

INTEROFFICE MEMORANDUM

DATE: April 29, 2004

TO: Distribution

FROM: Procedure Control, Administrative Services, (901A) *Lucinda De Leon*

SUBJECT: **PLANT PROCEDURES MANUAL – VOLUME 13**
PACKAGE NO. 2004-290

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following Procedure(s) have been revised/approved and are to be inserted in your controlled copy of the Manual and the superseded revisions are to be removed and destroyed:

<u>Procedure</u>	<u>Rev</u>	<u>Title/Comments</u>
13.9.1	32	ENVIRONMENTAL FIELD MONITORING OPERATIONS

Also included in this package are **EDITORIAL CHANGES**, please replace the pages located in your manual with the attached pages:

<u>Procedure</u>	<u>Rev</u>	<u>Page/s</u>
13.4.1	29	16, 17

To verify receipt or cancellation of the subject Procedure(s), please sign, date and return this receipt to **Procedure Control, MD 901A** within **TEN (10) WORKING DAYS** of the date of this IOM.

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DISTRIBUTION - VOLUME 13

<u>Control Copy</u>	<u>Location</u>	<u>Mail Drop</u>
2	*Control Room (501) (IOM to CRS)	901A
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59	*CGS Security (CAS-AAP) (13.1.1, 13.4.1, 13.5.1, 13.5.5, 13.10.8 13.11.10, 13.12.19, 13.13.4)	901A
60	CGS Security	988A
63	Emergency Training	PE30
64	*Radwaste Control Room (467)	901A
66	*Simulator, Shift Manager (PSF Rm. 235)	1050
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)	901A
75	Dept. of Health Radiation Protection	----
78	*Control Room - (501) STA's Desk	901A
83	*MUDAC	1020
86	*Simulator - STA's Desk	1050
87	Document Control Desk, NRC	----
+ +90	*Joint Information Center (Keys)	901A
94	*EOF	1050
97	*EOF	1050
114	EP Manager	PE30
127-130 (4)	Licensed Training (Rms. 225, 247 or 248)	1050
132	Licensed Training (Rms. 225, 247 or 248)	1050
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 Kit (13.7.5, 13.9.1, 13.9.5, 13.9.8, 13.13.4, 13.14.4)	901A
142	Hanford EOC/SMT	----
155	*Maintenance Library (Memo to Veena)	901A
160	*OSC Emergency Support	901A
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219-221 (3)	Licensed Training (Rms. 225, 247 or 248)	1050
223	Franklin County Emergency Management	----
236	Site 1 (B.Lyons) (13.4.1, 13.5.1, 13.5.7, 13.13.4, 13.14.9)	817
+ +238	*Alternate EOF (Keys)	901A
244	Ron Jorgensen	PE30
245	Paul Ziemer	PE30

+ + Procedure Control does the filing at downtown - Bring keys

* Level 1 File

DATE: 04/29/04

EDITORIAL

13.4.1

EMERGENCY NOTIFICATION LISTS
PART C - OFFSITE SUPPORT AGENCY NOTIFICATION LIST

Discussion

- These offsite agencies are notified as soon as possible after Part A notifications are made. Notification is made at the indicated emergency classification level and at any subsequent reclassification (except as noted below), including termination.
- Notifications are made via commercial phone, radio or facsimile. An Offsite Agency Notification Checklist is located in the Offsite Agency Section of the Emergency Phone Directory.
- These agencies are normally provided information contained in items 2 through 6 of the CNF.
- The agencies are listed in the order of preferred notification. However, Energy Northwest reserves the right to modify the order as required for effective emergency preparedness coordination.
- After two (2) unsuccessful attempts to contact a listed agency, further attempts will be discontinued and an "unable to contact" notice given to the Site Support Manager.

AGENCY NOTIFICATION LIST

At Unusual Event or Above

1. Federal Emergency Management Agency (FEMA)

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EMERGENCY NOTIFICATION LISTS
PART C - OFFSITE SUPPORT AGENCY NOTIFICATION LIST (Contd.)

At Alert or Above

2. Site One Manager (or Designated Site One Authority (DSA)
3. Security Training Facility
4. Institute of Nuclear Power Operations (INPO)
5. American Nuclear Insurer (ANI)

At Site Area Emergency or Above

6. Framatome ANP
7. General Electric of San Jose

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13.9.1



**ENERGY
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USE CURRENT REVISION

**COLUMBIA GENERATING STATION
PLANT PROCEDURES MANUAL**

PROCEDURE NUMBER	APPROVED BY	DATE
*13.9.1	SLS - Revision 32	04/29/04
VOLUME NAME		
EMERGENCY PLAN IMPLEMENTING PROCEDURES		
SECTION		
ENVIRONMENTAL FIELD MONITORING AND SAMPLING		
TITLE		
ENVIRONMENTAL FIELD MONITORING OPERATIONS		

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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 4.11, Trip Directions to TLD Stations
- 2.3 CI 4.12, Airborne Samples Distribution, Collection and Shipping
- 2.4 CI 4.13, Trip Directions to Environmental Air Sampler Stations
- 2.5 PPM 11.2.9.31, Operation of MG DMC-100 and DMC-2000 Electronic Dosimeters
- 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, Form 19324
- 2.12 Emergency Response Log, Form 23895
- 2.13 Field Team Dispatch and Tracking Worksheet, Form 25815
- 2.14 Ten Mile EPZ Field Team Summary Map, Form 25130
- 2.15 Field Team Radiation Survey Data, Form 26097
- 2.16 Checklist for Equipment Test, Form 26286

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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 5.7) 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.).

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- 4.1.3 Interface with the Dose Projection Health Physicist (DPHP) to determine the following:
- Projected release path.
 - Areas which may require surveys, air sampling, or environmental sampling to verify plume location and deposition.
 - Emergency worker dose correction factor. The REM may need to be consulted for this information.
- 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.
- 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.
 - 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 25815). Available dose is 5000 mrem minus current YTD dose.
- When a radiological release to the environment has started, and periodically thereafter, request an emergency worker correction factor from the Dose Projectionist Health Physicist.
 - If the dose adjustment factor provided to you by the REM is less than 5, use that factor. If the dose adjustment factor is greater than 5, use 5. The emergency worker available dose should be divided by the dose adjustment factor to get the corrected available 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 5.8.
- Initial briefings should include individual exposures and limits.
 - 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.

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- 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. If it is determined that a dose correction factor is necessary, adjust this 2 rem/hr value accordingly.

- 4.1.10 During initial deployment, position field teams per the following guidelines:
- 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.
 - Locate the other field teams farther downwind.
- 4.1.11 Request field team readings as identified on Field Team Radiation Survey Data (Form 20697).
- Direct readings to be reported by column number. For example, Column 4, 1500 microR/hour.
- 4.1.12 When a radioactive release is confirmed:
- 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.
 - Upon identification of a radioactive plume, commence air sampling activities.
 - Identify plume centerline and boundaries (i.e., 100 microrem/hr).
- 4.1.13 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.
- 4.1.14 Keep the DPHP informed of field monitoring results.
- 4.1.15 Reposition field teams as necessary to track the plume's leading edge, the side boundaries and, when the release terminates, the trailing edge.
- 4.1.16 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.

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

NOTE: Dose limits for emergency workers in excess of 5 rem TEDE must be pre-approved by the Emergency Director.

- 4.1.17 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 25815).
- 4.1.18 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 (Form 25130) as needed.
- 4.1.19 Periodically, or as requested, provide completed Field Team Summary Maps (Form 25130) to the REM.
- 4.1.20 When directed to assist with river evacuation monitoring, dispatch a field team to implement PPM 13.9.8.
- 4.1.21 Notify field teams when decisions are made to take KI, or to implement other protective measures.
- 4.1.22 Arrange for replacement of field team instrumentation or supplies when needed.
- 4.1.23 Upon shift change, brief your relief on current status of the emergency and field team activities.
- 4.1.24 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 25815).
- 4.2.2 Maintain radio contact with field teams and enforce radio discipline and good practices.

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- 4.2.3 Request field team readings as identified on Field Team Radiation Survey Data (Form 20697).
- a. Direct readings to be reported by column number. For example, Column 4, 1500 microR/hour.
- 4.2.4 When significant changes occur during the emergency, complete a Field Team Briefing Worksheet (Attachment 5.8), 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.
- 4.2.5 When directed, notify field teams of any Protective Action Decisions (PADs) affecting the field teams or the public.
- 4.2.6 Periodically request dosimetry readings from field team members to ensure they are within limits and notify the Field Team Coordinator of results.
- 4.2.7 Maintain radio communications capability until all field teams have returned to the Kootenai Building.
- 4.2.8 Act as Field Team Coordinator when requested.
- 4.2.9 Upon shift change, brief your relief on the current status of the emergency and field team activities.
- 4.2.10 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 ENOC 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 ENOC MPF. Keys for the cabinet

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are located in the glass front key box on the wall adjacent to the Room 201 door. Enter the ENOC 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 EOF Field Team Supply Cabinet. The key to the EOF Field Team Cabinet is located in the red key box on the side of the cabinet.
- 4.3.4 Obtain keys for the Energy Northwest designated field team vehicles from the EOF Field Team Supply Cabinet. Field Team vehicles are located at the top of the hill above the ambulance bay.
- 4.3.5 Obtain keys to the Industrial Development complex gates located on the River Corridor road between Site One and WNP-4.
- 4.3.6 Obtain a Field Team case containing the Field Team Document Packet of Maps, Forms, Procedures, a GPS unit, and cell phone 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. The alarm can be silenced by pressing and holding the button on the side of the dosimeter until the alarm silences.

- 4.3.7 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:"
- 4.3.8 Report to the Ambulance Bay and unlock the following:
 - a. Field Team Emergency Cabinets #1 through #3 (Kootenai Building Health Physics Center).
 - b. Radio Charger Cabinet (Kootenai Building, Room 118A, by decon shower).
 - c. Return the key ring to the EOF Field Team cabinet prior to the last team departing the Ambulance Bay.
- 4.3.9 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. Ribbonded Stakes for marking sample locations
- d. Air Sampling Kit

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e. Field Sampling Kit

f. Field Team Portable Radio (1) and Spare Batteries (1) located in the Radio Charging Cabinets in Kootenai Building, Room 118A.

- 4.3.10 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 cabinets in the Ambulance Bay, and notify the Field Team Coordinator if anything is missing.

NOTE: The use of gloves is recommended when handling uncoated lead radioactive source shielding containers.

- 4.3.11 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.

- 4.3.12 Perform battery and response check, as applicable, on all radiation survey instruments in the instrumentation kit and record the information on Checklist for Equipment Test, (Form 26286) located in the Field Team Document Packet, using the guidance contained on Form 26286 and Attachment 5.1.

- 4.3.13 After the last Field Team completes instrument checks, return the source to the field team source cabinet.

- 4.3.14 Return the key ring to the EOF Field Team cabinet prior to the last team departing the Ambulance Bay.

- 4.3.15 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.

- 4.3.16 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.

- 4.3.17 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.

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- b. Batteries are not low. Verify batteries by pressing PAGES, then select STATUS.
- 4.3.18 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.
 - a. Security will open the gate near the treatment pond and leave the gate open as long as the Industrial Development complex roadblock is in place.
- 4.3.19 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	<i>A (1)</i>
Moderately unstable	<i>B (2)</i>
Slightly unstable	<i>C (3)</i>
Neutral	<i>D (4)</i>
Slightly stable	<i>E (5)</i>
Moderately stable	<i>F (6)</i>
Extremely stable	<i>G (7)</i>

- 4.3.20 Notify the Field Team Dispatcher upon arrival at your assigned location.
- 4.3.21 As directed, perform general area surveys, ground contamination surveys and portable air samples following the instructions contained in Attachments 5.3 through 5.5.
- 4.3.22 Maintain a chronology of significant inputs, actions, events and their resolutions on an already established log, or on the Emergency Response Log (Form 23895), for attachment to your After Action Report per PPM 13.13.4.
- 4.3.23 Record field survey results on Field Team Radiation Survey Data (Form 26097) and report field team readings to the Field Team Coordinator or Field Team Dispatcher.
 - a. Report readings by column number. For example, Column 4, 1500 microR/hour.
- 4.3.24 If directed to perform River Evacuation Monitoring refer to PPM 13.9.8.

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- 4.3.25 If directed to retrieve environmental TLDs and/or fixed air samples, refer to Attachment 5.6.
- 4.3.26 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. Return dosimetry to the EOF Field Team Supply cabinet and request HP to track and appropriately account for your dose, and then to reset the electronic dosimeters to fast entry mode per PPM 11.2.9.31.
 - d. Prepare an individual After Action Report per PPM 13.13.4.
 - e. Deliver After Action Reports to the Field Team Coordinator.
- 4.3.27 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 Checklist for Equipment Test, Form 26286, using Attachment 5.1.
- 4.3.28 Upon return of field team equipment:
- a. Restore equipment to correct field team kit container and place in designated cabinet.
 - b. Refer to the field team kit inventories for a list of each kit's contents.

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- If kits contain the required items, reseal the kits.
 - If kit supplies need replacement or replenishment, 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. Include the replenishment log with your After Action Report. Refer to Attachment 5.9.
- c. Prepare an Individual After Action Report per PPM 13.13.4.
- d. Deliver all logs, data work sheets, and After Action Reports to the Field Team Coordinator.

5.0 ATTACHMENTS

- 5.1 Radiation Survey Instruments: Battery & Response Checks, and Operation
- 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 (19324) 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

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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.
- Place the selector switch to OFF position
- 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 Set the Selector switch to X1.

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

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- 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.

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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.

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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. To place a call:
 - Enter the phone number you are calling and press the SND key.
 - When the call is complete, press the END key.
- b. To receive a call:
 - Press the SND key to answer the call. Your phone will be disconnected when the calling party hangs up. Press the END key.

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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. 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.

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FIELD RADIATION SURVEYS

1.0 General Area Surveys

NOTE: Refer to Radiation Survey Instruments: Battery & Response Checks, and Operation (Form 26286) 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 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 26097 (indicate type of survey by G for general area). Proceed until the other edge of the plume is identified.
- 1.6 Record field survey results on Field Team Radiation Survey Data (Form 20697) and report field team readings to the Field Team Coordinator or Field Team Dispatcher.
 - a. Report readings by column number. For example, Column 4, 1500 microR/hour.
- 1.7 If the dose rate is greater than 2 mrem/hr (2000 micro-R/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.

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- 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.
- 1.8 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.
- 1.9 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.
- 1.10 Leave the plume area when not taking readings, but leave the instrument turned on at all times for constant monitoring purposes.
- 1.11 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.

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2.0 Ground Contamination Surveys

NOTE: Refer to Checklist for Equipment Test, (Form 26286) 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 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.

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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 (Form 19324) and Radiation Survey Instruments: Battery & Response Checks, and Operation (Form 26286).
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 a new air sampler from the cal lab and retest.

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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 Checklist for Equipment Test, (Form 26286).
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 and locate the plume centerline (highest reading).
13. Obtain window open/window closed readings to ensure that you are in the plume. If the readings are the same, you are seeing only shine from the plume. Air samples should only be taken if you are in the plume.
14. 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
15. 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.
16. Turn the air sampler on.
17. 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.
18. Perform area dose rate survey for sample location.

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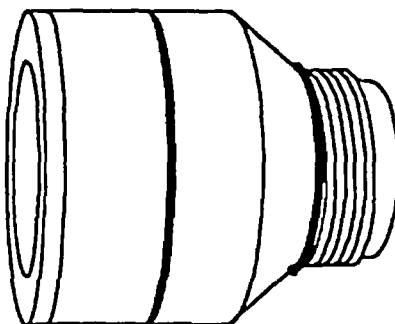
19. Record start flow rate, sample start time and sample location dose rate on the Sample Identification Form (Form 19324).
20. Upon completion of sampling, note stop flow rate and sample stop time, then turn off and disconnect sampler per step 9.
21. Leave the area of the plume to complete your documentation following the instructions in Attachment 5.5.
22. Label the plastic bags for the filter and charcoal cartridges with the sample identification number, location, date, and time collected.
23. 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.
24. 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.
25. Determine filter and cartridge dose rate or count rate by placing the appropriate instrument detector on the inlet side of the filter or cartridge.
26. Record sample readings on Sample Identification Form (Form 19324). Note particulate and iodine sample readings in the Remarks section separately. Report the results to the Field Team Coordinator.
27. Place the filter and cartridge in separate plastic bags then seal bags.
28. Survey team members for contamination. If contaminated, advise the Field Team Dispatcher.
29. 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.

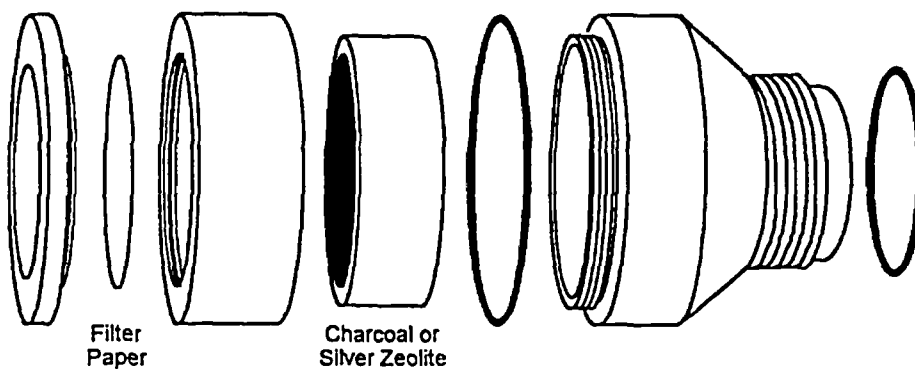
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SAMPLE HEAD DIAGRAM



Sample Head - Assembled



Sample Head - Disassembled

870713
Nov 1997

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

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SAMPLE IDENTIFICATION FORM (19324) 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

AA0

SEQUENCE

000

FIELD TEAM CODES

Use a two-letter and single number designator, (e.g., EN-1 for Energy Northwest Field Team 1).

SEQUENCE

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.

Attachment 5.5

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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.

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.

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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.

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.

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FIELD TEAM COORDINATOR CHECKLIST

DATE _____

	<u>Actions</u>	<u>Time Completed</u>	<u>Initials</u>
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.	Communicate emergency worker dose factor to all field teams and confirm information as received.	_____	_____
10.	Develop a strategy for assigning Field Teams initially, verifying plume path, and dealing with EOF inaccessibility.	-ongoing-	
11.	Direct field teams to perform field surveys per field team survey instructions contained in this procedure.	-ongoing-	
12.	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-	
13.	Provide field team air sample data to the Dose Projection Health Physicist (DPHP) for use in calculating dose projections.	-ongoing-	

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	<u>Actions</u>	<u>Time Completed</u>	<u>Initials</u>
14.	If requested to assist with river evacuation monitoring, implement PPM 13.9.8 (kits are at ENOC, MPF).	_____	_____
15.	Direct the dispatcher to periodically ask for field team dosimetry readings. Keep exposure ALARA.	-ongoing-	
16.	Arrange for field team replacement supplies, as necessary.	-ongoing-	
17.	Provide completed Field Team Summary Maps to the REM.	-ongoing-	
18.	Notify field teams when decision is made to recommend KI.	_____	_____
19.	Upon shift change or change to State control, brief replacements.	_____	_____
20.	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.	_____	_____

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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

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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 EOF Field Team Supply cabinet and contact Radiological Services for TES updates and reset to fast entry mode.

Attachment 5.9

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