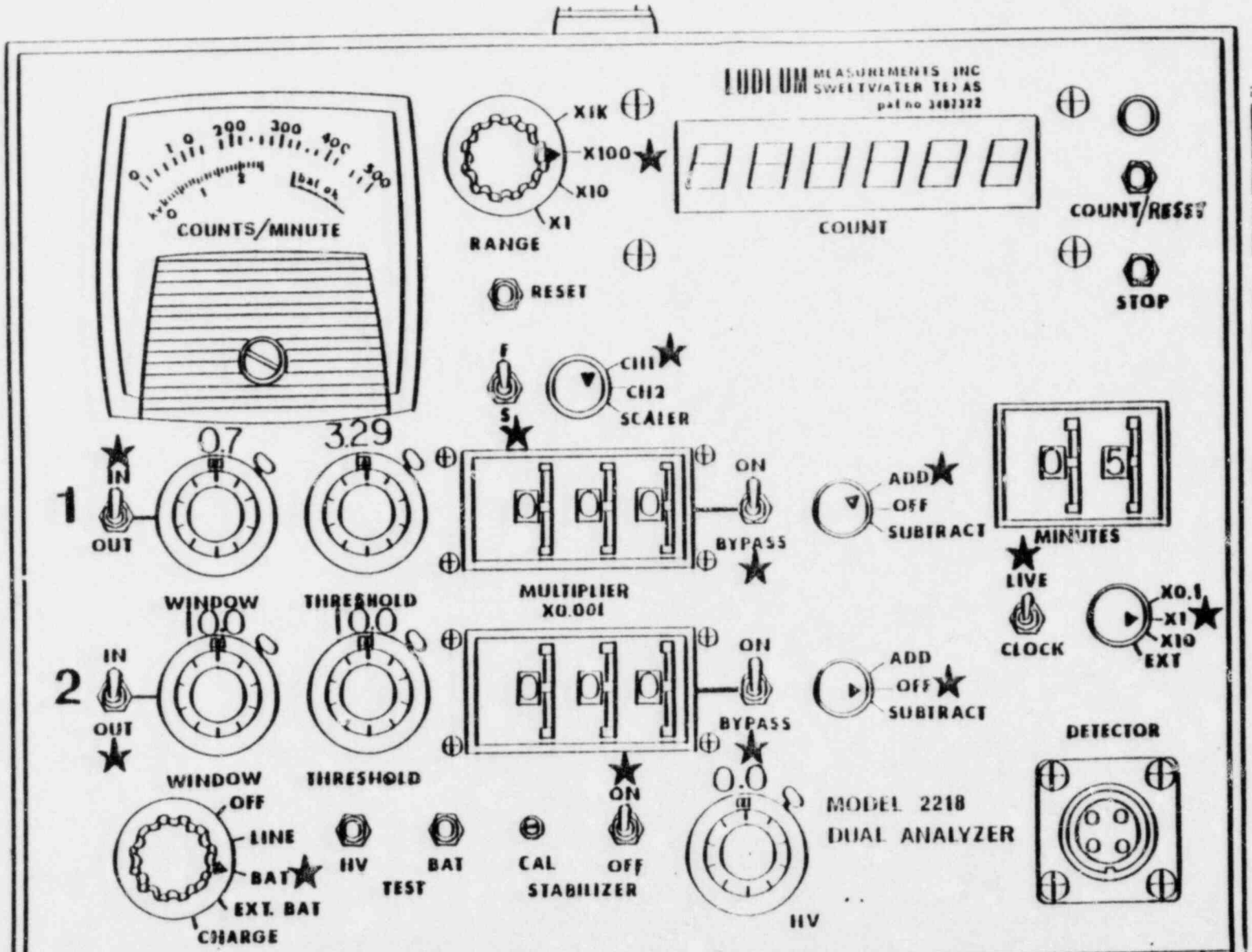
ΔT(°C/50m)	Stability Class
≤ - 0.75	C (unstable)
- 0..4 to - 0.25	D (neutral)
- 0.24 to 0.75	E (slightly stable)
> 0.75	G (very stable)

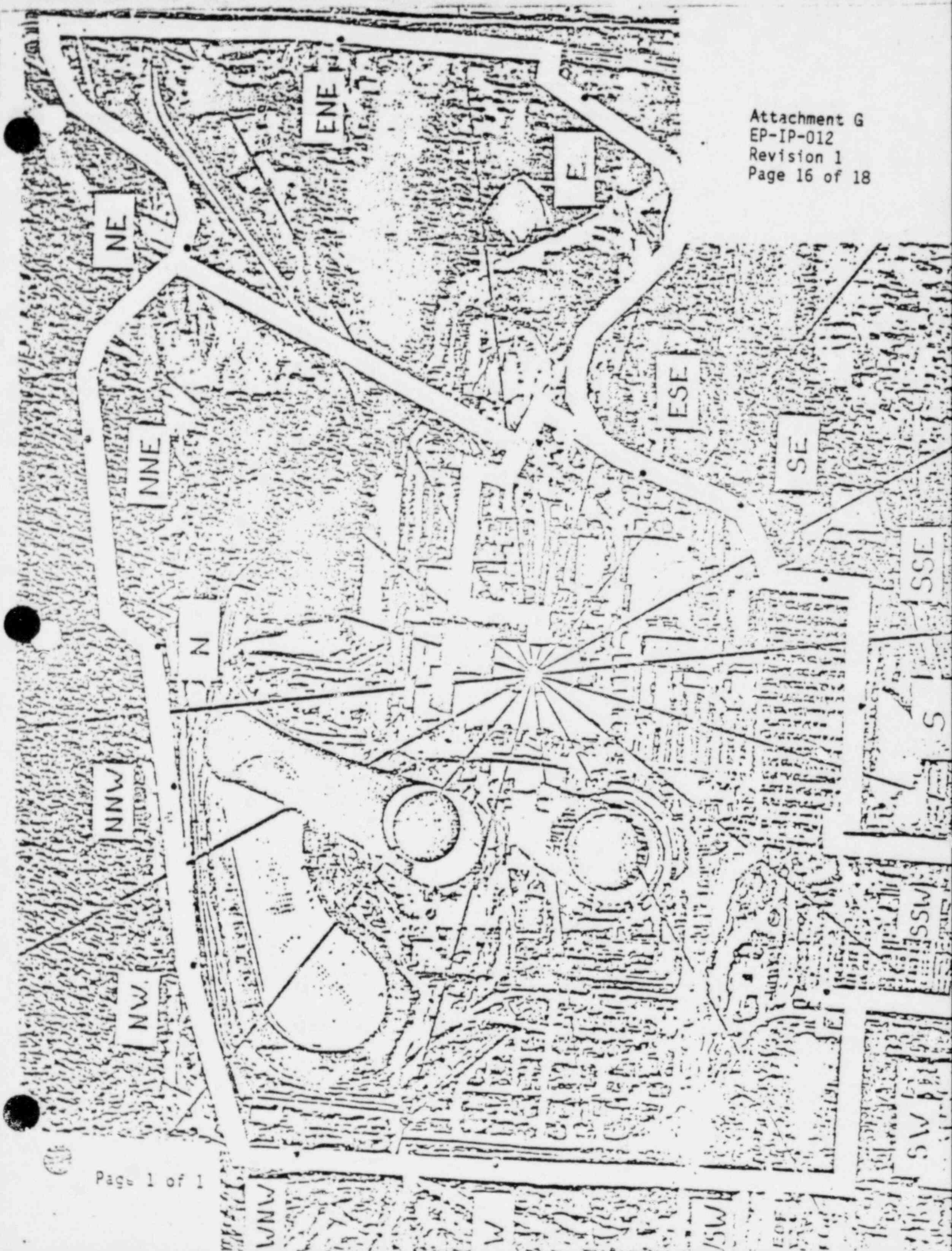
TABLE F.2.2
OVERLAY SELECTION

Wind Direction (from)	Overlay Numbers (Whole Body; Thyroid) Stability Classes					
Sector (directional) degrees)	C all wind speeds	D all wind speeds	E winds >4.5 mph	E winds <4.5 mph	G winds >4.5 mph	G winds <4.5 mph
N (348.74°-11.25°)	1;2	3;4	5;6	9;10	7;8	11;12
NNE (11.25°-33.75°)	1;2	3;4	5;6	13;14	7;8	15;16
NE (33.75°-56.25°)	1;2	3;4	5;6	17;18	7;8	19;20
ENE (56.25°-78.75°)	1;2	3;4	5;6	5;6	7;8	7;8
E (78.75°-101.25°)	1;2	3;4	5;6	*5;6*	7;8	*7;8*
ESE (101.25°-123.75°)	1;2	3;4	5;6	*5;6*	7;8	*7;8*
SE (123.75°-146.25°)	1;2	3;4	5;6	*5;6*	7;8	*7;8*
SSE (146.25°-168.75°)	1;2	3;4	5;6	*5;6*	7;8	*7;8*
S (168.75°-191.25°)	1;2	3;4	5;6	21;22	7;8	23;24
SSW (191.25°)-213.75°)	1;2	3;4	5;6	21;22	7;8	23;24
SW (213.75°-236.25°)	1;2	3;4	5;6	21;22	7;8	23;24
WSW (236.25°-258.75°)	1;2	3;4	5;6	5;6	7;8	7;8
W (258.75°-281.25°)	1;2	3;4	5;6	5;6	7;8	7;8
WNW (281.25°-303.75°)	1;2	3;4	5;6	25;26	7;8	27;28
NW (303.75°-326.25°)	1;2	3;4	5;6	29;30	7;8	31;32
NNW (326.25°-348.75°)	1;2	3;4	5;6	33;34	7;8	35;36

* Assume the wind is coming out of the ENE when using these overlays.

★ DENOTES ACTUAL SWITCH LOCATION




ENE
E
NE
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SE
NNE
SSE
N
S
NNW
SSW
NW
WNW

ON-SITE MONITORING TEAM DATA SHEET

DATE: _____ TIME: _____

LOCATION: _____ TEAM: _____

RADIATION SURVEY

DOSE RATE 3 FEET FROM GROUND WINDOW CLOSED _____ mrem/hr.

AIR SAMPLING DATA

AIR SAMPLER NO. _____

Calibration Date: _____

TIME START: _____
(Clock Time)

FLOW START: _____(a)
(Maximum of 2.5 CFM)

TIME STOP: _____
(Sample Time 8 Minutes)

FLOW STOP: _____ (b)
(Maximum of 2.5 CFM)

TOTAL TIME _____(1)

FLOW RATE $\frac{a + b}{2}$ = _____CFM(2)

TOTAL VOLUME (1) x (2) _____Ft^3 (A).

ANALYZER DATA

COUNTER NO. _____

EFFICIENCY _____

Calibration Date: _____

BKG Count Time _____ (5)
(Same amount of time as sample count)

BKG Gross Counts _____ (6)

BKG CPM _____ (6÷5) (C)

COUNT TIME _____ Min (3)
(5 minutes)

Gross Counts _____(4)

Gross CPM _____(4÷3) (B)

NET CPM _____ (B-C)=(D)

ACTIVITY = D ÷ (A X EFF. X 6.29E10) = _____uci/cc

ON-SITE MONITORING TEAM DATA SHEET

PERSONNEL DOSIMETRY

1. QUARTERLY EXPOSURE TO DATE: _____

DOSIMETER # _____ _____ Initials _____
(0 - 500 mR) (Final Reading)

_____ _____
(0 - 5R) (Final Reading)

2. QUARTERLY EXPOSURE TO DATE: _____

DOSIMETER # _____ _____ Initials _____
(0 - 500 mR) (Final Reading)

_____ _____
(0 - 5R) (Final Reading)

CLOCK TIME _____ _____
INITIAL FINAL

PROCEDURE COVER SHEET

PENNSYLVANIA POWER & LIGHT CO. SUSQUEHANNA STEAM ELECTRIC STATION	
OFF-SITE EMERGENCY MONITORING TEAMS	EP-IP-013 Revision 1 Page 1 of 17
Effective Date 1-4-83 Expiration Date 1-4-85 Revised Expiration Date	

CONTROLLED

Prepared by Harry L. Peiffer Date 12/15/82

Reviewed by Michael R Burdy Date 12/15/82

PORC Review Required Yes (X) No ( )

Approved by [signature] Date 12/21/82
Section Head

PORC Meeting Number 82-231 Date 11/19/82

[signature] Date 12/30/82
Superintendent of Plant

TABLE OF CONTENTS

ATTACHMENTS

1.0 PURPOSE

The purpose of this procedure is to provide EMERGENCY OFF-SITE RADIOLOGICAL MONITORING TEAMS with a method of conducting their duties during an emergency.

2.0 SCOPE

To provide EMERGENCY OFF-SITE RADIOLOGICAL MONITORING TEAMS with instruction for OFF-SITE EMERGENCY MONITORING during an emergency.

3.0 REFERENCES

3.1 SSES Emergency Plan

3.2 Instruction Manual, Ludlum Model 2218 Dual Stabilized Analyzer

3.3 Instruction Manual Radeco Lo-Vol Air Sampler

3.4 Instruction Manual Eberline RO-2 Portable Ion Chamber

4.0 RESPONSIBILITIES

It is the responsibility of the OFF-SITE EMERGENCY MONITORING TEAM to perform off-site radiological surveys in accordance with this procedure.

5.0 DEFINITIONS

See Attachment C, Working Glosssary

6.0 INSTRUCTIONS

6.1 OFF-SITE EMERGENCY MONITORING TEAMS will follow the instructions in Attachment A, Action Step, OFF-SITE EMERGENCY MONITORING TEAM.

ACTION STEP
OFF-SITE EMERGENCY MONITORING TEAMS

(Check)

NOTE: INSTRUCTIONS, INFORMATION AND DIRECTION MAY BE FURNISHED BY THE RADIATION SUPPORT MANAGER, RADIATION PROTECTION COORDINATOR OR OPERATIONS SUPPORT CENTER COORDINATOR.

A.1.0 The OFF-SITE MONITORING TEAMS will:

____ A.1.1 Upon arrival at the EOF:

a. Report to Security check-in

b. Obtain dosimetry

c. Await further instructions

____ A.1.2 When assigned to a vehicle; break the seal on the off-site monitoring equipment kit and perform functional checks of the following equipment:

NOTE: IF SEAL IS BROKEN, PERFORM AN INVENTORY OF KIT CONTENTS PER ATTACHMENT D, EMERGENCY KIT INVENTORY LIST.

THE FOLLOWING STEPS SHOULD BE PERFORMED IN ORDER GIVEN.

a. RO2

1. Check calibration date.
2. Perform battery check.
3. Zero the instrument.
4. Obtain a check source from kit.
5. Place the source against the RO2 with the window opened and detector on lowest scale.
6. A meter response should be observed.
7. Close the window of the detector.
8. Place the RO2 on the console in front of the vehicle.

NOTE: RO2 SHOULD REMAIN ON AT ALL TIMES.

b. Inverter

1. Turn off headlights.
2. Start engine
3. Turn on the inverter.
4. Meter should read greater than 110V.

c. Ludlum Dual Channel Analyzer

1. Record analyzer number, efficiency and calibration date on Attachment B, Off-site Monitoring Team Data Sheet.
2. Verify that all settings are in accordance with instructions on FRONT of the instrument.
3. Check batteries.
4. Push reset button.
5. Place check source against detector.
6. Analyzer should begin rapid counting.

d. Low Volume Air Sampler

1. Check calibration date and record date and serial number on Attachment B, Off-site Monitoring Team Data Sheet.
2. Plug the air sampler into the inverter.
3. Switch toggle to HIGH.
4. Motor should begin to run.
5. Unplug unit and turn off inverter.

e. Flashlight

f. Worklight

g. Calculator

h. Stopwatch

NOTE: NOTIFY EOF OF FAULTY EQUIPMENT

NOTE: ASSURE THAT INSTRUMENTS HAVE EFFECTIVE CALIBRATION DATES. NOTIFY OFF-SITE TEAM COORDINATOR IF INSTRUMENTS ARE OUT OF CALIBRATION.

____ A.1.3 Remove self-reading dosimeters (SRD) from the kit and check them for current calibration. Record the dosimeter number on the data sheet. Zero each dosimeter, as per the following instruction, and attach to the front of the body.

NOTE: DO NOT REZERO THE SRD IN THE FIELD UNLESS AUTHORIZED BY THE OFFSITE TEAM COORDINATOR.

____ a. Place the end of the dosimeter which houses the contact pin on the charging contact and press down firmly.

b. While keeping the dosimeter firmly depressed on the cntact pin note that the scale is illuminated.

c. Adjust the hairline to zero by turning the zeroing knob.

d. Release the dosimeter from the charging contact and re-read the scale to ensure that the hairline has not moved from zero.

____ e. If the hairline does not read zero, repeat steps a through d.

____ A.1.4 Turn on the radio, adjust squelch, tune to channel 1.

____ A.1.5 Contact the OFF-SITE TEAM COORDINATOR via radio and obtain the:

a. Location to be monitored
b. Specific tasks to be performed
c. Special instructions

NOTE: RO2 SHALL BE ON; BATTERY CHECKED; ZEROED AND ON APPROPRIATE RANGE BEFORE PROCEEDING TO SURVEY AREA.

____ A.1.6 Proceed to survey area and notify the OFF-SITE TEAM COORDINATOR upon arrival. Also notify the OFF-SITE TEAM COORDINATOR if there is a problem with the vehicle. Turn on the flashers and make sure that the vehicle is properly pulled off of the road.

NOTE: THE FIRST TEAM MEMBER SHOULD BEGIN WITH A.1.7 WHILE THE SECOND TEAM MEMBER CONTINUES WITH A.1.11.

____ A.1.7 FIRST TEAM MEMBER:

Verify instructions and proceed with radiation survey as follows:

a. Ensure that RO2 window is closed and step out of the vehicle.

b. Switch RO2 Range setting to a proper scale where an accurate and stable reading is obtained.

c. Slowly circle emergency vehicle while monitoring the meter.

d. Record the highest stable reading on the Data Sheet.

____ A.1.8 Transmit survey results immediately to the OFF-SITE TEAM COORDINATOR and record results on the OFF-SITE MONITORING TEAM Data Sheet.

____ A.1.9 Make a check of the dosimeter reading and be prepared to report this reading to the OFF-SITE TEAM COORDINATOR when requested.

NOTE: IF EXPOSURE OF ANY MEMBER OF THE TEAM APPROACHES 2500 mR., FIRST NOTIFY THE OFF-SITE TEAM COORDINATOR THEN RETREAT TO A LOW BACKGROUND AREA.

A.1.10 PROCEED TO STEP A.1.17.

____ A.1.11 SECOND TEAM MEMBER

Proceed to take an air sample with the Low Volume Air Sampler:

a. Turn on the inverter. (Note that the engine must be running and the headlights must be off.)

b. Mark the outer (fuzzy) surface of a particulate filter and place the filter and the cartridge in the air sampler so that the arrows on the cartridge are pointed in the direction of air flow.

c. Place the air sampler on the roof of the vehicle in the upwind direction.

d. Turn the dial setting all the way to the left (counter-clockwise).

e. Turn the toggle switch to the variable position and adjust the setting to just less than 2.5 CFM.

NOTE: FLOW RATE SHOULD NOT EXCEED 2.5 CFM AND SHOULD NOT BE ADJUSTED DURING SAMPLING. SAMPLE VOLUME SHOULD BE APPROXIMATELY 20 CUBIC FEET. (8 MINUTE RUN TIME AT 2.5 CFM)

f. Record the following information on the data sheet and two plastic bags:

1. Location
2. Date
3. Clock Time On
4. Flow Start Rate

____ A.1.12 At the completion of the air sample record the time off and the flow STOP rate on the data sheet and the two plastic bags. Turn off the sampler.

NOTE: RECORD ALL TIMES USING MILITARY TIME.

____ A.1.13 Put on a pair of protective gloves and remove the filter and cartridge from the Low Volume Air Sampler.

____ A.1.14 Using tweezers place the filter in the first plastic bag. Remove the cartridge and place in plastic bag.

____ A.1.15 Remove the disposable gloves and place in an empty, plastic bag. Mark this bag with a radioactive material sticker from the kit.

____ A.1.16 PROCEED to A.1.20.

____ A.1.17 Turn on the Dual Channel Analyzer and verify the dial settings according to the instructions on the face of the instrument if required.

____ A.1.18 Place the detector probe in the sample holder, without the sample, and perform a 5 minute background count.

____ A.1.19 At the completion of the background count with the Dual Channel Analyzer, record the gross counts on the data sheet.

NOTE: IF THE BACKGROUND EXCEEDS 1750 CPM NOTIFY THE OFF-SITE TEAM COORDINATOR AND RECEIVE INSTRUCTIONS TO PROCEED TO A LOCATION WITH A LOWER BACKGROUND.

____ A.1.20 Place the silver zeolite cartridge in the sample holder. Press the count reset button. The sample should be counted for a minimum of 5 minutes.

____ A.1.21 At the completion of the count, note the gross counts for the sample and record the results on the Data Sheet.

____ A.1.22 Place the plastic bags which contain the filter, cartridge in one large plastic bag and label this with a Radioactive Material Sticker.

____ A.1.23 Calculate the air sample results in accordance with the instructions supplied on the Data Sheet.

____ A.1.24 Record the results on the data sheet and report the results to OFF-SITE TEAM COORDINATOR. Report the results as:

NUMBER E MINUS NUMBER

Example: 1.72 E MINUS 6.

____ A.1.25 Note exposure on the Self Reading Dosimeter, record results on the Data Sheet and report exposure to the OFF-SITE TEAM COORDINATOR.

____ A.1.26 Receive instructions from the OFF-SITE TEAM COORDINATOR as to the next location to be surveyed.

____ A.1.27 Turn off the inverter before proceeding to a new location.

_____	A.1.28	Upon notification, return to the EOF. Remove equipment kits and await contamination survey of personnel and vehicle before coming into the EOF.
_____	A.1.29	Return all samples and original data sheets to the OFFSITE TEAM COORDINATOR.
_____	A.1.30	REPORT to the OFF-SITE TEAM COORDINATOR for debriefing.

OFF-SITE MONITORING TEAM DATA SHEETS

DATE: _____ TIME: _____
LOCATION: _____ TEAM: _____

RADIATION SURVEY

DOSE RATE 3 FEET FROM GROUND WINDOW CLOSED _____ mrem/hr

AIR SAMPLING DATA

AIR SAMPLER NO. _____
Calibration Date: _____

TIME START: _____
(Clock time)
FLOW START: _____ (a)
(maximum of 2.5 CFM)

TIME STOP: _____
(Sample Time 8 Minutes)

FLOW STOP: _____ (b)
(Maximum of 2.5 CFM)

TOTAL TIME _____ (1)

FLOW RATE $\frac{a + b}{2}$ = _____ CFM (2)

TOTAL VOLUME (1) x (2) _____ Ft^3 (A).

ANALYZER DATA

COUNTER NO. _____
Calibration Date: _____
EFFICIENCY: _____
BKG Count Time _____ (5)
(Same amount of time as sample count)

BKG Gross Counts _____ (6)

BKG CPM _____ (6÷5) (C)

COUNT TIME _____ Min. (3)
(5 minutes)

Gross Counts _____ (4)

Gross CPM _____ (4÷3) (B)

NET CPM _____ (B-C) = (D)

ACTIVITY = D ÷ (A x Eff x 6.29 E10) = _____ uci/cc

PERSONNEL DOSIMETRY

DOSIMETER# _____ _____ Initials _____
(0 - 500 mR) (Final Reading)

_____ _____
(0 - 5R) (Final Reading)

DOSIMETER# _____ _____ Initials _____
(0 - 500 mR) (Final Reading)

_____ _____
(0 - 5R) (Final Reading)

CLOCK TIME _____ _____
INITIAL FINAL

WORKING GLOSSARY
DEFINITIONS

Low-Vol Air Sampler - A device which is used to draw air through a filter and charcoal cartridge to collect particulate and organic material in the air for analysis.

ALARA - Acronym for As Low As is Reasonably Achievable.

BKG - Background radiation, the normal activity caused by cosmic radiation and the decay of naturally occurring radioactive material in the air and the earths crust.

CC - Cubic centimeters

CFM - Cubic feet per minute

Contamination - The deposition of radioactive material where it is not wanted.

Curie - Unit measuring the quantity of radioactive material; equal to 2.22E12 disintegration per minute.

CPM - Counts per minute; a rate that is seen by a detector.

Decontamination - Removal of radioactive material by cleaning.

SRD - Self-reading dosimeter

Survey - Determination of radiological conditions (dose rate) by the use of an RO2 or similar instrument.

TLD - Thermoluminescent dosimeter, used for personnel and environmental dosimetry.

TSC - Technical Support Center

u - micro; one-one-millionth

m - milli; one-one-thousandth

MOC - Media Operations Center

NaI - Sodium Iodide Detector

OSC - Operations Support Center

Particulate - Relating to minute separate particles

PIC - Pressurized Ion chamber

RAD - Radiation Absorbed Dose; measurement of energy absorbed per gram of material.

Roentgen - Represents the absorption of energy in air used to measure gamma and x-rays only.

REM (Roentgen Equivalent Man) - Unit for measurement of Radiation exposure to tissue; usually prefaced by milli-.

RO2 - Portable ion chamber used for radiation surveys.

Silver Zeolite Cartridge - A cartridge used to collect airborne radioactive iodine.

Shielding - A material that is used to reduce the amount of radiation.

DOSE - The amount of radiation received by an individual.

DOSE/RATE - The rate at which radiation exposure is being accumulated.

DPM - Disintegrations per minute; the actual rate at which a radioactive material is decaying.

Effeciency - Counts per minute as seen by the detector divided by the disintegrations per minute. CPM/DPM x 100 = % eff. Efficiency is normally used in calculations on the decimal form.

EOF - Emergency Operations Facility

EPZ - Emergency Planning Zone

Filter - The media that is used to collect a particulate air sample on. Usually a spun glass type of material.

ft^3 - Cubic feet

Friske. - a count rate meter used to survey personnel and equipment for contamination.

WORKING GLOSSARY
PHONETIC ALPHABET AND NUMERALS

LETTER	WORD	PRONUNCIATION
A	Alfa	Al Fah
B	Bravo	Brah Voh
C	Charlie	Char Lee
D	Delta	Dell Tah
E	Echo	Eck Oh
F	Fox Trot	Foks Trot
G	Golf	Golf
H	Hotel	Hoh Tell
I	India	In Dee Ah
J	Juliett	Jew Lee Ett
K	Kilo	Key Loh
L	Lima	Lee Mah
M	Mike	Mike
N	November	No Vem Ber
O	Oscar	Oss Cah
P	Papa	Pah Pah
Q	Quebec	Keh Beck
R	Romeo	Row Me Oh
S	Sierra	See Air Rah
T	Tango	Tang Go

U	Uniform	You Nee Form
V	Victor	Vik Tah
W	Whiskey	Wiss Key
X	X-ray	Ecks Ray
Y	Yankee	Yang Key
Z	Zulu	Zoo Loo

EMERGENCY KIT INVENTORY LIST

1 Each	Clipboard, Paper, Magic Marker	_____
2 Each	Pen, Pencil	_____
1 Each	Flashlight with Batteries	_____
1 Each	Map of site and surrounding areas	_____
1 Copy	EP-IP-013 Off-Site Emergency Monitoring	_____
1 Each	Stopwatch	_____
1 Each	Tweezers	_____
1 Each	Eberline RO2	_____
2 Each	0-5R Dosimeter	_____
2 Each	0-500 MR Dosimeter	_____
1 Each	Dosimeter Charger	_____
1 Each	Low-Vol Air Sampler with Head	_____
1 Box	Particulate Filters	_____
20 Each	Silver Zeolite Cartridges	_____
50 Each	Off-Site Monitoring Data Sheets	_____
40 Each	Disposable Gloves	_____
2 Rolls	Masking Tape	_____
20 Each	Plastic Sample Bags	_____
1 Each	Ludlum Dual Channel Analyzer 2218 with Detector	_____
1 Each	Calculator	_____
1 Each	Worklight	_____
1 Each	Extension Cord	_____

1 Each	Spare battery and Fuse kit	_____
1 Each	Box Radioactive Material Stickers	_____
1 Each	Check Source	_____
2 Each	Vials of Potassium Iodide (KI)	_____