ENERGY NORTHWEST

INTEROFFICE MEMORANDUM

DATE: August 10, 2001

TO: Distribution

FROM: Procedure Control, Administrative Services, (927A)

SUBJECT: **PLANT PROCEDURES MANUAL - VOLUME 13**
Distribution Package: 2001-508

REFERENCE:
The following Procedure(s) have been revised/approved and are to be inserted in your controlled copy of the Manual and the superseded revisions are to be removed and destroyed:

Procedure	Rev.	Title
13.8.1	21	Emergency Dose Projection System Operations
13.9.1	26	Environmental Field Team Monitoring Operations

To verify receipt or cancellation of the subject Procedure(s), please sign, date and **return this receipt to Procedure Control, MD 927A** within TEN (10) WORKING DAYS of the date of this IOM. Or the receipt may be FAXED back to (509)377-2476

Energy Northwest
Procedure Control (Mail Drop 927A)
PO Box 968
Richland, WA 99352

Date	Signature of Manual Holder	Controlled Copy Number

A045
A009

DISTRIBUTION - VOLUME 13

Control Copy	Location	Mail Drop
2	*Control Room (501) **(IOM to CRS)**	927A
3	*Shift Manager (501)	927A
5	Licensed Training (PSF Rm. 249)	1027
6	*Simulator (PSF Rm. 235)	1027
12	PEC Library	PEC
25	Bruce Bond	911
26	Region IV, NRC	----
28	Region IV, NRC	----
30	EOF Support Engineering Library	1050
31	*TSC Emergency Response	927A
35	NRC Resident Inspector	----
52	State of Washington, Military Department	----
55	Federal Emergency Mgmt. Agency	----
57	Benton County Dept of Emerg. Mgmt.	----
58	*WNP-2 Security **(SAS-CR) (13.1.1, 13.4.1, 13.5.1, 13.5.3, 13.5.5, 13.10.8, 13.11.10, 13.12.19, 13.13.4)**	927A
59	*WNP-2 Security **(CAS-AAP) (13.1.1, 13.4.1, 13.5.1, 13.5.3, 13.5.5, 13.10.8, 13.11.10, 13.12.19, 13.13.4)**	927A
60	WNP-2 Security	988A
63	Emergency Training	PE30
64	*Radwaste Control Room (467)	927A
66	*Simulator, Shift Manager (PSF Rm. 235)	1027
68	*Remote Shutdown Room (467) **(13.1.1, 13.2.1, 13.2.2, 13.4.1, 13.5.1, 13.10.1, 13.10.9)**	927A
75	Dept. of Health Radiation Protection	----
78	*Control Room - (501) STA's Desk	927A
83	*MUDAC	1020
86	*Simulator - STA's Desk	1034
87	Document Control Desk, NRC	----
++90	*Joint Information Center (J. Ittner)	PE30
94	*EOF	1050
97	*EOF	1050
114	EP Manager	PE30
127-130 (4)	Licensed Training (PSF Rm. 248)	1027
132	Licensed Training (PSF Rm. 248)	1027
134-136 (3)	*MUDAC Field Team Kits **(13.9.1, 13.9.5, 13.9.8, 13.13.4, 13.14.4)**	1050
++137	*MPF Field Team Kits **(13.7.5, 13.9.1, 13.9.5, 13.9.8, 13.13.4, 13.14.4)** (J. Ittner)	PE30
142	Hanford UDAC	----
146	FEMA RX Liaison	----
155	*Maintenance Library (Memo to Georgia)	927A
160	*OSC Emergency Support	927A
161	Equipment Operator Training	1027
164	Oregon State Dept. of Energy	----
218	U.S. Nuclear Regulatory Commission	----
219-221 (3)	Licensed Training (PSF Rm. 248)	1027
223	Franklin County Emergency Management	----

++ **Procedure Control assures delivery is arranged/made to J. Ittner**

* Level 1 File

ENERGY NORTHWEST		USE CURRENT REVISION
COLUMBIA GENERATING STATION PLANT PROCEDURES MANUAL		
PROCEDURE NUMBER *13.8.1	APPROVED BY JEW - Revision 21	DATE 08/10/01
VOLUME NAME EMERGENCY PLAN IMPLEMENTING PROCEDURES		
SECTION OFFSITE DOSE CALCULATIONS		
TITLE EMERGENCY DOSE PROJECTION SYSTEM OPERATIONS		

TABLE OF CONTENTS

Page

1.0 PURPOSE 2

2.0 REFERENCES 2

3.0 DEFINITIONS 2

4.0 PROCEDURE 4

4.1 General Instructions 4
4.2 Dose Estimation Using QEDPS 5
4.3 Dose Estimation Using EDPS 7
4.4 Historical Dose Projections 8

5.0 ATTACHMENTS 9

5.1 EDPS User Guidance 10

1.0 PURPOSE

This procedure provides instructions for the use of the computerized Emergency Dose Projection System (EDPS) to predict offsite dose rates, integrated doses and radioactive material deposition for locations within the 10-mile Plume Emergency Planning Zone (EPZ) and the 50-mile Ingestion EPZ. Actual manipulation of system display terminals is described in the Emergency Dose Projection System Users Manual referred to as the Users Manual. {R1594}

2.0 REFERENCES

2.1 Emergency Dose Projection System Users Manual

2.2 FSAR, Chapter 13.3, Emergency Plan, Section 5.3

2.3 NUREG 1228, Source Term Estimation During Incident Response to Severe Nuclear Power Plant Accidents

2.4 10 CFR 50 .47(b) {R1594}

2.5 PPM 13.1.1, Classifying the Emergency

2.6 PPM 13.2.1, Emergency Exposure Levels/Protective Action Guides

2.7 PPM 13.2.2, Determining Protective Action Recommendations

3.0 DEFINITIONS

3.1 Contours - Lines on the output map(s) connecting points of equal dose/dose rate/deposition.

3.2 Delta T - The temperature difference between two sensors located at different elevations on a meteorological tower.

3.3 EDPS (Puff) - A dose projection computer program which employs all the design capabilities of multi-meteorology station data, variable source term, full release time specification and a full output map selection. EDPS will compute dose/dose rate/deposition based on effluent monitor releases or reactor conditions out to 50 miles. EDPS provides the opportunity to modify the source term, reactor power, and release rates. EDPS will accept data from up to 50 meteorology stations to more realistically model the radioactive release via the puff dispersion model.

3.4 EDPS (Plume) - The EDPS Plume model accepts only a constant wind speed, direction and stability class per release. Additional data are ignored. Otherwise, EDPS (Plume) has similar capabilities as EPDS (Puff) model does.

3.5 Grid Points - EDPS calculations are based on two grid coordinate systems, both centered on the reactor building. For the polar grid, doses are calculated at 10 degree intervals on 6 concentric circles around the reactor. For the Cartesian grid, doses are calculated at 961 uniformly-spaced locations on the model domain (0-10 or 0-50 miles).

3.6 QEDPS - Quick EDPS is a fully defaulted, single entry screen EDPS subprogram designed for quick execution during the early stage of the plume phase and for EAL calculations. Many of the input options are defaulted with text and map output available. QEDPS uses plant monitor data or field team data to calculate offsite doses.

3.7 Release Height - The assumed calculation release height. The effective release height for WNP-2 is ground-level which is indicated in EDPS by entering 1 meter (or foot).

3.8 Source Term - The quantity and radionuclide makeup of the material in the release. The source term used in EDPS is based on NUREG-1228.

3.9 Stability Class - Values from 1 to 7 representing ranges of Delta T which in turn represent atmospheric mixing estimations. The NRC definitions of these ranges are used to define the stability classes used in EDPS.

3.10 Radioactive Release - Any of the following:

- A valid reading exists which exceeds any PPM 13.1.1 Table 3 Column UE value, OR
- Offsite dose calculations meet or exceed PPM 13.1.1 Table 4 UE levels for TEDE or CDE thyroid, OR
- Field teams measure 100 μR or more at 1.2 miles from the plant.

4.0 PROCEDURE

4.1 General Instructions

4.1.1 If in a declared emergency and an offsite dose or dose rate projection is needed, or if so directed, operate QEDPS or EDPS.

4.1.2 If necessary, boot up the PC at the work station. Log onto the LAN using the appropriate password:

- TSC: USERID = TSC Password = TSC1
- EOF: USERID = EOF Password = EOF1

NOTE: The PC assigned to the DOE representative at the JIC may be relocated to the Alternate EOF and used for dose projections. If relocated, it must be connected to the LAN to access PDIS.

- JIC: USERID = JIC1 Password = JIC1

4.1.3 Start PDIS by double-clicking on the appropriate PDIS icon on the Windows desktop. Minimize PDIS, and start QEDPS or EDPS.

- When both programs are running, window back and forth for data selection and dose projection input.

4.1.4 Access RSTAT by pulling down the EOP menu from the PDIS menu bar. Select Rad Status to obtain key radiation monitor data, meteorological, and effluent data.

- Other PDIS pulldown menus may be selected to view other plant parameters or trends as desired.

4.1.5 Use either the QEDPS or EDPS based on the following considerations:

a. In the Control Room and TSC, use QEDPS to estimate doses.

b. In the EOF dose assessment area:

1) Use QEDPS to estimate initial offsite doses when plant monitoring data are available.

2) Use QEDPS to estimate offsite doses during quickly changing meteorology or release conditions.

3) When sufficient dose assessment staff are available, then the EDPS may be run along with QEDPS. EDPS results may be lower because of additional parameters supplied when entering EDPS data.

4) Once the release has stabilized or is decreasing, then sole use of EDPS is appropriate with constant meteorological conditions.

5) Use of the EDPS Puff model at the end of the Early (plume) phase, in the Intermediate phase, or with variable meteorological conditions, is appropriate.

4.1.6 Refer to Attachment 5.1 as a guide through EDPS. For more detail consult the EDPS Users Manual.

4.1.7 Real time radiological and meteorological data is used by QEDPS and EPDS by default. Historical dose projections are estimated in Section 4.5.

4.1.8 Review dose projection printouts, note any qualifying factors, as appropriate, initial for release and brief the RPM or REM, as appropriate, on the dose projection.

4.1.9 Refer to PPM 13.2.2 for Protective Action Recommendation (PAR) guidelines.

4.2 Dose Estimation Using QEDPS

4.2.1 Verify that system is operational by turning on the surge protector, CPU, monitor, and printer, if necessary.

4.2.2 Activate QEDPS by double clicking the QEDPS icon.

a. The Monitoring/Field Data screen lists the Plant Monitors and Field Team options used to calculate a release. Readings for all monitors listed are normally available on RSTAT in PDIS for use in the TSC or EOF.

b. Select monitor to be used for the calculations from Columbia Generating Station and enter data in appropriate blocks.

1) If the release path is out the Reactor Building, the primary choice is a Stack Monitor.

2) When a Stack Monitor is selected, a screen will be displayed requesting Standby Gas Treatment System (SGT) information.

3) The default flow rate will display for the option chosen. Actual values will need to be entered.

4) Enter the monitor reading.

5) In the EOF, all suspect data should be verified through EOF engineering staff.

c. Dose Estimation for Unmonitored Release Paths or if Instrumentation is Out of Service or Offscale.

1) Obtain field team data in the form of iodine air sample results or dose rates from the Field Team Coordinator.

2) On the Windows Desktop, select the Excel air sample icon corresponding to the units of the air sample.

3) Enter the cartridge and background readings, and press the tab key to perform the calculation.

4) Select field team data type from the QEDPS menu and enter field team sample results or dose rate values in the popup when prompted.

5) Use closed window readings when calculating dose projections using field team dose rate meter data.

4.2.3 Projected Release Duration

a. If End of Release is <u>not</u> known, a default value of the time of the release rounded up to the next hour plus two hours should be used.

EXAMPLE: Release has lasted for 25 minutes. Round 25 minutes up to 1 hour and add 2 hours to give a release duration of <u>3 hours.</u>

b. Time since Reactor Shutdown

If the reactor is not scrammed, leave the value set to zero.

4.2.4 Enter Meteorology information. Stability class is entered as an alpha character A-G. Meteorological parameters from the primary met tower are normally available on the Radiological Parameters screen. If the primary met tower parameters are not available, use instructions in Attachment 5.1, step 2.2.4.k.3.

4.2.5 Select RUN to calculate doses.

4.2.6 Select PRINT to produce a paper output with emergency worker dose adjustment factor included.

4.2.7 Click on MAP to produce a projected plume map with TEDE and thyroid CDE values. If another dose projection is desired, click on RETURN.

NOTE: When RETURNing from the Centerline Dose Results table, you may archive the results by clicking Yes when prompted. Results are archived in a file called Qarchive found in the subdirectory called Output, which is a part of the subdirectory QEDPS. Results are appended to the existing file and can be viewed with any text editor.

4.2.8 Compare doses and dose rates with EALs (PPM 13.1.1 Table 4) and protective action guidelines (PPM 13.2.1).

4.2.9 To perform another dose calculation, click on RETURN. Previous entries are retained. Enter the new values and select RUN.

4.2.10 Label and sign printed data for distribution. Forward to the REM for approval during the plume phase. In the Control Room the Shift Manager has approval authority. The Washington Senior State Official approves release data for distribution during the ingestion phase. Maintain a binder of all original printouts.

4.2.11 When finished in QEDPS, select QUIT.

4.3 Dose Estimation Using EDPS

4.3.1 Verify that the system is operational by turning on the surge protector, CPU, monitor, and printer, as necessary.

4.3.2 Activate EDPS by double-clicking on the EDPS icon.

4.3.3 Starting at the bottom of the Log On screen, enter your name and click on your location, then exit this screen via the OK button. These actions will identify your model outputs.

4.3.4 An understanding of the following is necessary to successfully execute the programs:

a. At several points in the program when a subprogram begins execution, a black window appears. Press Enter (Return) and, if necessary, click on the X in the upper right to continue.

b. Use the reactor power level default value of 100% unless the reactor has been operating at a different power level for some time. Radioactive decay correction of the source term depends on the interval between

Reactor Shutdown Time and Start of Release to Environment, which are entered on the EVENT TIMES screen.

c. Ensure that WNP-2 is the first weather station selected in the meteorology module and that data are entered. The PLUME model requires input from only one set of meteorological data from the WNP-2 station.

d. If the meteorology data times entered do not occur prior to or the same as the Start of Release to Environment, then you will get zero dose on your map contours window (ZMAX=0).

e. Maps and text output may be made for any 15-minute time interval (display time) in the exposure period.

f. If you get a page fault or any other error message, go back to the main screen and click on FILES then NEXT RUN to restart at the beginning of data input.

4.4 Historical Dose Projections

4.4.1 Contact the PDIS Analyst in the EOF to obtain historical values for the following TDAS points if the release is from the Reactor Building:

X406, Low Range Stack Monitor, PRM-RE-1A
X407, Intermediate Range Stack Monitor, PRM-RE-1B
X392, High Range Stack Monitor, PRM-RE-1C
F146AV, Delta T
F145AV, Wind direction at 33'
F144AV, Wind speed at 33'

Contact the PDIS Analyst to obtain additional values as necessary:
X198, Turbine Building Exhaust Flow
X409, Turbine Building Low Range Monitor
X394, Turbine Building Intermediate Range Monitor
X366, Radwaste Building Exhaust Flow
X408, Radwaste Building Low Range Monitor
X393, Radwaste Intermediate Range Monitor
X466, SGTS A1
X356, SGTS A2
X452, SGTS B1
X371, SGTS B2

4.4.2 Enter the appropriate values and click RUN, PRINT or MAP as instructed.

5.0 ATTACHMENTS

5.1 EDPS User Guidance

EDPS USER GUIDANCE

1.0 DATA ENTRY OVERVIEW

1.1 The EDPS Main Window provides a snapshot of the flow of data required to generate a dose projection.

1.2 An arrow points toward the module(s) that are available for data entry.

1.3 As information is entered into the various modules, a check mark will display next to the completed module.

1.4 The EDPS system will highlight the normal sequence throughout the program by putting a small box around the current field requiring a response.

1.5 Use of the Tab key is the recommended method for entering numerical data.

1.6 Use of the left mouse button is the recommended method for navigation through the program.

2.0 DATA ENTRY

2.1 Input Source Term Data

2.1.1 At the "Logon as EDPS Master Terminal" screen:

a. Select location for performing a dose projection.

b. Enter your name and select "OK" to continue.

2.1.2 At the EDPS Main Window screen, select "Files" and "Next Run" to reset the program.

2.1.3 Select Scenario Description on the EDPS Main window to begin entering data.

2.1.4 Title/Model/Height/Power

a. Select the Title/Height/Bldg Wake/Power submenu.

b. Type in a Run Title for the dose projection being performed. Example: Run 1

c. Choose the desired Transport Model. In general:

1) For most projections, select the Puff model.

- The Plume model should be selected if the projection is for a near site vicinity map.

2) In the Intermediate (Ingestion) Phase, use the Puff Model

d. Choose Wake Effects or No Wake Effects.

The building wake option should be selected to allow building wake to be accounted for in the rate of diffusion.

e. Enter 1 meter as Effective Release Height.

f. Enter the Reactor Power level at which WNP-2 was operating prior to shutdown. The default value is 100%. If the plant was shutdown for seven days or longer, use 0% for power.

g. When the above data are entered, select the DONE button on the screen.

2.1.5 Source Term

a. Select the Source Term submenu.

b. Select the Source Term option from the display which will be used to perform the projection.

c. When plant monitoring data are available, Monitoring Data is the desired option.

d. If the effluent monitors are out of service, refer to Section 4.0 of this attachment for dose calculations based on plant conditions or sample analysis.

e. The Monitoring Data screen lists the Plant Monitors used to calculate a release. Readings for all monitors listed are normally available on RSTAT in PDIS.

f. Select monitor to be used for the calculation and enter data in appropriate blocks.

1) If the release path is out the Reactor Building, the primary choice is a Stack Monitor.

2) When a Stack Monitor is selected, a screen will be displayed requesting Standby Gas Treatment System (SGT) information. This can be obtained through RSTAT. If the Filter Intact option is selected, the Filter Efficiency is 99.7%. If the Damaged option is selected, EDPS uses 0% efficiency.

3) The default flow rate will display for the option chosen, however, this should be obtained from RSTAT. If two trains are running, add the flow rates together prior to entry.

4) Enter the monitor reading based on RSTAT data.

5) Verify all suspect data through EOF engineering staff.

g. Select the DONE button when complete to return to the data input submenu.

2.1.6 Event Times

a. Select the EVENT TIMES button on the screen.

b. The following events should be displayed:

1) Reactor Shutdown

If the reactor is not scrammed, enter the same time as the Start of Release to Environment. Use a 00:00 time format.

2) Start of Release to Containment

For releases from other than the reactor building, enter the same time as the Start of Release to Environment.

If the reactor is not scrammed, enter the same time as the Start of Release to Environment.

3) Start of Release to Environment

4) End of Release

If End of Release is <u>not</u> known, a default value of the time of the release rounded up to the next hour plus two hours should be used.

EXAMPLE: Release has lasted for 25 minutes. Round 25 minutes up to 1 hour and add 2 hours to give a release duration of 3 hours.

5) End of Exposure

Use the same time as End of Release or a later time. For times later than the End of Release when the plume has left the area of concern, then groundshine is the major pathway of exposure.

6) Select DONE to return to the data input menu.

2.1.7 Review of Entered Data

a. Select the View Entered Values button to review data for accuracy.

b. Select the Return to Main Menu button.

c. If data needs to be changed, then select the appropriate submenu and enter the correct data.

d. When the correct data are entered, select the Store Values in File button.

e. Select EXIT button. A black calculation screen will display. Press Return, and, if necessary, use the mouse to click on the X to close the window.

2.2 Meteorological Data

2.2.1 Select Input Meteorology Data button.

2.2.2 Meteorology Data Overview

Although data from multiple weather stations may be entered in the Puff model, only the data from the Columbia Generating Station meteorology tower is required and used during the Straight Line Plume selection.

The following is a brief description of the functions of each button displayed on the screen:

a.	CHANGE STATIONS	Allows adding or changing stations.
b.	CLEAR LIST	Clears entire list of dates and times.
c.	REMOVE ITEM FROM LIST	After selecting an individual date and time, you can remove it from the list using this function.

d.	ADD NEW DATE/TIME	After entering new date and time in the appropriate fields, this function adds them to the date and time list.
e.	ENTER DATA	Allows entry of data for weather stations for specific dates and times.

2.2.3 Obtain meteorological data. -Meteorological parameters from the primary met tower are normally available on the Radiological Parameters screen. If the primary met tower parameters are not available, use instructions provided in step 2.2.4.k.3.

2.2.4 Entry of Meteorological Data.

a. Meteorological data must be entered for times within 3 hours prior to, or at the same time as, the Start of Release to Environment time entered previously. Only one data time is allowed for the straight line Plume model.

b. If desired date and time is not listed, then select CLEAR LIST. Program will ask if you are sure you want to clear the list? Select YES.

c. Enter date of meteorological data in the NEW DATE field (MM/DD/YY). Press TAB key.

d. Enter time in NEW TIME field (HH:MM). Press TAB key.

e. Select the ADD NEW DATE/TIME button.

f. Steps 2.2.3.c. through 2.2.3.e. may be repeated for each date and time to be entered. Multiple dates and times should only be entered if the Puff Model is selected.

g. Select DONE.

h. Select ENTER DATA.

i. Input starts for the first date and time on the list. It may be necessary to select NEXT TIME SHEET to advance to the proper date and time before entering data for the Puff model.

j. Enter WNP-2 Mix Height (in meters). Refer to the list below:

1) winter 500

2) spring 750

3) summer 1000

4) fall 750

k. Enter Stab Class (Stability Class) - list is displayed on screen to choose class by number (1-7). If the ΔT or stability class is not available obtain Atmospheric Stability as described in step 2.2.4.k.3).

1) To determine Stability Class: Obtain necessary ΔT from the RSTAT screen, or PN H13-P823 Board L - Met System located in the Control Room via the Information Coordinator. Then use the following table to determine stability class:

Stability Class vs Temperature Change With Height (°F/212 ft)		
Stability Classification	NRC Categories Stability	Temperature Change With Height (°F/212 ft)
Extremely unstable	*A (1)*	$\Delta T \leq -2.22$
Moderately unstable	*B (2)*	$-2.22 < \Delta T \leq -1.98$
Slightly unstable	*C (3)*	$-1.98 < \Delta T \leq -1.75$
Neutral	*D (4)*	$-1.75 < \Delta T \leq -.58$
Slightly stable	*E (5)*	$-.58 < \Delta T \leq 1.75$
Moderately stable	*F (6)*	$1.75 < \Delta T \leq 4.67$
Extremely stable	*G (7)*	$4.67 < \Delta T$

2) If the ΔT is not available, use the sigma theta available on RSTAT.

Stability Class vs. Sigma Theta Signal		
Stability Classification	NRC Categories (Stability)	(Degrees)
Extremely unstable	*A (1)*	sigma theta ≥ 22.5
Moderately unstable	*B (2)*	22.5 ≥ sigma theta > 17.5
Slightly unstable	*C (3)*	17.5 ≥ sigma theta > 12.5
Neutral	*D (4)*	12.5 ≥ sigma theta > 7.5
Slightly stable	*E (5)*	7.5 ≥ sigma theta > 3.8
Moderately stable	*F (6)*	3.8 ≥ sigma theta > 2.1
Extremely stable	*G (7)*	2.1 ≥ sigma theta

3) If meteorology parameters are not available from the plant Met tower, contact one of the following:

- Hanford Internet Site Weather Page (primary alternate):

  Select the Hanford weather icon to access the FFTF meteorological information via the Internet.

  When the icon is selected on the desktop, either a Hanford site map or the data for FFTF will be displayed. If the Hanford site map is displayed, select the 400 Area (option 9) to view the FFTF data.

  Use the wind speed and direction for the 10 meter height since a ground level release is assumed.

  Stability class is expressed as a numeric value. Convert the ΔT to an A-G value for QEDPS. The above table or the aid on Board L may be used.

- PNNL Weather Forecaster (secondary alternate) at 373-2710

  Request wind speed, direction, and differential temperature for the FFTF met tower. If this information is not available from the PNNL forecaster, contact the National Weather Service.

- Telephone the National Weather Service Forecaster (tertiary alternate) at one of the following locations:

1-541-276-4493	Pendleton, Oregon
1-206-526-6083	Seattle, Washington

Request the following met data for the Hanford weather station: Wind speed, wind direction, and atmospheric stability which you will need to convert to a NRC stability category of 1-7. The National Weather Service does not provide a temperature differential. The NWS will describe the stability category as neutral, moderately stable, etc.

Wind speed obtained from the NWS is in knots. Convert knots to miles per hour using the following conversion:
1 knot = 1.15 statute mile per hour

l. Wind Dir (Wind Direction) - enter direction <u>from</u> which wind is blowing. Data point is normally available on RSTAT.

m. Wind Spd (Wind Speed) - enter wind speed in miles per hour (mph). Data point is normally available on RSTAT.

n. Precip (Precipitation) - a list is displayed at left of screen to assist in proper entry. Select the appropriate choice.

o. Select Next Time Sheet button if additional dates and times are available. When data for all stations have been entered, program will display a message stating it is complete.

p. After data has been entered, select DONE.

2.3 <u>Select MODEL DOMAIN button on EDPS Main Window</u>

2.3.1 During the Plume phase, the 0-10 Mile option should be selected. The 0-50 Mile option should only be selected if the released material has exceeded 10 miles, based on actual duration of the release.

2.3.2 Select DONE button.

2.4 <u>Process Meteorological Data</u>

2.4.1 Select PROCESS METEOROLOGICAL DATA button.

2.4.2 A black calculation window will appear behind the menu. Press Return when calculations are complete and close the window by selecting X if necessary.

2.4.3 Press the Enter key to return to the EDPS Main Menu.

2.5 Transport Calculation

2.5.1 Select TRANSPORT CALCULATION. This module calculates the dispersion for each grid point.

2.5.2 A black calculation window will appear behind the menu. Press Return when calculations are complete and close the window by selecting X if necessary.

2.6 Choose CALCULATE DOSES Option

2.6.1 Select Calculate Doses.

2.6.2 For the Plume transport model, use a Display Time value which is equal or prior to End of Release in order to view plume dose rate data. Use of a Display Time after the End of Release will produce dose rates due only to groundshine from deposition.

2.6.3 For the Puff transport model, the Display Time feature allows the puff to be portrayed on the map and in the tabular output at different stages of its progression downwind.

2.6.4 Change Display Time, if desired. After reviewing data, select the OK button.

2.6.5 A black calculation window will appear behind the menu. Press Return when calculations are complete and close the window by selecting X if necessary.

3.0 DATA OUTPUT

3.1 The EDPS Main Menu should now have check marks beside all options except VIEW DOSE MAP and VIEW TABULAR OUTPUT.

3.2 Select VIEW TABULAR OUTPUT to view the dose projection data

3.2.1 Compare dose projection data at 1.2 miles with the EALs (PPM 13.1.1 Table 4).

3.2.2 Compare dose projection data with protective action guidelines (PPM 13.2.2).

3.2.3 Print the dose projection data by selecting File on the menu bar. Then, select Print, and Complete Document.

3.2.4 Program may display a screen concerning Print destination and Port. Select OK.

3.2.5 To exit, select File in menu bar and Exit on the pull down menu.

3.2.6 Dose Assessor and REM signatures are required if the printed output is leaving MUDAC during the plume phase. The Washington Senior State Official approves data for release during the ingestion phase.

3.3 To enter new values and recalculate, select Files/Next Run.

3.4 <u>Select VIEW DOSE MAP button</u>

3.4.1 This module has several options:

a. Files Allows viewing of any map files on the computer.

b. Map Allows selection of the map used for the projection.

c. Dose Allows selection of the type of dose to be mapped.

d. Print Allows map printing.

3.4.2 Choose Map.

a. If the Plume model was selected, use only the following:

1) Vicinity map (Straight Line Plume Model)

2) 10 mile map (Straight Line Plume Model)

b. For the Puff model:

<u>NOTE:</u> Do not select Option 5 or 6 if running the Puff model.

1) Use any of the following map options:

1) 10 mile map (B&W)
2) 10 mile map (color)
3) 50 mile map (B&W)

4) 50 mile map (color)

2) If printing the maps, select the black and white maps ONLY.

3.4.3 Choose Dose to select the type of dose to display and contour values.

a. Contour options:

1) Clear Map Before Plot (This should normally be checked).

2) Recompute Contours (Choose this if manually entering contour levels).

3) Manually Enter Contour Levels (You may specify contour values, however, default values have been entered).

- To print a map showing the projected Plume boundary, select 1.00 E -04 (100 micro r) only.

4) During the ingestion phase, manual contour lines may be entered to project the 500 μR (relocation boundary), 20 μR and 2 μR (food control boundary). To select the correct value, enter the following:

5e-4 for 500 μR
2e-5 for 20 μR
2e-6 for 2 μR

- Select the ground shine projection option when calculating the food control and relocation boundaries.

b. In the Plume phase, choose:

1) Total Effective Dose Equivalent (TEDE) (rem).

2) Acute Thyroid Dose CDE (rem).

c. Map displays with contour lines drawn.

1) The value of each contour line is displayed in the upper left corner of the map.

2) The map may be moved on the screen by clicking on a location on the map with the left mouse button and dragging it. (If map is dragged towards upper left, the contour values will disappear.)

3.4.4 Map Printing

a. For 10 mile maps:

1) Select Print from menu bar.

2) Select Print map from pull down menu.

3) Enter name of person authorizing release. This will normally be the REM during the plume phase. The Washington Senior State Official approves data release during the ingestion phase.

4) Select OK to print map.

5) Computer will display message when printing is complete.

6) Different maps may be drawn and printed by starting at Step 3.4.3 and entering a different selection at 3.4.3.a., and repeating the steps through 3.4.4.b).

7) To EXIT from Map printing:

- Select Files in menu bar.
- Select Exit on pull down menu.

b. 50 mile maps:

1) Select Print from menu bar.

2) Select Print map from pull down menu.

3) Enter name of person authorizing release. This will normally be the REM during the plume phase. The Washington Senior State Official approves data release during the ingestion phase.

4) Select OK to print map.

5) To EXIT from Map printing:

(1) Select Files in menu bar.

(2) Select Exit on pull down menu.

3.4.5 Distribution of Maps and Data

a. Any dose projection maps or data printouts selected for distribution to offsite agencies shall have REM and Emergency Director review and approval.

b. Maps selected for distribution should always be accompanied by the data. This is very important because the plume projected on the map is not closed and without the data sheet, the plume may be misinterpreted.

4.0 OTHER SOURCE TERM OPTIONS

4.1 Dry Well Leakage/Failure

4.1.1 Identify the condition/status for the following parameters and choose the appropriate option:

a. Core Condition

b. Containment Sprays

c. Release Path

d. Dry Well Leak Rate

4.1.2 Select DONE button.

4.2 Wet Well Leakage/Failure

4.2.1 Identify the condition/status for the following parameters and choose the appropriate option:

a. Core Condition

b. Wet Well

c. Release Path

d. Wet Well Leak Rate

4.2.2 Select DONE button.

4.3 Containment Bypass

4.3.1 Identify the condition/status for the following parameters and choose the appropriate option:

a. Core Condition

b. Release Path

c. Leak Rate

4.3.2 Select DONE button.

4.4 Gross Reactor Release - Specified Mix

4.4.1 Base these entries on approved plant sample analyses.

4.4.2 Enter the Gross Release Rate in Ci/sec (or Bq/sec).

4.4.3 Enter the specific percentage of the Release for the listed radionuclides.

4.4.4 Select DONE button when complete.

4.5 Isotopic Release Rates

4.5.1 Base these entries on approved plant sample analyses.

4.5.2 This section allows for entry of the Activity Release Rate (Ci/sec or Bq/sec) for 50 different isotopes.

4.5.3 After entry is complete, select DONE button.

4.6 Return to Section 2.1 of this attachment to continue entering data.(a)(b)(c)

ENERGY NORTHWEST		USE CURRENT REVISION
COLUMBIA GENERATING STATION PLANT PROCEDURES MANUAL		
PROCEDURE NUMBER *13.9.1	APPROVED BY JEW - Revision 26	DATE 08/10/01
VOLUME NAME EMERGENCY PLAN IMPLEMENTING PROCEDURES		
SECTION ENVIRONMENTAL FIELD MONITORING AND SAMPLING		
TITLE ENVIRONMENTAL FIELD MONITORING OPERATIONS		

TABLE OF CONTENTS

Page

1.0 PURPOSE 2

2.0 REFERENCES 2

3.0 PRECAUTIONS AND LIMITATIONS 3

4.0 PROCEDURE 3

4.1 Field Team Coordinator Duties 3
4.2 Field Team Dispatcher Duties 6
4.3 Environmental Field Team Member Duties 7

5.0 ATTACHMENTS 12

5.1 Radiation Survey Instruments: Battery and Response Checks, and Operation 13
5.2 Radio, Cellular Phone and GPS Operation Instructions 18
5.3 Field Radiation Surveys (General Area and Ground Contamination) 20
5.4 Portable Air Sampling Instructions 22
5.5 Sample Identification Form (968-19234) Instructions 26
5.6 Environmental TLD and Fixed Air Sample Retrieval Instructions 27
5.7 Field Team Coordinator Checklist 29
5.8 Field Team Briefing Worksheet 31
5.9 Field Team Kit Replenishment Log 32

1.0 PURPOSE

This procedure provides those individuals involved with Environmental Field Team (EFT), or Field Team, operations with instructions for responding to radiological emergencies at Energy Northwest nuclear facilities. The Environmental Field Teams will confirm radiological releases through actual measurements in the field to determine the extent of plume travel and contamination spread. Sampling and field analysis will be conducted following the instructions contained in attachments to this procedure.

2.0 REFERENCES

2.1 FSAR, Chapter 13.3, Emergency Plan, Sections 2, 5

2.2 CI 4.10, WNP-2 Environmental Thermoluminescent Dosimeter (TLD) Distribution and Collection

2.3 CI 4.11, Trip Directions to TLD Stations

2.4 CI 4.12, Airborne Samples Distribution, Collection and Shipping

2.5 CI 4.13, Trip Directions to Environmental Air Sampler Stations

2.6 PPM 13.2.1, Emergency Exposure Levels/Protective Action Guides

2.7 PPM 13.9.5, Environmental Sample Collection

2.8 PPM 13.9.8, River Evacuation Monitoring

2.9 PPM 13.13.4, After Action Reporting

2.10 PPM 13.14.4, Emergency Equipment

2.11 Sample Identification Form, 968-19324

2.12 Emergency Response Log, 968-23895

2.13 Field Team Dispatch and Tracking Worksheet, 968-25815

2.14 Ten Mile EPZ Field Team Summary Map, 968-25130

2.15 Field Team Radiation Survey Data, 968-26097

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Environmental air sampling should be performed sufficiently downwind and not closer than 1.2 miles from the plant to minimize dose. All field team personnel should be instructed to contact MUDAC prior to entering the plume and should be made aware of expected dose rates. Air sampling should not be conducted in fields greater than 2 rem/hr.

3.2 When driving off-road during the dry summer months, Field Team personnel should be aware of the potential for grass fires started by the vehicle's hot exhaust.

3.3 Due to the potential hazard of explosion or fire, adhere to good safety practices when obtaining environmental air samples by connecting the sampler's positive battery terminal lead first, then connecting the negative lead to a ground away from the battery's negative lead cable post (a ground connection can be any metal object within the vehicle's engine compartment). When completed air sampling, disconnect the negative lead first.

3.4 Field Team personnel need to be aware of the potential for heat stress problems when dressed in protective clothing on a hot summer day. The Field Team Coordinator should request a Safety Representative be called out for advisory purposes if this is perceived to be a potential problem.

4.0 PROCEDURE

4.1 Field Team Coordinator Duties

NOTE: The Field Team Coordinator checklist (Attachment 5.8) is provided for guidance.

4.1.1 Provide overall direction of environmental field teams. Coordinate each organization's team activities with the responsible agency for their respective area:

a. Exclusion Area Boundary -- Energy Northwest

b. Hanford Reservation -- Energy Northwest and DOE-RL

c. Outside the Hanford Reservation -- Energy Northwest and Washington State Department of Health

d. Oregon -- Oregon Department of Energy

4.1.2 Assign each field team deployed an identification number for use in communications and reporting (e.g., EN-1, EN-2, DOE-1, DOE-2, etc.).

4.1.3 Interface with the Dose Projection Health Physicist (DPHP) to determine the following:

a. Projected release path.

b. Areas which may require surveys, air sampling, or environmental sampling to verify plume location and deposition.

c. Emergency worker dose correction factor. The REM may need to be consulted for this information.

- the emergency worker dose adjustment factor should be multiplied by the PIC reading to determine total exposure.

4.1.4 Determine current year-to-date (YTD) dose of each Energy Northwest field team member. Using a dose projection computer, double click on the "Run Exposure Report" icon. This will download the most recent exposure report to the computer.

a. Double click on the "View Exposure Report" icon. This will display a list of all Energy Northwest personnel and their exposure history. Scroll to the desired name or select "Edit" and use the "Find" option.

b. Close the window when all desired records have been obtained.

4.1.5 Log each field team member's current year-to-date (YTD) dose, available dose, electronic dosimeter number, and the emergency worker dose correction factor in the Emergency Worker Dose Worksheet Section of the Field Team Dispatch and Tracking Worksheet (Form 968-25815). Available dose is 5000 mrem minus current YTD dose.

4.1.6 If necessary, request a support person or additional field team member to assist with recording incoming field team data.

4.1.7 Perform initial briefing of field teams prior to dispatch per Attachment 5.9.

a. Initial briefings should include individual exposures and limits.

b. Obtain field team vehicle license and cell phone numbers, and record them on the briefing guide.

4.1.8 Direct the Field Team Dispatcher in the control and routine briefing of field teams after they are dispatched.

4.1.9 Develop an initial plan of action to detect radiological effluent releases through the use of field teams taking into account computer generated data on current and potential effluent release exposure areas.

> CAUTION: Environmental air sampling should be performed sufficiently downwind to minimize dose. All field team personnel should be instructed to contact MUDAC prior to entering the plume and should be made aware of expected dose rates. Air sampling should not be conducted in fields, projected or actual, greater than 2 rem/hr.

4.1.10 During initial deployment, position field teams per the following guidelines:

a. Locate one field team downwind in close proximity to the plant (about ½ mile depending on wind conditions). Use grid locations rather than GPS coordinates when field teams are close to the plant.

b. Locate the other field teams farther downwind.

4.1.11 When a radioactive release is confirmed:

a. Dispatch field teams to traverse at designated distances (i.e., 1.2, 5, and 10 miles) and verify dose rate levels above 100 microrem/hr.

b. Upon identification of a radioactive plume, commence air sampling activities.

c. Identify plume centerline and boundaries (i.e., 100 microrem/hr).

4.1.12 Direct field teams to contact the Field Team Coordinator for further instructions when they have located the plume boundary and prior to entering the plume for additional readings.

4.1.13 Keep the DPHP informed of field monitoring results.

4.1.14 Reposition field teams as necessary to track the plume's leading edge, the side boundaries and, when the release terminates, the trailing edge.

4.1.15 Consult with the REM to determine when an environmental air sample is necessary to determine specific isotopic content of the plume. If so, direct the field team to enter the plume and obtain the air sample keeping exposures ALARA. Air samples should be taken at least 1.2 miles downwind.

a. Electronic dosimeters for field team members are set to alarm at 500 mrem pre hour. Direct field team members to leave the plume and contact you for guidance if their dosimeters go into alarm.

4.1.16 Periodically request dosimeter readings of field team members to assure personnel do not exceed Energy Northwest guides. The Emergency Worker dose limit is 5 rem TEDE, minus any accumulated dose. Ensure dosimeter readings are logged on the Field Team Dispatch and Tracking Worksheet (Form 968-25815).

4.1.17 Maintain up-to-date 10 mile and 50 mile MUDAC Field Team display maps, showing field team locations, and showing field team radiological monitoring results. Update Field Team Summary Maps (968-25130) as needed.

4.1.18 Periodically, or as requested, provide completed Field Team Summary Maps (Form 968-25130) to the REM.

4.1.19 When directed to assist with river evacuation monitoring, dispatch a field team to implement PPM 13.9.8.

4.1.20 Notify field teams when decisions are made to take KI, or to implement other protective measures.

4.1.21 Arrange for replacement of field team instrumentation or supplies when needed.

4.1.22 Upon shift change, brief your relief on current status of the emergency and field team activities.

4.1.23 Upon shift change or termination of the emergency:

a. Prepare an individual After Action Report. Refer to PPM 13.13.4.

b. Collect Field Team Kit Inventory Sheets and After Action Reports from all field teams.

c. Deliver After Action Reports to the DPHP.

4.2 Field Team Dispatcher Duties

4.2.1 Assign and dispatch field teams as directed and record data on the Field Team Dispatch and Tracking Worksheet (Form 968-25815).

4.2.2 Maintain radio contact with field teams and enforce radio discipline and good practices.

4.2.3 When significant changes occur during the emergency, complete a Field Team Briefing Worksheet (Attachment 5.9), conduct a roll call of all field teams and provide a radio briefing of worksheet information. Record field team acknowledgment following the briefing.

a. Continue to follow up with any teams that fail to acknowledge the briefing. The Washington field team coordinator should be informed of state teams not receiving the briefing.

4.2.4 When directed, notify field teams of any Protective Action Decisions (PADs) affecting the field teams or the public.

4.2.5 Periodically request dosimetry readings from field team members to ensure they are within limits and notify the Field Team Coordinator of results.

4.2.6 Maintain radio communications capability until all field teams have returned to the Kootenai Building.

4.2.7 Act as Field Team Coordinator when requested.

4.2.8 Upon shift change, brief your relief on the current status of the emergency and field team activities.

4.2.9 Upon shift change or termination of the emergency:

a. Prepare an individual After Action Report. Refer to PPM 13.13.4.

b. Deliver After Action Report, and logs to the Field Team Coordinator.

4.3 Environmental Field Team Member Duties

4.3.1 Upon notification of Alert or higher classification, or as directed, proceed to the Emergency Operations Facility, or if directed, to Energy Northwest Alternate EOF at the MPF, and report to the Radiological Emergency Manager or Field Team Coordinator.

NOTE: If none of the above personnel are present, proceed with those procedure steps listed for getting field team equipment ready for use. Check back with one of the listed personnel when ready for dispatch.

4.3.2 Sign in on the EOF staffing board designated for listing field team members and obtain a field team identification designator number (i.e., EN-1, EN-2, etc.).

NOTE: Additional field team kits and the River Evacuation and Monitoring Kits are located outside Room 201 of the MPF. Keys for the cabinet are located in the glass front key box on the wall adjacent to the Room 201 door. Enter the MPF via the southeast keycard sliding door.

4.3.3 The first team member to arrive at the EOF should retrieve the Field Team Emergency Cabinet keys (key to the First Aid Room for entry to the ambulance bay, and the key to the field team radio cabinet) from the red key box on the EOF Field Team Supply Cabinet.

NOTE: Two of the designated field team vehicles are pool vehicles. One is normally located at the Chelan Building (bldg. 11). The second vehicle is usually located on the east side of the Willamette Building (bldg. 64). Use of another Energy Northwest or personal vehicle may be required to obtain these vehicles. Keys to all four designated field team vehicles are located in the EOF Field Team Supply Cabinet.

4.3.4 Obtain keys for the Energy Northwest designated field team vehicles from the EOF Field Team Supply Cabinet. Personnel going to get the other vehicles should carry both sets of keys to assure vehicle accessibility.

4.3.5 Obtain bundled Field Team Document Packet of Maps, Forms and Procedures, and a GPS unit from the EOF Field Team Supply Cabinet.

NOTE: The electronic dosimeter dose rate alarm is set to 500 mrem per hour. The dose alarm is set to 1800 mrem. If the dosimeter goes into alarm, immediately leave the area and contact the Field Team Coordinator.

4.3.6 Obtain an electronic dosimeter from the EOF Field Team Cabinet. To activate the dosimeter, press the button on the side. The dosimeter display should change from "Enter" to "d:"

4.3.7 Report to the Ambulance Bay and unlock the following:

a. Field Team Emergency Cabinets #1 through #3 (Kootenai Building Health Physics Center). Leave the key in the last lock.

b. Radio Charger Cabinet (Kootenai Building, Room 118A, by decon shower).

4.3.8 Obtain field team equipment from the designated cabinets which includes the following:

NOTE: The combination to the field team kits is 911.

a. Protective Clothing Kit

b. Instrumentation Kit

c. Ribboned Stakes for marking sample locations

d. Air Sampling Kit

a. Field Sampling Kit

b. Field Team Portable Radios (2) and Spare Batteries (2) located in the Radio Charging Cabinets in Yakima Building, Room 118A.

4.3.9 If the inventory seal on any of the kits is broken, inventory the contents of that kit per the PPM 13.14.4 inventory list (located in the Field Team Document Packet) and notify the Field Team Coordinator if anything is missing.

4.3.10 Using the field team radio cabinet key, obtain the source to be used for performing instrument response checks located in the field team source cabinet in Room 118A. The source shall be returned to this cabinet when response checks are complete, and the cabinet locked.

4.3.11 Perform battery and response check, as applicable, on all radiation survey instruments in the instrumentation kit and record the information on the Checklist for Equipment Test, Attachment 5.1, located in the Field Team Document Packet, using the guidance contained in Attachment 5.1 and Attachment 5.2.

4.3.12 After the last Field Team completes instrument checks, return the source to the field team source cabinet, and return the key to the key box on the EOF Field Team Supply Cabinet.

4.3.13 Set up and test air sampler per Attachment 5.4.

NOTE: The field team vehicle radio needs to be turned on for the following step.

NOTE: If your radio is inoperable, establish contact by phone, or by cellular phone from a Field Team vehicle.

4.3.14 When equipment check and vehicle loading is complete, establish radio contact with MUDAC and conduct radio checks, using the vehicle radio and both portable radios. See Attachment 5.2, Radio, Cellular Phone and GPS Operation Instructions, for guidance.

NOTE: It is recommended that the GPS unit be connected to the vehicle's cigarette lighter.

4.3.15 Turn on the GPS unit and verify the following:

a. The page with altitude, clock and position displays. If another page displays, press PAGES and select GROUP A.

b. Batteries are not low. Verify batteries by pressing PAGES, then select STATUS.

4.3.16 Obtain initial deployment assignment from MUDAC, and when directed by the MUDAC Field Team Coordinator, don appropriate protective clothing (PCs), and proceed to assigned location, continuously monitoring radiation levels.

4.3.17 The following Stability Class tables are provided to complement the briefing information received from the Field Team Coordinator.

STABILITY CLASS TABLE

Stability Classification	NRC Categories (Stability)
Extremely unstable	*A (1)*
Moderately unstable	*B (2)*
Slightly unstable	*C (3)*
Neutral	*D (4)*
Slightly stable	*E (5)*
Moderately stable	*F (6)*
Extremely stable	*G (7)*

4.3.18 Notify the Field Team Dispatcher upon arrival at your assigned location.

4.3.19 As directed, perform general area surveys, ground contamination surveys and portable air samples following the instructions contained in Attachments 5.3 through 5.6.

4.3.20 Maintain a chronology of significant inputs, actions, events and their resolutions on an already established log, or on the Emergency Response Log (Form 968-23895), for attachment to your After Action Report per PPM 13.13.4.

4.3.21 If directed to perform River Evacuation Monitoring refer to PPM 13.9.8.

4.3.22 If directed to retrieve environmental TLDs and/or fixed air samples, refer to Attachment 5.7.

4.3.23 When relieved at shift change, or termination of emergency event:

a. Brief your relief on responsibilities, duties and current status of actions being performed.

b. Report to the Kootenai Building Health Physics Center for survey, and, if necessary, decontamination.

c. Turn in personal dosimetry to the Health Physics Center staff and report to MUDAC for debriefing.

d. Prepare an individual After Action Report per PPM 13.13.4.

e. Deliver After Action Reports to the Field Team Coordinator.

4.3.24 When assigned as relief for the on shift Environmental Field Team Members:

a. Report to the Field Team Coordinator in MUDAC.

b. Receive an update on present conditions, and instructions for relieving the on shift team members.

c. Prior to beginning the assignment, obtain electronic dosimetry from the EOF Field Team Cabinet, and report to the Health Physics Center for a complete set of protective clothing.

d. Obtain replacement radio batteries from the radio charging cabinets in the Kootenai Building, Room 118A, if needed.

e. Proceed to the field team location you are relieving, receive briefing and relieve the on shift field team.

f. Perform a battery check on all applicable instrumentation. Complete the Checklist for Equipment Test, Attachment 5.1.

4.3.25 Upon return of field team equipment:

a. Restore equipment to correct field team kit container and place in designated cabinet.

b. Refer to PPM 13.14.4, Emergency Equipment, for a list of kit contents. If kits contain the required items, reseal the kits.

c. Complete the Field Team Kit Replenishment Log located on the inside of the field team cabinet door noting any items used out of the kits. Refer to Attachment 5.10.

- Include the replenishment log with your After Action Report.

d. Prepare an Individual After Action Report per PPM 13.13.4.

e. Deliver all logs, data work sheets, and After Action Reports to the Field Team Coordinator.

5.0 ATTACHMENTS

5.1 Radiation Survey Instruments: Battery and Response Checks

5.2 Radio, Cellular Phone and GPS Operation Instructions

5.3 Field Radiation Surveys (General Area and Ground Contamination)

5.4 Portable Air Sampling Instructions

5.5 Sample Identification Form (968-19234) Instructions

5.6 Environmental TLD and Fixed Air Sample Retrieval Instructions

5.7 Field Team Coordinator Checklist

5.8 Field Team Briefing Worksheet

5.9 Field Team Kit Replenishment Log

RADIATION SURVEY INSTRUMENTS: BATTERY AND RESPONSE CHECKS, and OPERATION

Prior to departure from the EOF, all radiation survey instruments should be battery and response checked. The Cesium 137 check source for response checking the instruments is located in the Field Team Source Cabinet inside a lead container. When response checking the instruments you are looking for any indication of an elevated reading.

When response checking the RO-2A (Beta/Gamma Dose Rate Meter) you may need to remove the source from the lead container and check window open in order to see a response. When finished, return the source to its container, and the container to the field team source cabinet. Lock the cabinet to maintain adequate source control, and return the key to the EOF Field Team Supply Cabinet.

1. Ludlum Model 2 Count Rate Meter

The Ludlum Model 2 Count rate meter should be used when measuring gamma and beta radiation to determine Beta and Gamma contamination. It is used to take readings on air sample cartridges and filters. It is also used to detect levels of contamination on samples, equipment and on yourself.

The Count rate meter can be used to differentiate between Gamma and Beta radiation by placing a piece of cardboard over the probe. If uncovered readings are higher than covered readings then this is an indication of the presence of Beta radiation. If there is no difference between the readings, you are seeing only Gamma. An indication of Beta would mean you are in the plume. An indication of only Gamma would mean the plume is overhead.

a. Battery Check

1.1.1 Place Selector switch to BAT. The needle should deflect to BAT TEST portion of the scale.

- If the battery response does not deflect into the BAT TEST portion of the scale, replace the two D cell batteries and repeat the battery check.
- Check the calibration due date.

b. Response Check

1.2.1 Attach the HP 260 pancake probe to the count rate meter.

1.2.2 Press the RES button to ensure that scale reading goes to zero.

1.2.3 Set the Selector switch to X1.

1.2.4 Set the F-S switch to fast. The F-S response toggle switch dampens meter response from 3 seconds (F) to 11 seconds (S).

1.2.5 Set the audio toggle to ON

1.2.6 Slowly pass the probe over the surface of the source at about one centimeter.

1.2.7 If the response check was satisfactory; initial, date and check the SAT block on the checklist.

1.2.8 If the instrument fails the response check, contact the HP in the Health Physics Center for assistance.

2. Ludlum Model 3 Micro R Meter

The Ludlum Micro R meter should be used for detection of very low level gamma radiation. This instrument is used to determine plume boundaries (10 times background or approximately 100 micro R) and to determine dose rates. The Micro R meter has a range of 0 to 3000 Micro R/hr. When levels exceeding 2000 Micro R/hr are detected, the RO-2A should be used.

For initial surveys, the meter should be set to the X1 range. The Range selector switch positions for the Micro R meter includes a X0.1 scale. On the meter this indicates a range of 0 to 3 Micro R/hr. Because background is approximately 10 Micro R/hr, this scale will always be pegged.

a. Battery Check

2.1.1 Place Selector switch to BAT. The needle should deflect to BAT TEST portion of the scale.

- If the battery response does not deflect into the BAT TEST portion of the scale, replace the two D cell batteries and repeat the battery check.
- Check the calibration due date.

b. Response Check

2.2.1 Attach the probe to the instrument.

2.2.2 Press the RES button to ensure that scale reading goes to zero. The RES button should also be pushed when changing ranges to quickly re-zero the meter.

2.2.3 Set the Selector switch to X1.

2.2.4 Set the F-S switch to fast. The F-S response toggle switch dampens meter response from 3 seconds (F) to 11 seconds (S).

2.2.5 Set the audio toggle to ON.

2.2.6 Slowly pass the probe over the surface of the source at about one centimeter.

2.2.7 If the response check was satisfactory; initial, date and check the SAT block on the checklist.

2.2.8 If the instrument fails the response check, contact the HP in the Health Physics Center for assistance.

3. Eberline Model RO-2A Meter

CAUTION: The chamber face of the RO-2A is a Beta window of ultra-thin mylar and is covered by a sliding Beta shield to allow Beta/Gamma differentiation. Caution should be taken not to puncture the mylar screen when the Beta shield is open.

The Eberline Model RO-2A meter should be used once levels of radiation exceed 2000 Micro R/hr detected by the Micro R meter.

The Beta window is moved by first depressing the friction release button located on the side of the instrument case. To slide the window, tilt the case either up or down while depressing the button.

Full instrument response time of the RO-2A is five seconds. This means the meter needle will move from a reading of zero to 90% of full scale in five seconds. To obtain accurate results, the instrument should be moved slowly enough to evaluate the extent of a change in meter reading.

To differentiate between Beta and Gamma radiation, a reading should first be taken with the window open and then with window closed. If there is no difference in readings you are seeing only Gamma. If there is a difference then you are seeing both Gamma and Beta. A reading with both Gamma and Beta detected would indicate that you are in the plume.

When calculating beta radiation, a correction factor must be applied to the difference between the beta and gamma readings, and the beta only reading (i.e., the window open and window closed readings). To determine the beta radiation, subtract the window closed reading (gamma) from the window open reading. Multiply the beta correction factor listed on the side of the RO-2A times the difference to determine the corrected beta reading.

a. Battery Check

3.1.1 The RO-2A has two battery checks for each test (one of the 9 volt batteries has been replaced with a 30 volt upgrade). Place the Range Selector switch in each BAT position and verify that the meter indicates above the BATT OK mark.

- If the battery response does not deflect into the BAT OK portion of the scale, replace the nine volt battery and repeat the battery check.
- Check the calibration due date.

b. Response Check

3.2.1 Place the Range Selector switch in the ZERO position and adjust ZERO knob until the meter indicates ZERO (0).

3.2.2 Set the Selector Switch to the 0-50 mR/hour position.

3.2.3 With the window open, slowly pass the instrument over the source at about one centimeter. (You may need to remove the source from the lead container to obtain a response.)

3.2.4 If the response check was satisfactory; initial, date and check the SAT block on the checklist.

3.2.5 If the instrument fails the response check, contact the HP in the Health Physics Center for assistance.

CHECKLIST FOR EQUIPMENT TEST

NOTE: Return the check source to the field team source cabinet and lock the cabinet when done response checking instruments. Return the key to the EOF Field Team Supply Cabinet key box.

Instrumentation Kit	Serial Number	Cal Due Date	Correction Factor	Initials/Date & Time	Response Check		Battery Check	
					Sat	Unsat	Sat	Unsat
Micro R Meter			N/A					
Beta/Gamma Dose Rate Meter (RO-2A)								
Count Rate Meter/Pancake GM Probe (Frisker/Geiger counter)			N/A					
Portable Radio (Check operability with Field Team Coordinator)	N/A	N/A	N/A		N/A	N/A		
Verify Cell Phone operation	N/A	N/A	N/A		N/A	N/A	N/A	N/A

Global Positioning System (GPS) Unit		N/A	N/A		N/A	N/A		
Check Electronic Dosimeters	N/A		N/A		N/A	N/A	N/A	N/A
Return Source to field team source cabinet; lock cabinet; return key to the field team cabinet.	N/A	N/A	N/A		N/A	N/A	N/A	N/A
Other (Specify)								
					Initial Flow Rate	10 cu ft Sample Time		
Air Sampler Operational Check			N/A				N/A	N/A

RADIO, CELLULAR PHONE AND GPS OPERATION INSTRUCTIONS

1. Radio Operating Procedures

   a. Turn on the radio (vehicle radios must be turned on each time the vehicle is turned off and back on).
   b. Set the frequency selector to the F-1 channel.
   c. Place the speaker toggle switch to normal position (speaker open).
   d. Rotate the squelch control counterclockwise until you receive squelch.
   e. Adjust the volume to desired level.
   f. Rotate the squelch control clockwise until the noise just stops. This is the threshold setting. Do not adjust further. Excessive squelch reduces radio sensitivity. If unable to silence squelch, the battery must be replaced. Contact the Field Team Dispatcher for replacement batteries.

2. Radio Transmitting Instructions

   NOTE: Continuous transmissions lasting longer than approximately 30 seconds will be automatically interrupted by the repeater.

   a. Hold the radio upright with the speaker-microphone grill two or three inches from your mouth.
   b. Do not interrupt another user. If you do, someone will not be heard.
   c. When preparing to transmit, press the talk switch, and wait approximately one second before talking.
   d. Talk in a slow, clear, normal voice, with brief transmissions.
   e. When finished transmitting, release the talk switch to receive.
   f. State the station you are calling first, then state your identification number (e.g., MUDAC this is EN-2, or EN-2 this is MUDAC).

3. Cellular Phone Instructions

   a. The cellular phone is activated automatically when the vehicle's ignition switch is in the ON position (vehicle running or not). If the phone does not activate, check the ON/OFF push button on the left side of the stand. It must be IN for operation.

   b. To place a call:

      - Remove the phone from its stand (or leave in the stand to use the remote microphone), enter the phone number you are calling and press the SND key.
      - When the call is complete, press the END key and hold the CLR key until the number you called is removed from the display.

   c. To receive a call:

      - Remove the phone from its stand, or to use the remote microphone, press the SND key to answer the call. Your phone will be disconnected when the calling party hangs up.

Attachment 5.2
Page 1 of 2

GPS OPERATING INSTRUCTIONS

1. Start up

   a. Attach the cigarette lighter adapter to the GPS unit.
   b. Press the PWR button.

2. Obtaining a Position

   a. The unit activation requires the unit to lock onto several satellites. Depending upon the length of time since the last activation, this may take three to five minutes.
   b. If this information does not display, select PAGES and GROUP A. Press EXIT to close the options window.

3. Viewing Local map

   a. Press PAGES and select MAP 1, using the UP/DOWN arrow.

   b. Use the ZOUT/ZIN to enlarge or decrease the area to be viewed.

   c. Press the EXIT button to remove menu overlays.

3. Satellite Status Screen and Battery Level Indicator

   a. Appears each time the unit is turned on until unit locks onto several satellites.

   b. Satellite status and a battery level indicator may be viewed at any time by pressing PAGES, and selecting STATUS. Press EXIT to close the OPTIONS window.

FIELD RADIATION SURVEYS

1.0 General Area Surveys

NOTE: Refer to Attachment 5.1 for instructions on instrument operation.

1.1 Before entering an affected area, perform a background measurement using the Micro-R Meter and record background reading and time on the Field Team Radiation Survey form, 968-26097.

1.2 As directed by MUDAC, proceed toward the plume using the Emergency Zone Map booklet from the Field Team Kit and GPS unit to determine the location of the plume.

1.3 Using the MicroR meter set on the x1 scale, search for the edge of the plume (defined as ten times background). Increase scales as radiation levels increase.

1.4 When the Micro-R Meter reads 2000 micro-R/hr (2 mrem/hr) or greater, change to the beta/gamma dose rate instrument, RO-2A.

NOTE: If your electronic dosimeter goes into alarm, immediately leave the area and contact the Field Team Coordinator. The dosimeter will reset when the dose rate returns to a level less than 500 mrem per hour.

1.5 When directed by MUDAC, traverse the plume constantly monitoring radiation levels and record locations, dose rates and other required information for the plume centerline and edges on form 968-26097 (indicate type of survey by G for general area). Proceed until the other edge of the plume is identified.

1.6 If the dose rate is greater than 2 mrem/hr, use the beta/gamma dose rate instrument to tell if you are in the plume or just seeing plume shine as follows:

NOTE: All open and closed readings must be done in the same location and not from a moving vehicle. Consider ALARA practices in choosing how many readings to take.

a. When first entering the plume, and again at centerline, take open and closed window readings at 3 feet and 6 inches above the ground.

b. If the open and closed window readings are approximately the same, then the plume is probably overhead and has not touched down.

- When the open and closed window readings are the same, you are seeing gamma shine from the overhead plume. If the open window reading is higher than the closed window reading, you are seeing some beta radiation. When beta readings are detected, you are in the plume.

c. If the open window reading is higher than the closed window reading, (by approximately 20% or greater) then you are probably in the plume.

d. Record both sets of open and closed window readings.

1.7 If the Micro-R Meter indicates a plume reading of less than 2000 micro-R/hr, you can determine if you are actually in the plume (instead of under it) by repeating Step 1.6 using the Count Rate Meter/GM pancake probe as the instrument, and the cardboard from your notebook as a window.

1.8 Do not stop to report data while in the plume. Report the plume edge and centerline readings and their locations to the Field Team Dispatcher at the earliest possible time.

1.9 Leave the plume area when not taking readings, but leave the instrument turned on at all times for constant monitoring purposes.

1.10 After being in the plume, periodically conduct a survey of yourself and your vehicle using the count rate meter, and if grossly contaminated, advise the Field Team Dispatcher.

2.0 Ground Contamination Surveys

NOTE: Refer to Attachment 5.1 for instructions on instrument operation.

2.1 As directed by the Field Team Dispatcher, perform a ground contamination survey:

a. Select small area of level ground (3′ x 3′) with minimal vegetation.

NOTE: The detector probe should not be allowed to touch the ground or come in contact with potentially contaminated vegetation.

b. Using the Micro-R Meter and the count rate meter, take readings at ground level (1-2 inches (5 cm) above the surface) and at waist level, approximately 3 feet above the ground.

c. If Micro-R Meter readings are above 2000 micro-R/hr, use the dose rate meter and repeat ground level and waist level readings at the same locations.

d. If ground level reading is higher than waist level reading, assume the ground to be contaminated.

2.2 Record all four readings on the Field Team Radiation Survey Data Form, 968-26097 (indicate the type of survey by C for contamination).

2.3 Repeat the ground contamination survey in several locations.

2.4 Select the highest set of readings and report them to the Field Team Dispatcher.

PORTABLE AIR SAMPLING INSTRUCTIONS

> WARNING: Environmental air sampling should be performed sufficiently downwind to minimize dose. All field team personnel should be instructed to contact MUDAC prior to entering the plume and should be made aware of expected dose rates. Air sampling should not be conducted in fields, projected or actual, greater than 2 rem/hr and closer than 1.2 miles from the plant.

Portable Air Sampler Setup and Operational Test

1. Monitor your exposure during performance of this Attachment.

> WARNING: Potential hazard of explosion or fire during connection of the sampler's leads to the vehicle's battery terminals exists.

2. Obtain the air sampler, cartridge and particulate filter.

3. If not already marked, mark a charcoal or silver zeolite (AgZ) cartridge with an arrow to indicate the direction of the air flow.

4. Insert the cartridge and a clean two-inch filter paper, (spongy side facing outward), into the air sample head. Refer to the diagram in this Attachment.

5. Connect the sampler's positive lead to the vehicle's battery first, then connect the negative lead to a ground away from the battery's negative terminal. A ground connection can be any metal object within the vehicle's engine compartment. Leave vehicle engine running while operating the air sampler to assure constant voltage.

6. Turn the air sampler on. Determine initial flow rate from the rotometer on the side of the air sampler. Note the flow rate information on the Sample Identification Form 968-19324 and Attachment 5.1.

7. If the flow rate is less than one or greater than five CFM, the air sampler is inoperable. Contact the Field Team Coordinator for further instructions, or obtain an new air sampler from the cal lab and retest.

8. Based on air sampler flow rate, determine the sample time necessary to obtain a sample of 10 cubic feet. Record the 10 cubic foot sample time on Attachment 5.1.

9. When the air sampling test is complete, disconnect the negative lead first, then the positive lead.

Obtaining an Air Sample

NOTE: Air sampler preparation (sample head assembly) and paperwork initiation should be performed outside the plume.

11. When directed by MUDAC, collect an environmental air sample in accordance with the following instructions:

12. Proceed to assigned sample location.

13. Ensure the following conditions of operation are met:

    - If at all possible, do not place sampler on a known contaminated surface
    - Keep sampler away from vehicle exhaust gases
    - Do not point air sampler inlet toward any object which may restrict air flow
    - Do not stand in front of sampler inlet when running or allow loose clothing to restrict air flow

14. Connect the sampler's positive lead to the vehicle's battery first, then connect the negative lead to a ground away from the battery's negative terminal. A ground connection can be any metal object within the vehicle's engine compartment. Leave vehicle engine running while operating the air sampler to assure constant voltage.

15. Turn the air sampler on.

16. If the flow rate is less than one or greater than five CFM, the air sample will be invalid. Leave the plume and contact the Field Team Coordinator for further instructions.

17. Perform area dose rate survey for sample location.

18. Record start flow rate, sample start time and sample location dose rate on the Sample Identification Form (Form 968-19324).

19. Upon completion of sampling, note stop flow rate and sample stop time, then turn off and disconnect sampler per step 9.

20. Leave the area of the plume to complete your documentation following the instructions in Attachment 5.5.

21. Label the plastic bags for the filter and charcoal cartridges with the sample identification number, location, date, and time collected.

22. If using charcoal cartridge vs. Silver Zeolite, purge noble gases by reconnecting air sampler to vehicle battery and drawing clean air through filter and cartridge for a minimum of 2 minutes.

23. Disassemble sample head to allow access to the particulate filter and the cartridge.

    NOTE: Remove the filter (using tweezers) and the cartridge from sample head to assure appropriate probe geometry when counting.

24. Determine filter and cartridge dose rate or count rate by placing the appropriate instrument detector on the inlet side of the filter or cartridge.

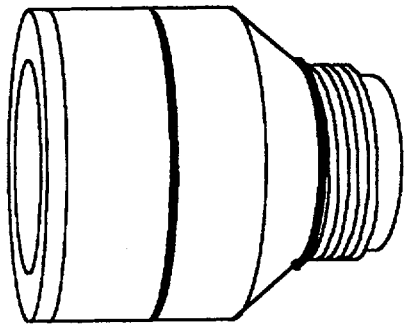
25. Record sample readings on Sample Identification Form (968-19324). Note particulate and iodine sample readings in the Remarks section separately. Report the results to the Field Team Coordinator.

26. Place the filter and cartridge in separate plastic bags then seal bags.

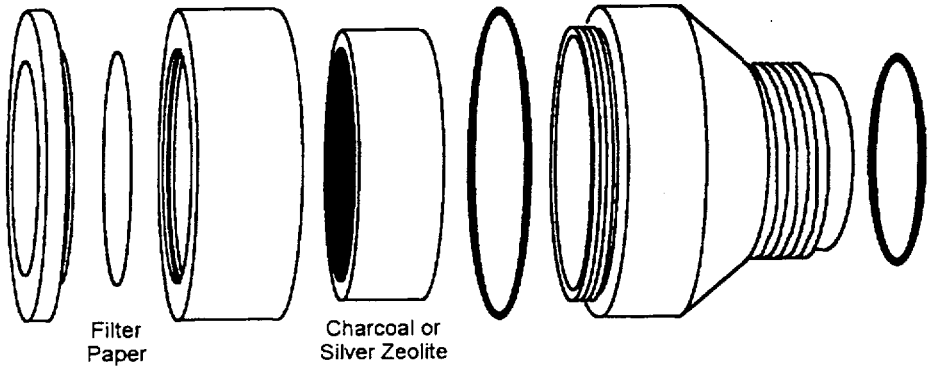
27. Survey team members for contamination. If contaminated, advise the Field Team Dispatcher.

28. Transport the samples, with Sample Identification Forms, as directed by the Field Team Coordinator. Ensure that particulate filters and the corresponding cartridges are transported together and that Sample Identification Forms accompany the samples.

SAMPLE HEAD DIAGRAM



Sample Head - Assembled



Sample Head - Disassembled

970713
Nov 1997

Filter Cartridge and Sample Head for High Volume Air Sampling Pumps
Model CFH-30

Attachment 5.4
Page 4 of 4

SAMPLE IDENTIFICATION FORM (968-19234) INSTRUCTIONS

1. SAMPLE IDENTIFICATION FORM

List one sample per form. For air samples, use one sample form and one sample identification number for both the cartridge and particulate filter. Attach one copy of the form to the cartridge and one to the particulate filter.

2. SAMPLE IDENTIFICATION NUMBER DESIGNATION

SAMPLE ID NUMBERS will be in a two segment alpha-numeric code using the following format:

FIELD TEAM	SEQUENCE
AA0	000

FIELD TEAM CODES	SEQUENCE
Use a two-letter and single number designator, (e.g., EN-1 for Energy Northwest Field Team 1).	Use sequential numbers for each team throughout an event, (e.g., 003 for the third sample taken by a given team).

3. SAMPLE TYPE

Describe the type of sample being collected-air, soil, vegetation, water, etc.

4. FIELD TEAM SAMPLE LOCATION/DESIGNATION

Use sample station numbers where they exist, such as continuous environmental air sampling stations (e.g., Sample Station 3). Where no sample station number exists, as in emergency field samples, enter the GPS location.

ENVIRONMENTAL TLD AND FIXED AIR SAMPLE RETRIEVAL INSTRUCTIONS

1.0 ENVIRONMENTAL TLD RETRIEVAL

Radiological Emergency Manager/Field Team Coordinator Duties

1.1 Consult with the Washington DOH representative at the Emergency Operations Facility (EOF) and determine the need for collection and replacement of environmental TLDs during the emergency.

NOTE: If possible, involve the Radiological Environmental Monitoring Program (REMP) Supervisor in any nonscheduled collection or deployment of environmental TLDs.

1.2 When collection is determined advisable, dispatch an experienced REMP staff member as part of an Environmental Field Team, to replace the ANNUAL TLD badges at selected locations as described in CI 4.10 and CI 4.11.

NOTE: Copies of CI 4.10 and CI 4.11 are in the document packet of the Environmental Field Team kit located in the MUDAC emergency supply cabinet.

REMP Staff Member Duties

1.3 Contact the Energy Northwest TLD Administrator to obtain replacement environmental TLDs for distribution.

1.4 Ensure that the required number of TLDs are provided for each exchange group as directed by the Radiological Emergency Manager (REM).

1.5 Contact the Field Team Coordinator regarding radiological conditions in the field, and follow his/her directions on individual radiation protection measures.

1.6 Proceed to the TLD stations as directed by the Field Team Coordinator.

1.7 Exchange only the ANNUAL TLDs.

1.8 When the TLDs have been exchanged, return to the Health Physics Center and turn them in to the Health Physics Center Staff for processing.

2.0 FIXED AIR SAMPLE RETRIEVAL

Radiological Emergency Manager/Field Team Coordinator Duties

2.1 Consult with the Washington DOH representative at the EOF and determine the need for collection of fixed air samples during the emergency.

NOTE: If possible, involve the REMP Supervisor in any nonscheduled collection of fixed air samples.

2.2 If collection is determined advisable, dispatch experienced REMP personnel as part of an Environmental Field Team to collect air samples at selected locations in accordance with CI 4.12 and CI 4.13.

NOTE: Copies of CI 4.12 and CI 4.13 are in the document packet of the Environmental Field Team kit located in the MUDAC emergency supply cabinet.

REMP Staff Member Duties

2.3 Contact the Field Team Coordinator regarding radiological conditions in the field and follow his/her directions on radiation protection measures to be taken.

2.4 Proceed to the fixed air sample stations as directed by the Field Team Coordinator.

2.5 Collect the air samples.

NOTE: If the emergency involved a radioactive release, calculations of the volume of air sampled may need to be restricted to the time during which the plume or puff was over the station. Request guidance from the Field Team Coordinator if the fixed air sample was in the path of a release during the sampling period.

2.6 When the air samples have been collected, return to the Health Physics Center and turn them in to the Health Physics Center Staff for processing.

FIELD TEAM COORDINATOR CHECKLIST

DATE_____

	Actions	Time Completed	Initials
1.	Sign in on board, obtain supply drawer from EOF supply cabinet, and notify the REM of your availability.	_____	_____
2.	Brief the field team coordinators from other agencies supplying field teams and reach a consensus about management of their field teams.	_____	_____
3.	Determine current year-to-date exposure of Energy Northwest field team members prior to deployment.	_____	_____
4.	Assign field team members and a designate team identification number (one HP and one non HP per team, if possible).	_____	_____
5.	Ensure field teams have transportation and other equipment.	_____	_____
6.	Direct the Field Team Dispatcher(s) to brief the teams approximately each 30 minutes on current radiological projections or other appropriate information about emergency conditions.	-ongoing-	
7.	If necessary, assign an individual to act as field team recorder.	_____	_____
8.	Interface with the Dose Projection HP to determine projected plume path and emergency worker dose factor.	-ongoing-	
9.	Develop a strategy for assigning Field Teams initially, verifying plume path, and dealing with EOF inaccessibility.	-ongoing-	
10.	Direct field teams to perform field surveys per field team survey instructions contained in this procedure.	-ongoing-	
11.	Provide completed Field Team data summary maps to the Dose Projectionist Health Physicist (DPHP) as new information is developed. During rapidly changing conditions, try to do this at least every 30 minutes.	-ongoing-	
12.	Provide field team air sample data to the Dose Projection Health Physicist (DPHP) for use in calculating dose projections.	-ongoing-	
13.	If requested to assist with river evacuation monitoring, implement PPM 13.9.8 (kits are in MPF).	_____	_____
14.	Direct the dispatcher to periodically ask for field team dosimetry readings. Keep exposure ALARA.	-ongoing-	

Actions	Time Completed	Initials
15. Arrange for field team replacement supplies, as necessary.	-ongoing-	
16. Provide completed Field Team Summary Maps to the REM.	-ongoing-	
17. Notify field teams when decision is made to recommend KI.	_____	_____
18. Upon shift change or change to State control, brief replacements.	_____	_____
19. Upon shift change or termination of the emergency:		
a. Prepare an individual After Action Report. Refer to PPM 13.13.4.	_____	_____
b. Deliver After Action Report, logs, and all field team work sheets to the REM.	_____	_____

FIELD TEAM BRIEFING WORKSHEET

Date _____
Time _____

Plant Status: _____

_____

Initial Briefing: 1) Cell Phone: EN-1:_____ EN-2:_____ EN-3:_____
2) YTD Exposures: _____ _____ _____
_____ _____ _____

Safety Concerns: _____
Emergency Classification: _____
Release Point: _____ Release Type: _____
Environmental Release Time: _____ Duration:_____
Projected Dose/Location: _____
Weather: Wind Direction From: _____ Speed:_____
Forecast: _____
PAD for Public: _____

_____

RADIOLOGICAL ASSESSMENT

Expected Conditions: __Hi Rad __Hi Contamination __Hi Airborne
Protective Clothing: __None __Single
Exposure Limitations: Individual Dose Limits____
Dose/Dose Rate to Notify MUDAC:____

Roll Call/Acknowledgment:

TEAM NO.	ACKNOWLEDGED AT: (Time)	COMMENTS

Attachment 5.8

FIELD TEAM KIT REPLENISHMENT LOG

Date _____ Team Members _____

FIELD TEAM MEMBERS: List below the items used from each kit during the drill/event so that the kits can be restocked appropriately. Include the completed log with your After Action Report.

INSTRUMENTATION KIT:

_____
_____
_____
_____
_____

AIR SAMPLING KIT:

_____
_____
_____
_____
_____

PROTECTIVE CLOTHING KIT:

_____
_____
_____
_____
_____

FIELD SAMPLING KIT:

_____
_____
_____
_____
_____

MISCELLANEOUS (FORMS, MAPS, PROCEDURES, ETC.)

_____
_____
_____
_____

Return electronic dosimeters to the HP Technician in the HP Center for TES updates.

Attachment 5.9