



13.9.1



USE CURRENT REVISION

COLUMBIA GENERATING STATION
PLANT PROCEDURES MANUAL

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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 4.10, 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 11.2.9.31, Operation of MG DMC-100 and DMC-2000 Electronic Dosimeters
- 2.7 PPM 13.2.1, Emergency Exposure Levels/Protective Action Guides
- 2.8 PPM 13.9.5, Environmental Sample Collection
- 2.9 PPM 13.9.8, River Evacuation Monitoring
- 2.10 PPM 13.13.4, After Action Reporting
- 2.11 PPM 13.14.4, Emergency Equipment
- 2.12 Sample Identification Form, 19324
- 2.13 Emergency Response Log, 23895
- 2.14 Field Team Dispatch and Tracking Worksheet, 25815
- 2.15 Ten Mile EPZ Field Team Summary Map, 25130
- 2.16 Field Team Radiation Survey Data, 26097

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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 $\frac{1}{2}$ 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 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).
- 4.1.12 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.
- 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.

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- 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 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 (Form 25130) as needed.
- 4.1.18 Periodically, or as requested, provide completed Field Team Summary Maps (Form 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 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 5.8), 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.

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- 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 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 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 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.

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- 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 keys to the Site One gates located on the River Corridor road between WNP-1 and WNP-4.
- 4.3.6 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.

- 4.3.7 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). Leave the key in the last lock.
 - b. Radio Charger Cabinet (Kootenai Building, Room 118A, by decon shower).
- 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
 - e. Field Sampling Kit
 - f. Field Team Portable Radios (2) and Spare Batteries (2) located in the Radio Charging Cabinets in Yakima 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 Document Packet) and notify the Field Team Coordinator if anything is missing.
 - 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

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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 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.
- 4.3.13 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.
- 4.3.14 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.

- 4.3.15 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.

- 4.3.16 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.
- 4.3.17 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. If you are dispatched to the river pump house area, unlock the gate, proceed through and immediately lock the gate behind you.
 - b. Security will open the gate near the treatment pond and leave the gate open so long as the Site One roadblock is in place.

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- 4.3.18 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>

- 4.3.19 Notify the Field Team Dispatcher upon arrival at your assigned location.
- 4.3.20 As directed, perform general area surveys, ground contamination surveys and portable air samples following the instructions contained in Attachments 5.3 through 5.5.
- 4.3.21 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.
- 4.3.22 If directed to perform River Evacuation Monitoring refer to PPM 13.9.8.
- 4.3.23 If directed to retrieve environmental TLDs and/or fixed air samples, refer to Attachment 5.6.
- 4.3.24 When relieved at shift change, or termination of emergency event:
- Brief your relief on responsibilities, duties and current status of actions being performed.
 - Report to the Kootenai Building Health Physics Center for survey, and, if necessary, decontamination.
 - 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.
 - Prepare an individual After Action Report per PPM 13.13.4.
 - Deliver After Action Reports to the Field Team Coordinator.

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4.3.25 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.

4.3.26 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.
 - 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.

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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 (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

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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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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

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CHECKLIST FOR EQUIPMENT TEST, con't

Instrumentation Kit	Serial Number	Cal Due Date	Correction Factor	Initials/Date & Time	Response Check		Battery Check	
					Sat	UnSat	Sat	UnSat
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

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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. 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.

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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 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, 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 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.

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- 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.

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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, 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 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.

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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 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 19324).

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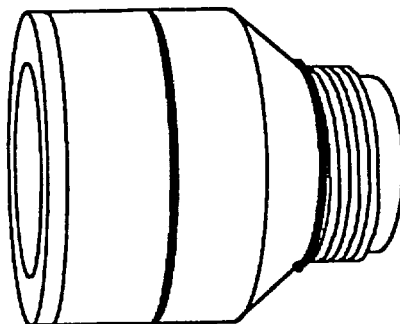
19. Upon completion of sampling, note stop flow rate and sample stop time, then turn off and disconnect sampler per step 9.
20. Leave the area of the plume to complete your documentation following the instructions in Attachment 5.5.
21. Label the plastic bags for the filter and charcoal cartridges with 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 (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.

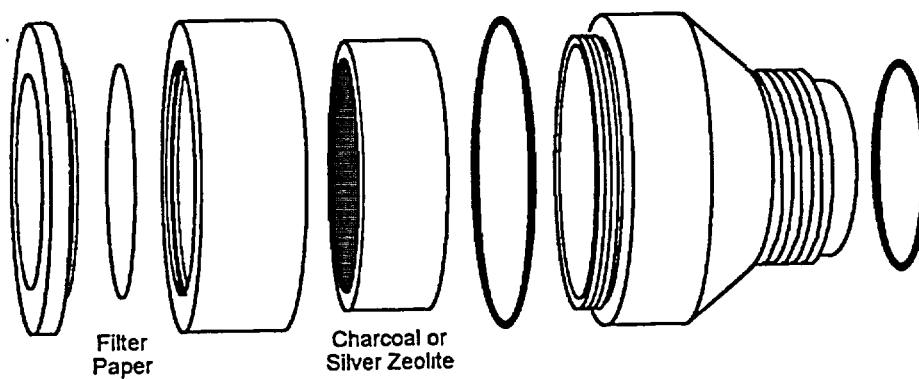
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SAMPLE HEAD DIAGRAM



Sample Head - Assembled



Sample Head - Disassembled

970713
Nov 1997

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

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SAMPLE IDENTIFICATION FORM (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

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.

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.

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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.

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.

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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-	
14.	If requested to assist with river evacuation monitoring, implement PPM 13.9.8 (kits are at ENOC, MPF).	_____	_____

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	<u>Actions</u>	<u>Time Completed</u>	<u>Initials</u>
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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13.11.7

ENERGY NORTHWEST

COLUMBIA GENERATING STATION PLANT PROCEDURES MANUAL

PROCEDURE NUMBER	APPROVED BY	DATE
*13.11.7	SLS - Revision 26	05/02/03
VOLUME NAME		
EMERGENCY PLAN IMPLEMENTING PROCEDURES		
SECTION		
EMERGENCY OPERATIONS FACILITY		
TITLE		
RADIOLOGICAL EMERGENCY MANAGER DUTIES		

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1.0 PURPOSE

This procedure describes the emergency responsibilities and duties of the Emergency Operations Facility (EOF) Radiological Emergency Manager (REM), including oversight of: Environmental Field Team activities; dose projection activities; Protective Action Recommendation (PAR) coordination with the Emergency Director; coordinating any offsite monitoring and decontamination activities; Health Physics Center (HPC) activities; and coordination of offsite reentry and Ingestion Pathway activities with Washington State Department of Health (WADOH) personnel. As necessary, portions of the REM duties may be delegated to staff members.

Upon arrival of WADOH representatives and/or the U.S. Department of Energy, Richland Field Office (DOE/RL) representatives, certain REM duties will be administered according to the jurisdictional authority of each agency, with the REM ensuring full cooperation and support to all agencies.

2.0 REFERENCES

- 2.1 FSAR, Chapter 13.3, Emergency Plan, Sections 2 and 6
- 2.2 PPM 1.9.14, Onsite Medical Emergencies
- 2.3 PPM 11.2.9.31, Operation of MG DMC-100 and DMC-2000 Electronic Dosimeters
- 2.4 PPM 13.2.1, Emergency Exposure Levels/Protective Actions Guides (PAGs)
- 2.5 PPM 13.2.2, Determining Protective Action Recommendations
- 2.6 PPM 13.5.1, Localized and Protected Area Evacuations
- 2.7 PPM 13.5.3, Evacuation of Exclusion Area and/or Nearby Facilities
- 2.8 PPM 13.7.5, Offsite Assembly Area Operations
- 2.9 PPM 13.8.1, Emergency Dose Projection System Operations
- 2.10 PER 201-2601, Honeywell Control Systems {P183283}

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REFERENCES, (cont'd)

- 2.11 PPM 13.9.1, Environmental Field Monitoring Operations
- 2.12 PPM 13.9.5, Environmental Sample Collection
- 2.13 PPM 13.9.8, River Evacuation Monitoring
- 2.14 PPM 13.13.3, Intermediate Phase MUDAC Operations
- 2.15 PPM 13.13.4, After Action Reporting
- 2.16 Emergency Response Log, 23895
- 2.17 Ten Mile EPZ Field Team Summary Map, 25130

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3.0 PROCEDURE

- 3.1 When notified of an Alert, Site Area Emergency or General Emergency, or if directed, report to the EOF and sign in on the EOF staffing board.
- 3.2 Obtain your procedure book from the wall rack and supply drawer from the EOF supply cabinet.
- 3.3 Notify the Site Support Manager and EOF Manager (or the TSC Manager if EOF Manager not yet present) of your availability.

NOTE: MUDAC may be declared operational with less than minimum staffing , however, doing so does not satisfy minimum staffing requirements of the Emergency Plan. Contact the Manpower scheduler to fill open positions.

- 3.4 Inform the EOF Manager when MUDAC is operational (capable of performing dose assessment and field monitoring functions).

NOTE: At an Alert or higher emergency, a Security Officer will be dispatched to the EOF HPC to lock down the Kootenai Building and assist with EOF access control, and with evacuation assembly area accountability.

- 3.5 At Alert or higher, determine the current wind direction. If the wind is blowing from between 20 and 90 degrees, direct activation of the ENOC Offsite Assembly Area.
- 3.6 If activating the ENOC Offsite Assembly Area, contact the RPM and request three HP Technicians. Dispatch two Technicians to the ENOC to begin setting up the Offsite Assembly Area per PPM 13.7.5. Direct the third Technician to the EOF to initiate habitability monitoring.
- 3.7 At Alert or higher, if the wind is from any direction other than between 20 and 90 degrees, contact the RPM and request that two HP Technicians be dispatched to the EOF for HPC activation.
 - Direct the HPC staff to set up HPC facilities and establish EOF habitability monitoring. Refer to Attachment 4.10.
 - Ensure appropriate radiological monitoring equipment (dose rate and air sampling) is positioned in the lower level south end Kootenai Building near the EOF and periodic dose rate and airborne surveys are performed as necessary.
 - Designate an appropriate evacuee holding area for Protected Area evacuees in the event the Protected Area is evacuated. Inform the HPC staff and the TSC RPM of the location.

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- 3.8 Establish and maintain contact with the RPM in the TSC for a briefing on the status of the emergency, and to provide assistance in radiological assessment, mitigation activities, or dose assessments.
- 3.9 When dose assessment is fully functional, assume responsibility for offsite dose projections from the RPM in the TSC, or the STA in the Control Room.
- 3.10 Provide an initial briefing on the emergency using Attachment 4.8 to the offsite agency representatives.
- 3.11 In the event of a Protected Area evacuation, assist the RPM with coordinating Health Physics (HP) monitoring and decontamination services at the evacuation assembly area.
- Refer to PPM 13.5.1 for Protected Area evacuation routes.
 - Refer to PPM 13.7.5 for Alternate Assembly Area set up instructions.
- 3.12 If assistance is requested by Washington State Department of Health, provide for radiological monitoring of Columbia River evacuees per PPM 13.9.8.
- 3.13 If plant conditions indicate the possibility of an offsite release or a Site Area Emergency is declared, direct the Site Support Manager to call in an additional REM to assist in REM responsibilities.
- 3.14 If the determination is made to evacuate the Exclusion Area, determine if radiological hazards exist or are suspected. Determine evacuation routes and hazardous routes to avoid. Refer to PPM 13.5.3.
- 3.15 Provide periodic updates on radiological conditions and evacuation actions which require set-up of the ENOC Offsite Assembly Area.
- 3.16 In the event of an Exclusion Area evacuation requiring personnel to report to Energy Northwest Office Complex (ENOC), direct that two HP technicians be dispatched to activate the Offsite Assembly Area, and ensure that the TSC is directed to complete the appropriate PA announcement.
- 3.17 In the event of a Protected Area evacuation or Exclusion Area evacuation requiring personnel to report to the ENOC, notify the HP Technicians at the Offsite Assembly Area that evacuees have been directed to report to the ENOC.
- 3.18 If conditions indicate the need for road closure, evacuation, or other protective measures, coordinate the safe placement of Energy Northwest or local law enforcement agency roadblocks with the Security Manager.

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NOTE: Security no longer maintains dosimetry in road block kits for responders, and will direct personnel needing dosimetry to the EOF, except for fire and ambulance personnel who will obtain dosimetry at the vehicle trap.

- 3.19 When notified that personnel must pass through road blocks into radiological hazard areas, determine and implement necessary radiological monitoring and protective clothing requirements.

NOTE: The Energy Northwest administrative exposure hold point (2 rem TEDE) is automatically waived for Energy Northwest emergency workers at Alert or higher emergency classifications and increased to 5 rem TEDE.

NOTE: A radioactive release is in progress when any of the following conditions exist:

- Valid reading exists which exceeds PPM 13.1.1 Table 3 Column UE, OR
- Offsite dose calculations meet or exceeds PPM 13.1.1 Table 4 Column UE levels for TEDE or CDE thyroid, OR
- Field teams measure GE 100 μ Rem/hr at 1.2 miles.

- 3.20 If a confirmed radioactive release is in progress, the following steps should be taken:

- Determine the advisability of sheltering or evacuating any manned Exclusion Area facility, i.e., Kootenai Building, Laundry, Energy Northwest, Ashe Substation, River Pump house, and determine and direct implementation of radiological protective actions for EOF personnel, based on radiological conditions.
- Refer to PPM 13.2.2, Section 4.3, Offsite PARs Based on Projected Doses, to determine offsite PARs and act as the Protective Action Decision Group spokesperson in proposing PARs to the EOF Manager (Emergency Director).
- Provide the Emergency Director with updated dose projection results. Information provided should include dose, dose rate, and the basis for the time used for the dose estimates.
- Notify the Emergency Director and the State and County Technical Liaisons if dose rates exceed 250 mRem/hr thyroid, or air sample results exceed $1.4E-7$ μ Ci/cc Iodine 131. Ensure that this information is marked on the CNF.
- Consult with the Field Team Coordinator to ensure the following:
 - a. Dispatch field teams to traverse at designated distances (i.e., 1.2, 5, and 10 miles) and verify dose rate levels above 100 μ Rem/hr.
 - b. Upon identification of a radioactive plume, commence air sampling activities.

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- c. Identify plume centerline and boundaries (i.e., 100 μ Rem/hr).
- 3.21 Determine the need for a dose adjustment factor based on dose projection results or reports from field team members indicating a potential inhalation concern. The dose adjustment factor provides an internal dose component. The available dose should be divided by the dose correction factor to get corrected available dose.
- Using QEDPS, calculate a dose adjustment factor:
 - a. If the dose adjustment factor is 5 or greater, a dose adjustment factor of 5 should be implemented.
 - b. Provide the dose adjustment factor to the Field Team Coordinator for use in establishing field team exposure limits.

NOTE: Refer to PPM 13.2.1 for guidance on recommending administration of Potassium Iodide (KI) for emergency workers. Be aware that criteria for recommending KI for State, County and DOE personnel are different from those for Energy Northwest personnel.

- EOF Manager (as Emergency Director) authorization is required for issuance of KI.
- 3.22 Advise the Field Team Coordinator when protective actions need to be taken by field teams, such as KI.
- 3.23 Review Field Team summary and dose projection summary maps for the plume EPZ, and when applicable, the ingestion EPZ. Have copies transmitted to the JIC, County and State emergency centers.
- 3.24 Continually assess offsite radiological releases and determine the need to recommend to the Emergency Director to provide authorization to exceed Protective Action Guides (PAGs) for offsite emergency workers, in accordance with PPM 13.2.1, or general public Protective Action Recommendations (PARs) in accordance with PPM 13.2.2.
- 3.25 Brief all Energy Northwest and offsite MUDAC personnel of impending PAR declarations prior to issuing the PAR.
- 3.26 As necessary, complete radiological release-related portions of the CNF for PAR modifications.
- 3.27 Provide PAR updates to the EOF Information Coordinator for transmittal on the Information Coordinator's network.

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- 3.28 Conduct periodic briefing sessions of the MUDAC staff on pertinent information from incoming hard copy communications and changes in emergency status.
- 3.29 Act as a conduit for information flow between MUDAC, HPC personnel, and the main EOF area, and provide input into EOF briefings on status and activities of dose assessment, field monitoring activities, EOF habitability, etc., per Attachment 4.8.
- If you receive notification that the Control Room has received a high moisture alarm on Standby Gas Treatment, ensure that dose projections are performed with the SGTS Damaged option checked.
- 3.30 Distribute MUDAC generated hard copy dose projection information (map and data sheets) to State and County Emergency Operations Centers (EOCs), and retain a copy for MUDAC records.
- 3.31 When relief from the Health Physics Network (HPN) is requested by the RPM, select a communicator and direct that they maintain the EOF HPN line in accordance with Attachment 4.4. Consider calling in an additional Dose Projection Health Physicist to fill this position.
- 3.32 If the following conditions exist:
- EOF general area radiation levels exceed 5 mrem/hr as indicated by the EOF radiation monitor, or;
 - EOF unidentified airborne radioactivity exceeds 0.3 DAC (0.3 DAC equates to approximately 750 ccpm on a 40 ft³ air sample in the field), then:
 - a. Immediately notify the EOF Manager and staff of the condition;
 - b. Direct surveillance of airborne activity be increased to once per hour and results reported to you;
 - c. Direct dose rates in the area be determined approximately every 15 minutes and results reported to you;
 - d. Direct that projected accumulated doses for the EOF personnel be evaluated and appropriate stay times be established;
 - e. Prohibit eating or drinking in the EOF until advised of resolution of the EOF airborne activity problem.
- 3.33 If the EOF is activated and ventilation system problems are experienced, notify the Construction and Maintenance Services on-duty supervisor at x6063 to put the EOF HVAC system into the EOF recirculation mode (mode 3) and skip Step 3.33.

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- 3.34 Dispatch a Health Physics Technician to the Kootenai Building penthouse to determine if the following conditions exist if the plume is over the Kootenai Building:
- Kootenai Building intake air activity exceeds 100 mRem/hr, or;
 - Kootenai Building return air activity exceeds 50 mRem/hr, then:
 - a. Immediately notify EOF Manager and staff of the condition.
 - b. Ensure EOF ventilation system is in proper operating mode per Attachment 4.10;
 - c. Request the Site Support Manager to notify Facilities to assist, if needed.
- 3.35 If necessary, direct the Site Support Manager to contact the Chemistry/Effluent Manager for support of field team sample analysis.
- 3.36 As required, direct appropriate staff to perform the following tasks per Attachment 4.5:
- Prepare, issue and collect direct reading dosimeters and TLDs for emergency response personnel.
 - Contact Nuclear and Engineering Support Staff training to determine if respirator training, medical qualifications, and fit testing for emergency support personnel, vendors, and contractors who must enter areas requiring respiratory protection is current.
- 3.37 If questioned by State or County officials, provide briefings that explain EOF radiological survey data and dose projection activities that determined Energy Northwest recommendations for protective actions.
- If Washington State Radcon teams are not available, and establishment of an offsite survey or remote decontamination location is required to handle potentially contaminated personnel, make arrangements for the necessary personnel and equipment.
- 3.38 If injured or contaminated personnel require offsite medical attention, refer to PPM 1.9.14.
- 3.39 If additional Energy Northwest personnel resources are needed for Environmental Field Teams, dose assessment or other EOF radiological duties, request the Site Support Manager obtain those resources.
- 3.40 Assist the Site Support Manager as necessary to establish second shift personnel for dose assessment area staff, environmental field teams and HPC staff.

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- 3.41 If offsite radiological resources are needed, inform the EOF Manager.
- 3.42 Determine disposition of Environmental Field Team samples gathered pursuant to PPM 13.9.5:
- In consultation with representatives of DOH for samples outside the Hanford Reservation.
 - In consultation with representatives of DOE-RL for samples on the Hanford Reservation.
- 3.43 Upon notification of transfer of plant Post Accident Sample System (PASS) samples, brief HPC Staff on anticipated radiation levels and necessary protective measures.
- 3.44 Ensure that the Field Teams identify the trailing edge of the radioactive plume to confirm that the release has ended (i.e., LT 100 μ Rem/hr).
- 3.45 When emergency activities have resulted in stabilizing the plant, and radiological conditions are progressing from the early phase to the intermediate phase, refer to Attachment 4.11 to transfer MUDAC leadership to the Washington State Department of Health (WADOH) Representative, and:
- Implementing PPM 13.13.3, Intermediate Phase MUDAC Operations.
 - Arranging additional support with the Site Support Manager to fulfill all responsibilities of MUDAC during this phase.
- 3.46 Estimate the total population exposure as a result of the radiological release. Consider total dose from EDPS, duration, and length of exposure. Refer to Attachment 4.9.
- 3.47 Coordinate use of Energy Northwest radiological equipment and manpower resources, authorized by the EOF Manager, to provide assistance to the state in establishing relocation centers, food control zones, or other reentry and recovery activities.
- 3.48 Refer all calls from media to the JIC.
- 3.49 Upon shift change, turn over chronological logs and brief your relief on the current status of the emergency, radiological activities, and status of work being performed.
- 3.50 Upon termination of the event, direct Field Team members to inventory their field team kits and to attach a completed EPIP 13.9.1 Attachment 5.9 to their After Action Report.

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3.51 Upon shift change or termination of the emergency:

- Prepare an individual After Action Report. Refer to PPM 13.13.4
- Collect individual After Action Reports prepared by staff personnel.
- Deliver all After Action Reports and accompanying sheets to the EOF Manager.

4.0 ATTACHMENTS

- 4.1 Checklist for Radiological Emergency Manager Duties
- 4.2 Dose Projection Health Physicist Duties
- 4.3 Comparison of Field Data with Dose Projections
- 4.4 Health Physics Network (HPN) Communicator Duties
- 4.5 Health Physics Center (HPC) Staff
- 4.6 Health Physics Center Staff Radiological Sample Tracking Instructions
- 4.7 Typical Setup for HP Center Receiving Area
- 4.8 Radiological Emergency Manager Briefing Guidelines
- 4.9 Total Population Within the 10 Mile EPZ
- 4.10 EOF HVAC Automatic and Manual Operation
- 4.11 Dose Assessment Center Leadership Transfer Guide

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CHECKLIST FOR RADIOLOGICAL EMERGENCY MANAGER DUTIES

- A. Report to the EOF, sign in on the staffing board, obtain your procedure book and supply drawer.
- B. Notify the EOF Manager (or the TSC Manager if EOF Manager not yet present) of your availability.

NOTE: MUDAC may be declared operational with only four field team members, however, emergency center activation requirements are not met.

- C. Inform the EOF Manager when MUDAC is operational.
- D. At Alert or higher, contact the RPM and request two HP Technicians be dispatched to the EOF for Health Physics Center (HPC) activation.
 - .1 Direct the HPC staff to set up HPC facilities and establish EOF habitability monitoring. Refer to Attachment 4.10.
 - .2 Ensure appropriate radiological monitoring equipment is positioned (dose rate and air sampling) in the lower level south end Kootenai Building near the EOF and periodic dose rate and airborne surveys are performed as necessary.
- E. Establish and maintain contact with the RPM for a briefing on the status of the emergency, and to provide assistance in radiological assessment, mitigation activities, or dose assessment.
 - Designate an appropriate evacuee holding area for Protected Area evacuees in the event the Protected Area is evacuated. Inform the HPC staff and the TSC RPM of the location.
- F. When dose assessment is fully functional, assume responsibility for offsite dose projections from the TSC or Control Room.
- G. In the event of a Protected Area evacuation, assist the RPM with coordinating HP monitoring and decontamination services at the evacuation assembly area.
 - Refer to PPM 13.5.1 for Protected Area evacuation routes.
 - Refer to PPM 13.7.5 for Alternate Assembly Area set up instructions.
- H. In the event of an Exclusion Area evacuation requiring personnel to report to Energy Northwest Office Complex (ENOC), dispatch an HPC staff member to set up the assembly area. Refer to PPM 13.7.5 for guidance regarding setup and operation of the assembly area.

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- I. When radiological conditions require evacuation of the Columbia River, indicating the potential for contaminated boaters, or, if requested, provide for radiological monitoring of Columbia River evacuees per 13.9.8.
- J. If plant conditions indicate the possibility of an offsite release or a site area emergency is declared, direct the Site Support Manager to call in an additional REM to assist in REM responsibilities.
- K. If the determination is made to evacuate the Exclusion Area, determine if radiological hazards exist or are suspected. Determine evacuation routes and hazardous routes to avoid. Refer to PPM 13.5.3.
- L. If conditions indicate the need for road closure, evacuation, or other protective measures, coordinate the safe placement of Energy Northwest or local law enforcement agency roadblocks with the Security Manager.
- M. When notified that personnel must pass through road blocks into radiological hazard areas, determine and implement necessary radiological monitoring and protective clothing requirements.
- N. A radioactive release is in progress when any of the following conditions exist:
 - Valid reading exists which exceeds PPM 13.1.1 Table 3 Column UE, OR
 - Offsite dose calculations meet or exceeds PPM 13.1.1 Table 4 Column UE levels for TEDE or CDE thyroid, OR
 - Field teams measure GE 100 μ Rem/hr at 1.2 miles.
- O. If a confirmed radioactive release is in progress, the following steps should be taken:
 - Determine the advisability of sheltering or evacuating any manned Exclusion Area facility, i.e., Kootenai Building, Laundry, Energy Northwest, Ashe Substation, River Pumphouse, and determine and direct implementation of radiological protective actions for EOF personnel, based on radiological conditions.
 - Refer to PPM 13.2.2, Section 4.3, Offsite PARs Based on Projected Doses, to determine offsite PARs and act as the Protective Action Decision Group spokesperson in proposing PARs to the EOF Manager (Emergency Director).
 - Provide the Emergency Director with updated dose projection results. Information provided should include dose, dose rate, and the basis for the time used for the dose estimates.
 - Notify the Emergency Director and the State and County Technical Liaisons if dose rates exceed 250 mRem/hr thyroid, or air sample results exceed $1.4\text{E-}7$ μ Ci/cc Iodine 131. Ensure that this information is marked on the CNF.

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P. Consult with the Field Team Coordinator to ensure the following:

- Dispatch field teams to traverse at designated distances (i.e., 1.2, 5, and 10 miles) and verify dose rate levels above 100 $\mu\text{rem/hr}$.
- Upon identification of a radioactive plume, commence air sampling activities.
- Identify plume centerline and boundaries (i.e., 100 $\mu\text{Rem/hr}$).
- Determine the need for a dose adjustment factor based on dose projection results or reports from Field Team members indicating potential inhalation concern. The dose adjustment factor provides an internal component which should be multiplied by the dosimeter reading to give an estimate of total exposure.

Q. Using QEDPS, calculate a dose adjustment factor:

- If the dose adjustment factor is 5 or greater, a dose adjustment factor of 5 should be implemented.
- Provide the dose adjustment factor to the Field Team Coordinator for use in establishing field team exposure limits.

NOTE: Refer to PPM 13.2.1 for guidance on recommending administration of Potassium Iodide (KI) for emergency workers. Be aware that criteria for recommending KI for State, County and DOE personnel are different from those for Energy Northwest personnel.

- EOF Manager (as Emergency Director) authorization is required for issuance of KI.

R. Advise the Field Team Coordinator when protective actions need to be taken by field teams, such as KI.

S. Review Field Team summary and dose projection summary maps for the plume EPZ, and when applicable, the ingestion EPZ. Have copies transmitted to the JIC, County and State emergency centers.

T. Continually assess offsite radiological releases and determine the need to recommend to the Emergency Director to provide authorization to exceed Protective Action Guides (PAGs) for offsite emergency workers, in accordance with PPM 13.2.1, or general public Protective Action Recommendations (PARs) in accordance with PPM 13.2.2.

U. Brief all Energy Northwest and offsite MUDAC personnel of impending PAR declarations prior to issuing the PAR.

V. As necessary, complete radiological release-related portions of the CNF for PAR modifications.

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- W. Provide PAR updates to the EOF Information Coordinator for transmittal on the Information Coordinator's network.
- X. Conduct periodic briefing sessions of the MUDAC staff on pertinent information from incoming hard copy communications and changes in emergency status.
- Y. Act as a conduit for information flow between MUDAC, HPC personnel, and the main EOF area, and provide input into EOF briefings on status and activities of dose assessment, field monitoring activities, EOF habitability, etc., per Attachment 4.8.
- Z. If necessary, direct the Site Support Manager to contact the Chemistry/Effluent Manager for support of field team sample analysis.
- AA. Distribute MUDAC generated hard copy dose projection information (map and data sheets) to State and County Emergency Operations Centers (EOCs), and retain a copy for MUDAC records.
- AB. When relief from the Health Physics Network (HPN) is requested by the RPM, select a communicator and direct that they maintain the EOF HPN line in accordance with Attachment 4.4. Consider calling in an additional Dose Projection Health Physicist to fill this position.
- AC. If the following conditions exist:
 - EOF general area radiation levels exceed 5 mRem/hr as indicated by the EOF radiation monitor, or;
 - EOF unidentified airborne radioactivity exceeds 0.3 DAC (0.3 DAC equates to approximately 750 ccpm on a 40 ft³ air sample in the field),

Then:

- Immediately notify the EOF Manager and staff of the condition;
- Direct surveillance of airborne activity be increased to once per hour and results reported to you;
- Direct dose rates in the area be determined approximately every 15 minutes and results reported to you;
- Direct that projected accumulated doses for the EOF personnel be evaluated and appropriate stay times be established;
- Prohibit eating or drinking in the EOF until advised of resolution of the EOF airborne activity problem.

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- AD. Dispatch a Health Physics Technician to the Kootenai Building penthouse to determine if the following conditions exist if the plume is over the Kootenai Building:
- Kootenai Building intake air activity exceeds 100 mRem/hr, or;
 - Kootenai Building return air activity exceeds 50 mRem/hr, then:
 - A. Immediately notify EOF Manager and staff of the condition.
 - B. Ensure EOF ventilation system is in proper operating mode per Attachment 4.10.
 - C. Request the Site Support Manager to notify Facilities to assist, if needed.
- AE. If the emergency worker dose limit of 5 rem is projected to be exceeded over the course of the event for the EOF staff, inform the EOF Manager so plans to evacuate the EOF and activate the Alternate EOF may be initiated.
- AF. As required, direct appropriate staff to perform the following tasks in accordance with Attachment 4.5:
- Prepare, issue, and collect direct reading dosimeters and TLDs for emergency response personnel.
 - Contact Nuclear and Engineering Support Training to determine if respirator training, medical qualifications, and fit testing for emergency support personnel, vendors, and contractors who must enter areas requiring respiratory protection are current.
- AG. If questioned by State or County officials, provide briefings that explain EOF radiological survey data and dose projection activities that determined Energy Northwest recommendations for protective actions.
- AH. If Washington State Radcon teams are not available, and establishment of an offsite survey or remote decontamination location is required to handle potentially contaminated personnel, make arrangements for the necessary personnel and equipment.
- AI. If injured or contaminated personnel require offsite medical attention, refer to PPM 1.9.14.
- AJ. If additional Energy Northwest personnel resources are needed for Environmental Field Teams, dose assessment or other EOF radiological duties, request the Site Support Manager obtain those resources.
- AK. Assist the Site Support Manager as necessary to establish second shift personnel for dose assessment area staff, environmental field teams and HPC staff.

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- AL. If offsite radiological resources are needed, inform the EOF Manager.
- AM. Determine disposition of Environmental Field Team samples gathered pursuant to PPM 13.9.5:
- A. In consultation with representatives of DOH for samples outside the Hanford Reservation.
 - B. In consultation with representatives of DOE-RL for samples on the Hanford Reservation.
- AN. Upon notification of transfer of PASS samples, brief HPC staff on anticipated radiation levels and necessary protective measures.
- AO. Ensure field teams identify the back edge of the radioactive plume to confirm the release has ended (i.e., LT 100 μ Rem/hr).
- AP. When emergency activities have resulted in stabilizing the plant, and radiological conditions are progressing from the early phase to the intermediate phase, refer to Attachment 4.11 to transfer MUDAC leadership to the Washington State Department of Health (WADOH) Representative, and:
- Implementing PPM 13.13.3, Intermediate Phase MUDAC Operations.
 - Arranging additional support with the Site Support Manager to fulfill all responsibilities of MUDAC during this phase.
- AQ. Estimate the total population exposure as a result of the radiological release. Consider total dose from EDPS, duration and length of exposure. Refer to Attachment 4.9.
- AR. Coordinate the use of Energy Northwest radiological equipment and manpower resources, authorized by the EOF Manager, to provide assistance to the State in establishing relocation centers, food control zones, or other reentry and recovery activities.
- AS. Refer all calls from the media to the Joint Information Center.
- AT. Upon shift change, turn over chronological logs and brief your relief on the current status of the emergency, radiological activities, and status of work being performed.

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Duties of: Dose Projection Health Physicist

Assigned Location: Meteorology and Unified Dose Assessment Center (MUDAC)

Report to: Radiological Emergency Manager (REM)

Responsibilities:

1. Activate the Emergency Dose Projection System (EDPS) PCs, printers, the LAN and PDIS terminals. Keep the REM updated on the status of the systems and important information that could affect dose projections.
2. Activate the RSTAT summary display (a PDIS form display of TDAS signals from the STAR System) and determine if there are elevated readings from monitors that may indicate a release in progress. PDIS may be used to retrieve past TDAS readings. Contact the EOF PDIS Analyst to retrieve historical data.
3. Perform plume tracking and dose projection functions to keep the EOF staff informed of the plume projection. Maintain close contact with the Engineering Assessment group and Information Coordinator for the current plant condition.
4. Obtain the latest weather forecast (refer to the EDPS User's Manual) from the National Weather Service or PNNL Weather Forecaster, and ensure the Meteorological Information board is updated. Advise the REM and Field Team Coordinator of weather conditions which may affect plume direction, deposition, or dispersion.

NOTE: Phone numbers of the weather services are located in the Emergency Phone Directory in the Offsite Agency Section and PPM 13.8.1.

5. Review dose projection results and inform the REM of projections approaching EAL and PAR limits.
6. Complete a dose projection for the REM's consideration.
 - a. Verify operability of SGTS based on flow rate or engineering input.
 - b. Follow the guidance in PPM 13.8.1 concerning default entries and estimates for the dose projection models.
 - c. Make dose estimates for at least the distances of 1.2 miles, 2 miles, 5 miles, and 10 miles.

NOTE: 1.2 miles is the distance used for the site boundary.

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Duties of: Dose Projection Health Physicist (Contd.)

7. Coordinate and verify radiation conditions and equipment status with the Radiation Detection Systems Engineer.
8. Compare field team measurements to dose projection estimates using the guidance in Attachment 4.3, including terrain knowledge, weather conditions and sampling theory.
9. If there are significant, unexplainable differences between field samples and dose projections, consult with the REM regarding appropriate adjustments to be made.
10. Inform the Field Team Coordinator, REM, and staff of significant, verifiable changes in release rates, meteorology, or Emergency Worker Dose Factors.
11. As requested, provide completed Dose Projection Summary Maps for the REM to review.
12. Label and validate by signature, printed data or maps for distribution, and maintain a copy of all authorized projections and maps.
13. When the transition to ingestion phase has been completed, generate an EDPS dose projection map for the 500 μ R and 2 μ R isopleths. Refer to PPM 13.8.1, Attachment 5.1 for guidance on contour options.
14. During shift change, brief your relief on the current status of work in progress, and ensure that they understand the basis for the current dose projection and field team readings.
15. Prepare and deliver to the REM all After Action Reports, logs, authorized projections and analyses as requested.
16. Retain a copy of completed dose projection worksheets, display outputs or maps you generate and attach them to your After Action Report.
17. Assist the HPN Coordinator in obtaining answers to NRC queries.

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COMPARISON OF FIELD DATA WITH DOSE PROJECTIONS

1. Exposure Rate Readings

- a. Using QEDPS, input field team air sample results or dose rate into the code and compare resultant TEDE values at various distances with TEDE values from a projection based on plant monitor readings.
- b. Compare exposure rate measurements reported by field teams to a projected External Dose Rate for the same downwind distance.
- c. Consider the following in making your comparison:
 - 1) The time that the field measurement was made vs. the time that the projected release would reach the downwind distance based on wind speed.
 - 2) If release rates change significantly, then consider the time it would take the lower or higher effluent concentrations to reach the field team measurement location based on wind speed.
 - 3) Changes in sampling time, wind speed, wind direction, and stability class will cause field team readings to differ from dose projections.

2. Iodine Concentrations

- a. Using QEDPS, input field team air sample results and compare resultant Thyroid CDE values at various distances with Thyroid CDE from a projection based on plant monitor readings.
 - 1) To convert field team air sample results to μ curies/cc, select either the particulate or cartridge icon on the Windows Desktop. When the program is active, enter the field team results to calculate the necessary value.
 - 2) Compare the Thyroid CDE rate based on field team data to a projected Thyroid CDE rate for the same downwind distance.
- b. Consider the items from Step 1.C of this Attachment when making your comparison.

Attachment 4.3

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Duties of: Health Physics Network (HPN) Communicator

Assigned Location: Emergency Operations Facility (EOF)

Report to: Radiological Emergency Manager

Responsibilities:

1. Upon assignment obtain a briefing from the REM on the current status of the emergency and the known or anticipated radiological conditions and/or releases.
2. Activate the EOF extension of the HPN phone, following instructions attached to the HPN phone. Introduce yourself to the NRC communicator, and provide information on the current status of radiological conditions.
 - a. Refer to side two of form 26045, Emergency Classifications or Other Messages, for a list of questions you may be asked by the NRC.
3. After assuming duties observe the requirements of 10CFR50.72(c)(3) by maintaining continuous communications when requested by the NRC. If you must leave the phone for any reason, find someone to maintain the phone in your absence, or obtain permission to leave the phone unattended.
4. Maintain a log of communications on Emergency Response Log, (Form 23895).
5. Contact the REM for assistance with resolving NRC information requests. Consult the REM when asked to make commitments you do not feel you are authorized to make.
6. As necessary, brief the REM on the status of HPN communications.
7. Ensure transmissions you relay are distinct and understood. Avoid the use of acronyms unless you are sure they are understood and ensure the correct letters of acronyms are understood by using phonetic spelling to clarify, i.e., "B" as in Bravo or "D" Delta.
8. Ensure data you transmit to the NRC represents factual information only. Do not provide speculative information or editorialize on data and do not engage in problem solving discussions.
9. Upon shift change, brief your relief on responsibilities, duties and the current status of HPN communications with the NRC.
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 REM.

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Duties of: Health Physics Center (HPC) Staff
Assigned Location: Health Physics Center Work Areas
Report to: Radiological Emergency Manager (REM)

Responsibilities:

NOTE: At an Alert or higher classification, Security provides an officer to lock down the Kootenai Building; the officer then assists the HPC staff with access control through the HPC ambulance bay.

HPC Staff:

1. Prepare ambulance garage area and decontamination facility to receive samples and personnel. Ensure PA speaker controls are set to maximum levels. Refer to Attachment 4.7.
2. Prepare the radiological laboratory and Counting Room to receive and analyze environmental and in-plant samples.
3. Position a Continuous Air Monitor (CAM) in the lower level south end Kootenai Building near the EOF and ensure operability of the EOF area radiation monitor for EOF habitability monitoring.
4. Report to the REM when all assigned systems are in a state of readiness.
5. Obtain friskers and dose rate instruments, perform daily checks, then distribute to the Ambulance Bay area radiological laboratories.
6. Frequently monitor the operation of the area radiation and airborne monitors.
7. When directed, take and evaluate direct radiation and/or contamination surveys in areas of the Kootenai Building and EOF.
8. Question Field Team members delivering samples on whether self-frisking has been performed by, or under the supervision of a qualified HP member, and if not, perform a frisk.
9. Obtain and analyze hi-volume air samples inside and outside of the Kootenai Building as necessary.

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HPC Staff, (cont'd)

10. Perform decontamination of personnel as required and report results to the REM.
11. Insure the use of appropriate radiological precautions and good practices by all individuals involved with handling of samples throughout the sampling and survey sequence.
12. Note electronic dosimeter results and account for dose received appropriately for personnel completing a shift, or as directed. Contact HP to reset dosimeters to the fast entry mode per PPM 11.2.9.31.
13. Return reset electronic dosimeters to the EOF Field Team Cabinet.
14. Monitor radiation levels in any area where samples are stored and post area(s) as necessary, or move samples to a shielded area.
15. Maintain a record of your actions on an Emergency Response Log per PPM 13.13.4.
16. Upon shift change, brief your relief on responsibilities, duties and current status of work being performed.
17. Upon shift change, or termination of the emergency:
 - a. Prepare an individual After Action Report per PPM 13.13.4.
 - b. Deliver your After Action Report and Log(s) to the REM.

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HEALTH PHYSICS CENTER STAFF
RADIOLOGICAL SAMPLE TRACKING INSTRUCTIONS

1. Receive, survey, sort and catalog samples as they are delivered by Environmental Field Teams.
2. Adhere to appropriate radiological precautions and good practices in the handling of samples throughout the sampling and survey sequence.
3. Question Field Team members delivering samples on whether self-frisking has been performed by, or under the supervision of a qualified HP member, and if not, perform a frisk.
4. For receipt and handling of PASS samples ensure that appropriate cautions are in place and that all personnel are properly dressed out for all aspects of survey and handling procedures.
5. Perform radiation and contamination surveys on all incoming samples. Rebag all samples which are contaminated on the outer surface. Sort and store samples based on radiation levels to control exposures in the ambulance bay.
6. Ensure sample identification data is on the outside of the sample bag and the date, time and survey results are on Sample Identification Form.
7. Place the sample in storage and note the storage location on the Sample Identification Form and enter the storage date and time on the Sample Receipt Log, page 2 of this attachment.
8. When analysis of a specific sample is requested, retrieve sample and the appropriate copies of the Sample ID Form.
9. Record the new location (lab where sample is being analyzed) on the Sample ID form and the date and time of transfer on the Sample Receipt Log.
10. Send the sample to the lab or other assigned destination with the accompanying white and canary pages.
11. Refile the pink page of the Sample Identification Form in the HP Center file.
12. When samples are returned to the storage area, retrieve Sample Identification Form from HP Center file.
13. Note storage location on the white, canary and pink pages and enter the new storage date and time on the Sample Receipt Log.
14. Return the canary and pink copies to the HP Center file and return the white copy with the sample back to storage.

Attachment 4.6
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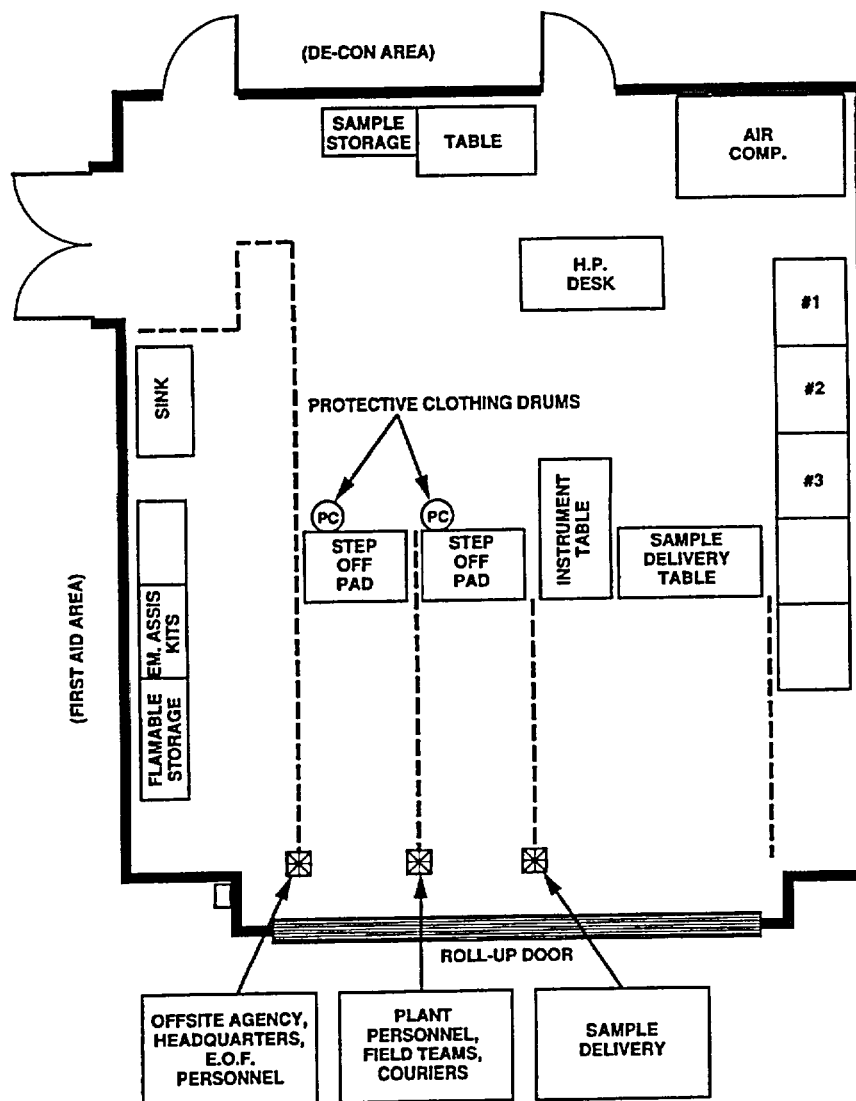
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TYPICAL SET-UP FOR HP CENTER RECEIVING AREA



LEGEND:

1. --- INDICATES WHERE TO PLACE ROPE BARRIERS
2. X INDICATES WHERE TO POST SIGNS

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Attachment 4.7

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RADIOLOGICAL EMERGENCY MANAGER BRIEFING GUIDELINES

NOTE: Items listed here are suggested topics for routine update briefing. Items actually selected should be used based on existing or projected plant or radiological conditions.

Radiological Emergency Manager (REM) update items:

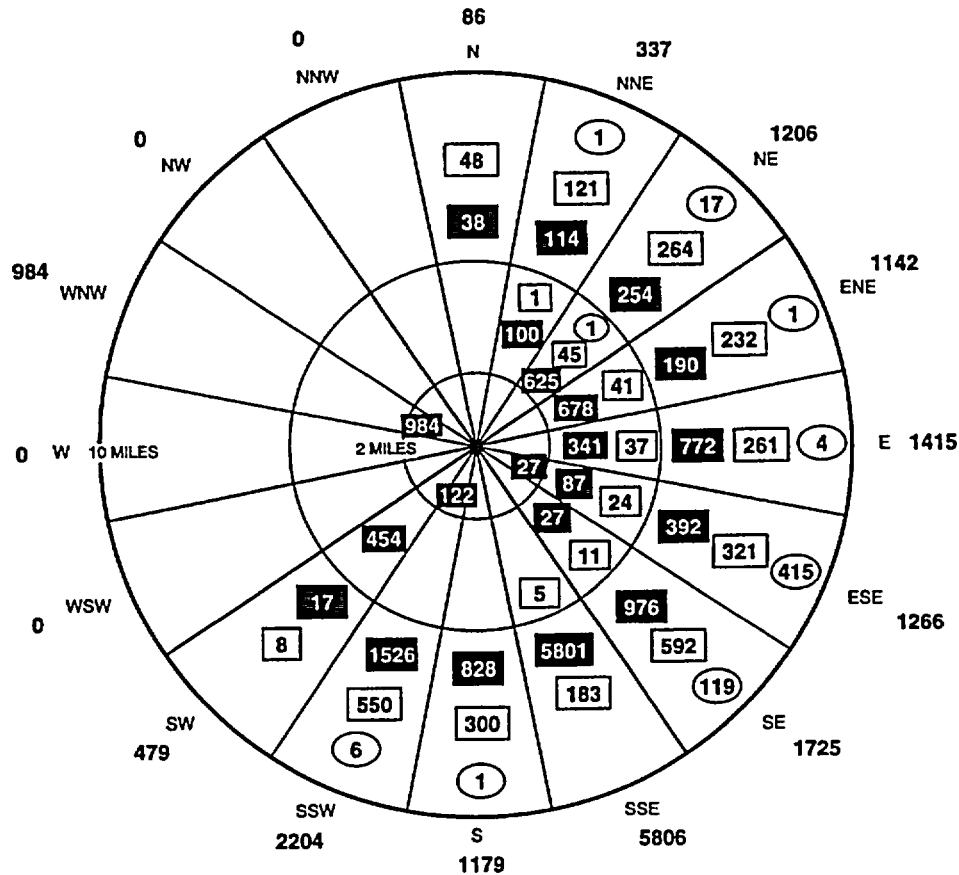
- a. Current release rate, recent trends, prognosis.
- b. Offsite dose projection results and most recent follow-up messages to offsite authorities.
- c. Energy Northwest (and offsite agency) field team survey results and their comparison to dose projection model results.
- d. Dose projection comparison with state or other agency results.
- e. Current and forecast meteorology on wind direction, shifts.
- f. Status of offsite protective action implementation.
- g. EOF habitability survey results and any protective actions or safe routes necessary for emergency workers outside the EOF.
- h. Problem areas needing resolution.
- i. NRC counterpart status report (if present).

Notes: _____

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TOTAL POPULATION WITHIN THE 10 MILE EPZ



17,829 TOTAL SEGMENT POPULATION
0 TO 10 MILES

POPULATION TOTALS - PERMANENT			
RING MILES	RING POPULATION	TOTAL MILES	CUMULATIVE POPULATION
0-2	0	0-2	0
2-5	164	0-5	164
5-10	2880	0-10	3044

POPULATION TOTALS - TRANSIENT			
RING MILES	RING POPULATION	TOTAL MILES	CUMULATIVE POPULATION
0-2	1133	0-2	1133
2-5	2312	0-5	3445
5-10	10,775	0-10	14,220

POPULATION TOTALS - SPECIAL			
RING MILES	RING POPULATION	TOTAL MILES	CUMULATIVE POPULATION
0-2	0	0-2	0
2-5	1	0-5	1
5-10	564	0-10	565

POPULATION TOTALS			
RING MILES	RING POPULATION	TOTAL MILES	CUMULATIVE POPULATION
0-2	1133	0-2	1133
2-5	2477	0-5	3610
5-10	14,219	0-10	17,829

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June 1996
Rev 18

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EOF HVAC AUTOMATIC AND MANUAL OPERATION

MODE 1 - Kootenai Building Isolation

If outside air activity causes the intake air radiation monitor on AHU-1 to trip at 100 mR/hr, the HVAC panel in Room 121 will indicate as follows:

AHU-1:	lighted	AHU-2:	lighted	Misc.:	lighted
EOF ISOL.:	off	AD4B:	off	SF3:	lighted

This configuration isolates the Kootenai Building and recirculates first floor air through HEPA filters.

MODE 2 - EOF Isolation

If return air activity causes the return air radiation monitor on AHU-1 to trip at 50 mR/hr, the HVAC panel in Room 121 will indicate as follows:

AHU-1:	lighted	AHU-2:	lighted	Misc.:	lighted
EOF ISOL.:	lighted	AD4B:	lighted* off**	SF3:	off

In this configuration, the EOF is sealed off from the rest of the Kootenai Building. Fan SF-3 recirculates EOF air through HEPA filters.

* Chem Lab exhaust hood is OFF.

** Chem Lab exhaust hood is ON.

MODE 3 - EOF Stagnation

If the SF-3 return air radiation monitor trips at 50 mR/hr, SF-3 will stop and the EOF will remain isolated as in Mode 2. The SF-3 light on the Room 121 panel will be ON.

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EOF HVAC AUTOMATIC AND MANUAL OPERATION (Contd.)

MANUAL OPERATION

CAUTION: Due to the potential for airborne contamination and area radiation, HP surveys of the following areas should be performed prior to entry.

Modes 1 & 2:

Obtain EOF HVAC key (1 F 8) from EOF key locker. Enter stairwell on 2nd floor east side by Auditorium entrance.

At top of stairs, continue left 180°, facing east wall. Above handrail at your left are two radiation indicators. Above the indicators, the gray box contains the switches for Modes 1 and 2.

Mode 3:

Enter SF-3 fan room, room 123. Radiation indicator is inside large gray cabinet on north wall next to door facing Room 121. Disconnect switch for SF-3 is around other side of fan from radiation indicator, on north wall. Throw this switch to OFF to stop SF-3.

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DOSE ASSESSMENT CENTER LEADERSHIP TRANSFER GUIDE

Transfer of MUDAC leadership from Energy Northwest to the State of Washington occurs following conclusion of the Plume phase. The transfer signals the beginning of the ingestion pathway or intermediate phase.

Prior to the transfer, the following conditions should be met:

1. Plant conditions are stable
2. The immediate emergency has been mitigated
3. No further threat of a radioactive release exists that could exceed Protective Action Guidelines (PAGs) to the public
4. The plume has dispersed and no longer threatens to exceed PAGs.

The following documentation should be provided to the Washington State Health Liaison during the transfer:

1. Classification Notification Forms (CNFs) identifying PARs and notifications on Potassium Iodide (KI)
2. Emergency dose projection results
 - Include both the data sheet and map projections
3. Airspace closure requests

Conduct a briefing with the Washington State Health Liaison addressing the following:

1. Status and duration of the release _____
2. Air sample results _____
3. Meteorological conditions, including wind speed _____
Direction: _____ Stability: _____
4. Current field team deployment: _____
5. Offsite Protective Action Decisions (evacuations, etc.) _____

Attachment 4.11

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DATE: 05/02/03

EDITORIAL

13.10.8



13.10.8

**ENERGY
NORTHWEST**

USE CURRENT REVISION

**COLUMBIA GENERATING STATION
PLANT PROCEDURES MANUAL**

PROCEDURE NUMBER

*13.10.8

APPROVED BY

JEW - Revision 20

DATE

08/29/02

VOLUME NAME

EMERGENCY PLAN IMPLEMENTING PROCEDURES

SECTION

PLANT EMERGENCY FACILITIES

TITLE

SECURITY LIEUTENANT DUTIES

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1.0 PURPOSE

This procedure defines actions to be taken by the Security Lieutenant in the event of an emergency classification or when an outside request for Energy Northwest assistance has been received.

2.0 REFERENCES

- 2.1 FSAR Chapter 13.3, Emergency Plan, Section 2
- 2.2 SPIP-SEC-27, Owner Controlled Security Area Emergency Evacuation
- 2.3 PPM 13.5.1, Localized and Protected Area Evacuations
- 2.4 PPM 13.5.3, Evacuation of Exclusion Area and/or Nearby Facilities
- 2.5 PPM 13.5.5, Personnel Accountability, Search and Rescue
- 2.6 PPM 13.11.10, Security Manager Duties
- 2.7 PPM 13.13.4, After Action Reporting
- 2.8 PPM 13.14.1, Nearby Nuclear Facility Emergencies/Requests For Assistance
- 2.9 Emergency Center Accountability Log, 25691

3.0 PROCEDURE

3.1 Security Lieutenant Responsibilities

- 3.1.1 When notification of a nearby nuclear facility emergency is received, or a request for Energy Northwest assistance is received from an outside agency, implement PPM 13.14.1.
- 3.1.2 Upon notification of an Energy Northwest classified emergency, respond to the Central Alarm Station.
- 3.1.3 If a second officer is not present or dispatched to the Security Communications Center, dispatch an officer to assist with offsite notifications.
- 3.1.4 At Unusual Event or higher classification, direct the Central Alarm Station (CAS) to activate emergency card readers by OPENING GROUP 10, (Group Door Open Display).

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3.1.5 Contact the Shift Manager prior to EOF activation to obtain information on emergency event status, then direct Security response actions accordingly. Following EOF activation, contact the Security Manager to obtain information on emergency event status. Direct security response actions accordingly.

3.1.6 Assign an individual to accountability duties for Security Personnel per PPM 13.5.5, and to assist you with telephone information calls to the CAS.

3.1.7 Brief the Shift Manager on security contingency events that could pose a threat to emergency center activation and personnel safety. This briefing should include, but is not limited to:

- a. Type or status of the contingency
- b. Avenues of safe access to the plant
- c. Appropriate areas for TSC and OSC operations

If an evacuation is warranted, determine whether an evacuation of plant personnel would put them at personal risk due to the security contingency, and then brief the Shift Manager.

3.1.8 At Alert or higher classifications:

- a. Assume the EOF Security Manager duties until relieved. Refer to PPMs 13.5.1, 13.5.3 and 13.11.10.
- b. Establish contact with the Operations Support Center (OSC) Manager to coordinate security and accountability actions that may be impacted by OSC accident mitigation activities.
- c. Dispatch an officer to the EOF Health Physics Center to lock down the Kootenai Building and assist with EOF access control and with evacuation assembly area personnel accountability.

NOTE: Procedure instructions for the JIC access control officer are contained in JIC Procedures.

- d. Dispatch two security officers to the Joint Information Center (JIC) Support Manager to assist with JIC access control.

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- e. Direct the Security Officer to instruct arriving evacuees to record their arrival on the Emergency Center Accountability Log (25691).
- f. Establish plant access roadblocks. Direct the roadblock officer to open Gate 1-8, the South Power Plant Loop vehicle gate. Advise Security Officers to:
 - Admit personnel with identification of employment with the Energy Northwest, BPA, DOE, Benton or Franklin Counties, State of Washington, NRC, FEMA, FBI and Coast Guard.
 - Obtain permission to admit others from the Security Manager or designee.
 - When known, advise persons they admit of special instructions for safe routes or avoiding hazardous areas in the area of the plant.

- 3.1.9 When advised by the TSC Manager that offsite emergency personnel have been requested to respond to the plant site, advise the Secondary Alarm Station (SAS) of the impending arrival.
- 3.1.10 If Protected Area evacuation, or Site 1 evacuation or an Exclusion Area evacuation is directed, implement PPM 13.5.1 or 13.5.3 actions.
- 3.1.11 Periodically consult with the Radiological Emergency Manager (or, if not yet activated, the Radiation Protection Manager) to insure your roadblocks are in safe locations.
- 3.1.12 If directed by the Radiation Protection Manager or Radiological Emergency Manager to shelter or administer a thyroid-blocking agent, take the following actions:
 - a. If sheltering has been ordered, direct Security Force Officers to move inside established structures, or use vehicles for sheltering if structures are not available.
 - b. If thyroid-blocking agent (KI) is recommended or if respirators are required, delegate an officer to obtain a sufficient amount of KI from storage and distribute to Security Force Officers. Distribute to Security personnel within protected area first.

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3.1.13

When evacuation is ordered:

- a. Contact the Operations Support Center Manager for the safest route to the Secondary Alarm Station (SAS) and direct the Security Sergeant and one additional CAS/SAS operator to report to the SAS.
- b. Notify the Security Manager at the EOF (if activated) of plant security evacuation and set up additional roadblocks or a security perimeter.
- c. If the Security Manager is not activated, refer to SPIP-SEC-27, and consult with the Radiation Protection Manager to determine if relocation of roadblocks and a security perimeter is necessary.
- d. Direct movements of security officers to establish the new security perimeter and/or roadblocks.
- e. Direct evacuees, and those evacuees that may be contaminated, to report to the assembly area for accountability and personnel monitoring. When the Emergency Center Accountability Log (25691) is completed at the assembly area, forward it to the Manpower Scheduler in the EOF.
- f. Direct that the new Security perimeter not allow anyone access to the plant unless they have TLDs and are authorized plant access by the TSC Manager.
- g. Instruct Security Officers at the roadblocks to direct persons coming from the plant to proceed to the designated assembly area for monitoring and decontamination, as necessary.

3.1.14

Keep the Security Manager and Security Sergeant informed of developing events.

3.1.15.

Provide the OSC Manager, Security Manager, and TSC Administrative Manager with periodic briefings on specific security contingency events that may influence the movement of Plant emergency personnel within Protected Area of the Plant.

3.1.16

Advise the OSC Manager, Security Manager, and the TSC Plant Administrative Manager of evacuation and accountability status.

3.1.17

Refer incoming media calls to the Joint Information Center.

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3.1.18 Upon shift change, brief your relief on responsibilities, duties and current status of security actions being taken.

3.1.19 Upon termination of the emergency:

- a. Direct CAS to deactivate the emergency card readers by locking GROUP 10.
- b. Prepare individual After Action Report. Refer to PPM 13.13.4.
- c. Collect the individual After Action Reports and attachments prepared by staff personnel.
- d. Deliver all After Action Reports to the Security Manager or designee.

4.0 ATTACHMENTS

None

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