Progress Energy

10 CFR 50, Appendix E

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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

TRANSMITTAL OF EMERGENCY PROCEDURE REVISIONS

Ladies and Gentlemen:

In accordance with 10 CFR 50.4(b)(5) and Appendix E to 10 CFR 50, Progress Energy Carolinas, Inc. (PEC), is transmitting revisions to H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Emergency Implementing Procedures. The procedure revisions and effective dates are listed in the attachment to this letter.

A description of the procedure changes are provided on the "Summary of Changes" page for the emergency procedures. Please replace the superseded procedures with the enclosed revisions.

If you have any questions concerning this matter, please contact me.

Sincerely,

C. T. Baucom
Supervisor – Licensing/Regulatory Programs

CAC/cac

Attachment

Enclosures

c: L. A. Reyes, NRC, Region II (2 copies)
NRC Resident Inspector, HBRSEP
C. P. Patel, NRC, NRR (w/o Attachment and Enclosures)

Progress Energy Carolinas, Inc.
Robinson Nuclear Plant
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A045

Procedure Revisions and Effective Dates

Procedure	Revision No.	Effective Date
EPPRO-06, "Operation and Maintenance of the Dialogic System"	0	11/25/03
EPRAD-01, "Environmental Monitoring"	12	11/25/03

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2
PART 5

EPPRO-06

OPERATION AND MAINTENANCE OF THE DIALOGIC SYSTEM

REVISION 0

SUMMARY OF CHANGES
PRR 110721

SECTION	REVISION COMMENTS
All	New Procedure

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1.0 PURPOSE

The purpose of this procedure is to provide instructions for performing routine updates, maintenance, and testing of the Dialogic System.

2.0 REFERENCES

2.1 EPNOT-01, CR/EOF Emergency Communicator

2.2 EPPRO-02, Maintenance and Testing

2.3 Dialogic Communications Corporation's "The Communicator" Training Manual

3.0 RESPONSIBILITIES

3.1 The Emergency Preparedness Staff is responsible for the management and oversight for the use and operation of the Dialogic Communications Corp (DCC) - "The Communicator" software and system.

4.0 PREREQUISITES

4.1 N/A

5.0 PRECAUTIONS AND LIMITATIONS

5.1 This procedure may not provide directions for all applications of the software and Communicator System; other operations and applications may be performed based on the users' knowledge and experience.

5.2 Company Information, Line Information, and Voice Server Configuration have been set by DCC and should not be altered without their assistance.

5.3 Changes to scenarios and call groups may affect the performance of this system in the event of an emergency. Peer checks for changes should be performed whenever possible.

5.4 "PCAnywhere" may be used for Dialogic Support to access the system. To prevent inadvertent remote access to The Communicator System; the "PCAnywhere" program should not remain active when the system is not attended by Progress Energy personnel.

5.5 Spelling and spacing are critical. The system automatically selects personnel from the categories in section 8.2 for use in specific applications based on spelling and spacing.

5.0 **PRECAUTIONS AND LIMITATIONS** (continued)

5.6 The Control Room and Simulator personnel should be notified each time the system is unavailable. In the event of an actual emergency, they will have to make manual beeper and NREC notifications.

6.0 **SPECIAL TOOLS AND EQUIPMENT**

6.1 Vendor supplied hardware and software packages.

7.0 **ACCEPTANCE CRITERIA**

7.1 Scenarios that have been newly developed **OR** modified should be tested for operation prior to placing them in-service.

8.0 **INSTRUCTIONS**

8.1 **System Start-up**

NOTE: **IF** the system has been rebooted, **THEN** it will automatically start the Voice Server and support servers. The Communicator will need to be started manually.

8.1.1 To start The Communicator **DOUBLE CLICK** the icon on the desktop and sign in as the applicable user and with the applicable password.

8.1.2 **IF** the servers have been closed to support maintenance, **THEN DOUBLE CLICK** the "Start The Voice Server System" icon on the desktop. This application could take 1-5 minutes to complete. It is complete when the eight server icons appear in the lower right task bar.

8.2 Personnel Roster Additions/Changes

8.2.1 The section will provide the basic information needed to create new roster personnel and to update the existing personnel.

NOTE: The Communicator must be active to make additions/changes to the personnel roster.

8.2.2 To create new personnel **OR** edit existing personnel information, **SELECT** the Roster Maintenance button or the drop-down selection.

CAUTION

The Roster Maintenance window activates with the cursor active on the "Contact" line. **IF** the desired line is not otherwise selected, **THEN** existing information may be altered.

8.2.3 **SELECT** the "NEW" button **OR TYPE** the person's last name in the lower left "Look-up" space. **IF** the latter is used, **THEN** all persons with that spelling will be indexed and have to be selected using the directional buttons at the top to the search column.

8.2 **Personnel Roster Additions/Changes** (continued)

8.2.4 **ADD OR REVISE** the personnel information using the following guidelines:

> **NOTE:** Required information is marked with a *, in this procedure. New Team numbers, Facilities, or Plt. Pos may have been created based on the system use and an up-to-date list should be maintained by Emergency Preparedness (EP).

> **CAUTION**
>
> Spelling and spacing are critical. The system automatically selects personnel from the following categories for use in specific applications based on spelling and spacing.
>
> **DO NOT** use periods or commas in any of the data fields for The Communicator program.

1. *Contact = person's first and last name (no initials and not more than one space between)
2. *ID Code = Social Security Number - **IF** SSN is specifically requested not to be used, **THEN** use the last six digits of the SSN.
3. Company = Progress Energy, etc.
4. Address = physical street address
5. City
6. State or Province
7. Zip code
8. *Position = **Primary** ERO position (as spelled in the "Group" names) **OR** "Multiple" for personnel qualified for more than one ERO position. These positions shall be listed by selecting the Position button.

8.2 **Personnel Roster Additions/Changes** (continued)

9. *Team = ERO Team, etc.
   a. 00 = Operations Shift personnel
   b. 01 = Team A
   c. 02 = Team B
   d. 03 = Team C
   e. 04 = Team D
   f. 05 = Relief Team
   g. 06 = ERO "Pool" position
   h. 96 = Security
   i. 97 = NRC Resident Inspector
   j. 98 = practice/testing
   k. 99 = Emergency Preparedness
10. *Facility = ERO Facility
   a. EOF
   b. OSC
   c. TSC
   d. JIC
   e. Control Room
   f. Chesterfield County EOC
   g. Darlington County EOC
   h. Lee County EOC
   i. State EOC
   j. All (typically EP)

8.2 **Personnel Roster Additions/Changes** (continued)

11. *Plt Pos = Routine Operational RNP Group

    a. Operations Training
    b. Operations
    c. Mechanical Maint
    d. Env & Chemistry
    e. Regulatory Support
    f. Maintenance Support
    g. Radiation Control
    h. IC-Elec Maint
    i. Outage & Scheduling
    j. M&CS
    k. IT-Communications
    l. Tech Training
    m. RNP Mgt
    n. QC-NAS
    o. Safety
    p. Access
    q. Security
    r. Plant Support
    s. Admin
    t. Eng Tech Services
    u. Eng Design
    v. Eng Systems

8.2 **Personnel Roster Additions/Changes** (continued)

12. *Work Phone = x####

13. *Home Phone = ##########

14. Cellular = ##########

15. *Digital Pager = ##########

16. *Alpha Pager = pager access modem number (Metrocall-6000000) PIN = ####### (seven digit pager number)

17. Fax = ##########

8.2.5 Additional information may be added using the following buttons.

1. Add'l Devices = additional numbers, addresses, email, etc.

2. Speech = recording of the person's name

3. Position = primary and alternate positions (as spelled in the "Group" names) for personnel with more than one ERO position.

4. Comments

5. In Groups = group assignments may be selected here or by using section 8.3.

6. Exclude = selected for individuals that are being **temporarily** removed from ERO response.

8.2.6 **COMPLETE** the roster addition/change by selecting Save **AND** Exit.

8.3 **Group Additions/Changes**

8.3.1 Groups are specific selections of personnel, from the roster, that require simultaneous notification in the event of a scenario activation. There are two types of groups: "Static" and "Dynamic".

1. Static groups are created by selecting specific individuals from the roster regardless of their roster information.

2. Dynamic groups are created by selecting specific search criteria from the roster information and the system adds or removes personnel based on the search criteria entered.

8.3 **Group Additions/Changes** (continued)

8.3.2 To create new groups **OR** edit existing group information, **SELECT** the Group Maintenance button or the drop-down selection.

8.3.3 Once the panel has opened, **ADD OR REVISE** groups using the following guidelines:

1. **SELECT** the New button **OR SKIP** to number 6.
2. **SELECT** either Static **OR** Dynamic **AND** the Next button.
3. **NAME** the group.
4. **IF** static is chosen, **THEN SELECT** the personnel desired to fill the group.
5. **IF** dynamic is chosen, **THEN ENTER** the search data by selecting New or Modify **AND ENTERING** the desired criteria.

NOTE:	Step 6 should be skipped for New groups.

6. **DOUBLE CLICK** the desired existing group AND edit the personnel or search criteria, as desired.
7. **ENTER** the desired fill count (number of personnel required to respond from the group). **IF** 0 is entered, **THEN** all personnel will be required.
8. **COMPLETE** the group by selecting OK **AND** Exit.

8.4 Paging Script Additions/Changes

8.4.1 Paging Scripts are text messages designed by the user and delivered with each scenario that requires pager contact. There are two types of pager scripts: "Alpha" and "Digital".

8.4.2 To create new pager scripts **OR** edit existing script information, **SELECT** the Pager Maintenance button or the drop-down selection.

8.4.3 Once the panel has opened, **ADD OR REVISE** scripts using the following guidelines:

1. **SELECT** the type of pager script desired.
2. **SELECT** the New button **OR SKIP** to number 4.
3. **NAME** the new script **AND TYPE** the desired text.

NOTE:	Step 4 should be skipped for new pager scripts.

4. **SELECT** the desired existing script from the drop down **AND EDIT** the text as desired.
5. **COMPLETE** the script by selecting Save **AND** Exit.

8.5 Speech Script Additions/Changes

8.5.1 Speech Scripts are voice messages designed by the user and delivered with each scenario.

8.5.2 To create new speech scripts **OR** edit existing script information, **SELECT** the Speech Maintenance button or the drop-down selection.

8.5.3 Once the panel has opened, **ADD OR REVISE** scripts using the following guidelines:

1. **SELECT** the New button **OR SKIP** to number 3.

NOTE: Trim Silence should be selected for each recording to minimize the silence at the beginning and end of the voice segment.

2. **NAME** the new script **AND RECORD** the desired voice segment.

NOTE: Step 3 should be skipped for new pager scripts.

3. **SELECT** the desired existing script from the drop down.
4. **EDIT** the voice segment by selecting the Recorder button **AND** recording as desired.
5. **COMPLETE** the script by selecting Exit.

8.6 Scenario Development, Testing, and Activation

8.6.1 Scenario **development** and editing shall be done by trained personnel only. This is done in Scenario Maintenance panel.

8.6.2 Scenario **testing** can be performed by selecting the Activate Scenario button or the drop-down selection.

8.6.3 Once the panel has opened test the scenarios using the following guidelines:

CAUTION

IF the Test block is **not** checked, **THEN** the scenario will activate real time. This may lead to an inadvertent ERO activation and response.

1. **SELECT** the desired scenario from the drop-down window.
2. **SELECT** the Test box **AND** Go. This will test the development and technical aspects of the scenario, **not** the notification functions.
3. The system may request that you verify scenario information that may be edited prior to activations **AND** that you want to activate the scenario.

8.6 **Scenario Development, Testing, and Activation** (continued)

8.6.4 Scenario **activation** or testing of the notification functions can be performed by selecting the Activate Scenario button or the drop-down selection.

8.6.5 Once the scenario development and the technical aspects have been tested, the scenario may be activated using the following guidelines:

1. **SELECT** the desired scenario.
2. **UNSELECT** the Test box.
3. **SELECT** the Tagging box **AND** Go.
4. The system may request that you verify scenario information that may be edited prior to activations.
5. The system will then open a window containing a "tree" of all groups and personnel.
6. **SELECT OR UNSELECT** the personnel in the "tree" based on whether they are participating in the activation/test or not. This is done by opening the group, individually clicking the personnel, and pressing the space bar to include or exclude each. Personnel included will have a check in the box next to their name.
7. **SELECT** OK.
8. Once this is done the system will verify that you want to activate the scenario. **IF** you select Yes, **THEN** the scenario **will activate real time** for the personnel selected. **IF** you select No, **THEN** the scenario will not activate.

8.6.6 To **stop** a scenario that is currently active **SELECT** the desired scenario, **SELECT** Stop, **AND RESPOND** to the system prompts.

8.7 System Shut Down

8.7.1 Shut down of the system requires that The Communicator applications be closed **in a specific order** to prevent corrupting it.

> **NOTE:** The last application that is required for shut down looks like a symbol of a man.

8.7.2 The eight applications must be closed **one at a time AND from right to left** based on their position in the Task Bar. The Task Bar is located in the lower right corner of the Desktop screen and the applications can be closed by right mouse clicking the application, selecting Close or Exit, and responding to system prompts.

8.7.3 **CLOSE** the Communicator window.

> **CAUTION**
>
> Shutting the system down will take Dialogic out-of-service **AND** the Control Room needs to be notified.

8.7.4 If desired the system can be rebooted or shut down.

8.8 File Maintenance and Hard Drive Defragmentation

8.8.1 This is used to purge unneeded files, errors, and reports from the system in preparation for performing back-ups.

8.8.2 **VERIFY CLOSED OR CLOSE** all system applications See sections 8.7.1 - 8.7.3.

8.8.3 **SELECT** the short cut from the Desktop for System Maintenance AND **SELECT** applications 1 -4, **individually AND RESPOND** to the system prompts.

8.8.4 Once this is complete the hard drive should be defragmented by selecting START, Programs, Accessories, System Tools, Disk Defragmenter.

8.8.5 **SELECT** the desired disk **AND** Analyze.

8.9 System and File Back-up

8.9.1 This section should only be performed at the completion of section 8.8.

8.9.2 System Back-ups are done using the GHOST software.

8.9.3 File back-up will be done each time the system back-up is performed **OR** can be done using NERO EXPRESS software.

8.10 General Information

8.10.1 The Communicator System makes out-going notifications and receives in-coming calls using a thirty-six line phone system.

8.10.2 Dialogic Support can be reached at (615) 794-2307 or at http://support.dccusa.com.

8.10.3 The client number for Progress Energy- Robinson Plant is 1300.

9.0 RECORDS

No records are generated by this procedure.

10.0 ATTACHMENTS

10.1 N/A

PATCH T

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2

PART 5

EPRAD-01

ENVIRONMENTAL MONITORING

REVISION 12

SUMMARY OF CHANGES
PRR 95591

STEP	REVISION COMMENTS
Step 8.1.3.1.4.b	Changed the building name to the auto maintenance facility
Step 8.1.3.1.10.b	Added a step to retrieve the KI from the locked cabinet and place in the emergency kit in an actual emergency.
Caution	Added a caution statement prior to Step 8.1.3.1.11 to change vehicle ventilation to recirculation or off prior to entering the plume.
Step 8.1.3.1.11.b	Revised step to observe compass readings when traveling downwind.
Step 8.1.3.1.11.d Note	Added a note to indicate that a micro-rem survey instrument or equivalent may be required to detect small releases.
Step 8.1.3.1.11.d Bullet 1	Revised step to observe odometer and compass readings when traversing the plume.
Note	Added a note to indicate that a significant difference in the open and closed window readings is indication that the release is at ground level.
Step 8.1.3.1.11.q	Revised step to report estimated I-131µCi/cc values of 8.7E-07 or greater to the EnMon Team Leader. Deleted step to report particulate ccpm and uCi/cc values to the EnMon Team Leader.
Attachment 8.1.5.3	Converted graph information to table format and provided the calculation for determining air activity in µCi/cc.
Attachment 8.1.5.4	Converted graph information to table format and provided the calculation for determining air activity in µCi/cc.
Attachment 8.1.5.5 and Attachment 8.1.5.6	Deleted Attachments for determining thyroid dose from inhalation and internal dose from inhalation. Re-numbered subsequent attachments.

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8.1.1 PURPOSE

1. This procedure provides instructions for Radiological Assessment and Consequences. This procedure addresses in-plant/on-site monitoring and emergency off-site environmental monitoring.

8.1.2 RESPONSIBILITIES

1. The Environmental Monitoring Team Leader (EMTL) is responsible for the direction and completion of the applicable requirements of this procedure by the Environmental Monitoring Teams.

2. The Radiological Control Director (RCD) and the Environmental & Radiation Control (E&RC) Lead are responsible for the direction and completion of the applicable requirements of this procedure by the Radiation Monitoring Teams.

8.1.3 INSTRUCTIONS

8.1.3.1 Environmental Monitoring

1. The Emergency Environmental Monitoring teams shall report to the Emergency Operations Facility/Technical Support Center at the declaration of an Alert or higher emergency classification.

   a. Report to Room 420, the Training Building Library. Other areas may be used for mustering, as necessary, to expedite team dispatch.

2. Immediate dispatch of the Emergency Environmental Monitoring Teams should be performed as soon as the need arises.

   a. Activation of any facility need not be a precursor for team dispatch.

NOTE: Emergency Exposure limits are outlined in EPOSC-04, Emergency Work Control.

3. Obtain a briefing from the Site Emergency Coordinator (SEC) **OR** Radiological Control Manager (RCM) **OR**, RCD **OR** EMTL regarding the following:

   a. Required monitoring data (plume tracking, dose projection confirmation, expanded environmental monitoring, etc.)

   b. Anticipated levels of radiation

8.1.3.1 **Environmental Monitoring** (Continued)

c. Suggested routes/sample points,

d. Required protective gear

e. Required dosimetry, TLD, and

f. Exposure limits allowed.

4. Obtain necessary calibrated monitoring and support equipment from designated areas:

   a. Environmental Monitoring emergency monitoring kits are located in the mechanical equipment room in the EOF/TSC.

      - The Environmental Monitoring team will ensure that R-38 ventilation has been switched from "Auto" to "Hand".

   b. The portable emergency generators are located in the auto maintenance facility (Building 440 east of the GET Bldg.)

5. Emergency Environmental Monitoring off site should proceed as follows:

   a. Obtain survey vehicles and emergency kits as needed.

   b. Verify gas is available for survey vehicles and emergency generators.

   c. Make quick visual check of the Emergency kit inventory.

      - Verify calibration dates on survey instruments and air samplers.

      - Battery check instruments

8.1.3.1 **Environmental Monitoring** (Continued)

6. Verify radio communications with the EMTL via channel 1-A. Range of the Environmental radios is approximately 20 miles.

   a. Turn radio on using the "Vol-Off" knob.

   b. "SLF-t S t" for self test will appear, when finished a beep will be heard.

   c. Verify channel 1-A is indicated. IF not, THEN press the up or down arrows until the 1-A appears.

   d. To talk, key the radio, wait for the tone, then speak.

7. Issue dosimetry to each team member. Record TLD and SRPD numbers on Attachment 8.1.5.2, Personnel Dose Data.

8. Test start emergency generators to ensure proper operation.

   - Start outside building to avoid carbon monoxide hazard.

9. Load air samplers with Iodine Cartridge(Silver Zeolite) and a particulate filter. The rough surface of the filter paper should face the open side of the filter.

   - Charcoal iodine cartridge may be used in drills/exercises.

10. Load emergency kits and generators into survey vehicle(s).

    a. The Potassium Iodide (KI) for the remote facility emergency kit is located in the locked cabinet with the laptop computers.

    b. For an actual radiological event, retrieve the KI from the locked cabinet and place in the emergency kit.

CAUTION

Prior to entering the plume, vehicle ventilation should be turned to the recirculation mode or turned off to minimize personnel exposure and internal contamination of the vehicle.

11. Locate the plume or confirm off-site doses as follows.

    a. Obtain current information from the EMTL.

        - Wind direction
        - Initial survey location
        - Expected radiation levels
        - Protective equipment required

    b. Travel downwind to initial survey location observing the compass heading.

    c. Maintain contact with EMTL at least every 30 minutes via radio or phone.

        - Attachment 8.1.5.6, Communications Log, may be used to document communications.
        - If desired, the EMTL may maintain all communications records.

8.1.3.1 **Environmental Monitoring** (Continued)

d. At each designated location, travel at a right angle to the reported wind direction using the most convenient roadway.

> **NOTE:** A micro-Rem survey instrument or equivalent may be required to detect small releases.

- Travel into the plume, observing odometer and compass readings that coincide with the entrance, maximum, and exit radiation levels as indicated by survey meter.
- Maintain survey instruments on and near a window or windshield.
- Drive slowly to ensure accurate readings and locations.
- Report readings greater than or equal to 0.2 mRem/hr to the EMTL.

e. Repeat survey traveling in the opposite direction.

f. Proceed to the location of the maximum dose rate and collect, as a minimum, a 20 ft^3 air sample. **{RNP RA/01-0164; NRC Amendment No. 192: PASS Elimination}.**

> **NOTE:** The sample period is based on collecting sufficient volume to attain the sensitivity necessary to detect the radioactive concentration. A ten (10) minute air sample at 2 scfm flow rate provides sufficient volume to meet the requirement to measure/detect 1.0E-07 μCi/cc for radioiodines when using the appropriate curve. **{RNP RA/01-0164; NRC Amendment No. 192: PASS Elimination}**

g. Place the air sampler so that the exhaust does not stir up loose contamination which would interfere with obtaining a representative sample.

h. Note the sample start and stop times to the nearest whole minute.

- If no suitable timing device is available, contact the EMTL for "marks" on start and stop times.

NOTE: If NO significant difference is noted in the open window and closed window readings, this indicates that the plume is overhead. If there is a significant difference this indicates that the plume is at ground level.

i. While the air sample is being drawn, perform the following:

- Closed window radiation level at approximately waist level (1 meter from ground).
- Open window radiation level at approximately waist level (1 meter from ground).
- Open window radiation level at approximately six inches above ground.
- Open window radiation level at approximately six inches above ground.
- Record dose rates in the Radiation Levels section on Attachment 8.1.5.1, Environmental Data.

j. Periodically read dosimeters **AND** report any off-scale readings to the EMTL immediately.

k. Proceed to a location outside the plume.

l. Remove the particulate filter and iodine cartridge from the air sampler and place in separate, clean plastic bags.

- Use tweezers or gloves to prevent cross contamination.
- Mark the bags with sample start/stop times, sample flow rate, activity in ccpm, ambient radiation levels, date, location, volume, and initials of team member.

8.1.3.1 Environmental Monitoring (Continued)

m. Conduct a field estimate of the airborne iodine activity **AND** the airborne particulate activity using a frisker type instrument with pancake probe (such as LM-177/44-9 combination) as follows:

- Move to a relatively low background area then measure **AND** note the background radiation levels.
- Measure the initial activity of the iodine cartridge by placing the probe on contact with each side of the bag **AND** note the highest reading.
- Determine the corrected counts per minute (ccpm) of the iodine cartridge by subtracting the background reading from the initial sample reading.
- Record the ccpm in the blank for the initial cartridge reading on Attachment 8.1.5.1.

NOTE: If the activity of the second measurement is within 25% of the initial measurement for the iodine cartridge, then it should be presumed that radioiodines are present, pending isotopic analysis.

- Wait for five minutes to allow the cartridge to off-gas.
- Repeat the measurement process for the iodine cartridge on contact with each side of the bag
- Record the ccpm in the blank for the final cartridge reading on Attachment 8.1.5.1.

n. Repeat the measurement process for the particulate filter.

- Record the ccpm values for initial particulate reading and the final particulate reading on Attachment 8.1.5.1 as appropriate.

o. Report field estimates (marked with an asterisk *) from Attachment 8.1.5.1 to the EMTL for entry into the dose projections program.

8.1.3.1 **Environmental Monitoring** (Continued)

p. Determine the estimated radioiodine airborne activity (estimated I-131) in μCi/cc using the highest calculated sample activity (ccpm) and the calculated sample volume from the chart on Attachment 8.1.5.3, Iodine Activity with a Frisker **AND** record the results in μCi/cc in the Airborne Levels section of Attachment 8.1.5.1.

q. Report estimated I-131 activity of 8.7 E-07 μCi/cc or greater to the EMTL to aid in evaluation of field protective action considerations for team members.

r. Determine the estimated particulate activity in μCi/cc using the highest calculated sample activity (ccpm) and the calculated sample volume from the chart on Attachment 8.1.5.4, Particulate Activity with a Frisker **AND** record the results in μCi/cc in the Airborne Levels section of Attachment 8.1.5.1.

s. After appropriate samples are collected, return the samples to the site or other designated location for further analysis as directed by the EMTL.

t. Perform expanded environmental monitoring as assigned by the EMTL.

- Place additional environmental TLDs as directed by the EMTL. Environmental Monitoring Procedures contain locations for TLDs and routine monitoring. Attachment 8.1.5.7 contains the log sheet for TLD locations.

12. Collect Environmental samples as directed by the EMTL.

a. Attachment 8.1.5.5, Collection of Environmental Samples establishes the method for collecting various liquid, soil, and vegetation samples.

b. Environmental samples will be collected as conditions permit.

c. Additional sampling instructions, where required, should be requested from the EMTL.

8.1.3.1 **Environmental Monitoring** (Continued)

d. All samples collected should be labeled as follows:

- sample type,
- location,
- date and time,
- activity upon collection,
- initials and team designation of sample collector.

e. Deliver samples to the designated location as directed by the EMTL.

- Ensure samples are properly labeled and the sample container is not externally contaminated. Sample may be placed in another "clean" bag/container.
- Brief the sample recipient/courier on the radiological conditions of the samples.

8.1.3.2 **In-Plant/On-site Radiological Monitoring**

1. Obtain necessary calibrated monitoring and support equipment from designated areas.

   a. Radiation monitoring equipment for in-plant/on-site monitoring is located in the OSC storage location.

   b. Communications equipment available for use includes radios, cell phones, and the public address system.

2. For Damage Control Teams entries, observe the following:

   a. Use surveying and sampling practices as per the normal health physic practices.

      - Normal plant maps may be used for documentation of all surveys and air samples.

   b. Under emergency conditions, monitor radiation levels continuously while proceeding to the requested locations.

      - Document any unanticipated high radiation levels incurred while in route.

8.1.3.2 **In-Plant/On-site Radiological Monitoring** (Continued)

c. Report any unanticipated high radiation levels incurred, while in route, to the E&RC Lead.

d. Samples are to be counted in the Chemistry Lab if available.

- Assure adequate integrity of sample containers and strict handling to avoid contamination of the facilities.
- All samples of greater than 2 Rem/hr will be handled as Very High Level Radioactive Samples (EPRAD-02, Processing Very High Level Radioactive Samples).
- If Robinson facilities are not available consider:
  - The use of other Progress Energy sites, or
  - Request State/Federal assistance through the State of South Carolina.

3. Habitability will meet the following criteria unless other wise directed by the RCD.

   a. Less than 5 mRem/hr direct radiation,

   b. Less than 1000 dpm/100cm^2 contamination,

   c. Less than 0.25 DAC airborne.

4. Perform surveys as per normal health physics practices in all areas which must remain habitable. Attachment 8.1.5.7 contains a log sheet for area TLD locations. Consideration should be given to placing TLDS in the following areas:

   a. OSC

   b. TSC

   c. EOF

   d. Assembly Areas

   e. Machine Shops

   f. Counting Room

   g. Administrative Building

8.1.3.2 **In-Plant/On-site Radiological Monitoring** (Continued)

5. As emergency facilities become inhabited, provisions for personnel monitoring at ingress/egress points must be set up in concert with Security Access Control.

   a. See EPSPA-00, Site Protective Actions, for details on Access Control.

8.1.4 **RECORDS**

1. Forward documentation generated during an emergency or drill/exercise to the Emergency Preparedness Staff.

   - Attachments/documentation generated during an emergency will be maintained in the plant vault as vital records.

   - Attachments/documentation generated during a drill/exercise may be maintained in the EP files.

8.1.5 **ATTACHMENTS**

8.1.5.1 Environmental Data

8.1.5.2 Personnel Dose Data

8.1.5.3 Iodine Activity With a Frisker

8.1.5.4 Particulate Activity With a Frisker

8.1.5.5 Collection of Environmental Samples

8.1.5.6 Communications Log

8.1.5.7 Area Dosimetry Log Sheet

ENVIRONMENTAL DATA

Date: _____ Log Page _____ of _____

FIELD TEAM DATA

Team ID: _____ Team Members: _____

Survey Instrument Model/Serial #: _____ Survey Instrument Model/Serial #: _____

Air Sampler Model/Serial #: _____ Frisker Model/Serial #: _____

RADIATION LEVELS

Instrument Used: _____		Dose Rates (mrem/hr)			
Time	**Location/Coordinates (degrees/miles)**	**1 Meter* Closed Window**	**1 Meter Open Window**	**6 inch* Closed Window**	**6 inch Open Window**

AIRBORNE LEVELS

Time	Location/Coordinates (degrees/miles)	Sample Volume* (Minutes x Flow Rate)	Initial Cartridge (ccpm) / Initial Particulate (ccpm)	Final Cartridge (ccpm)* / Final Particulate (ccpm)	Cartridge** (µCi/cc) / Particulate (µCi/cc)
		*	C	*	
			P		
		*	C	*	
			P		
		*	C	*	
			P		
		*	C	*	
			P		
		*	C	*	
			P		

*Report closed window (gamma dose rate) readings and iodine cartridge results in **ccpm** to the EMTL for entry into the Dose Projections Program.

Report estimated I-131 activity of **8.7E-07 µCi/cc or greater to the EMTL to aid in evaluation of field protective action considerations.

PERSONNEL DOSE DATA

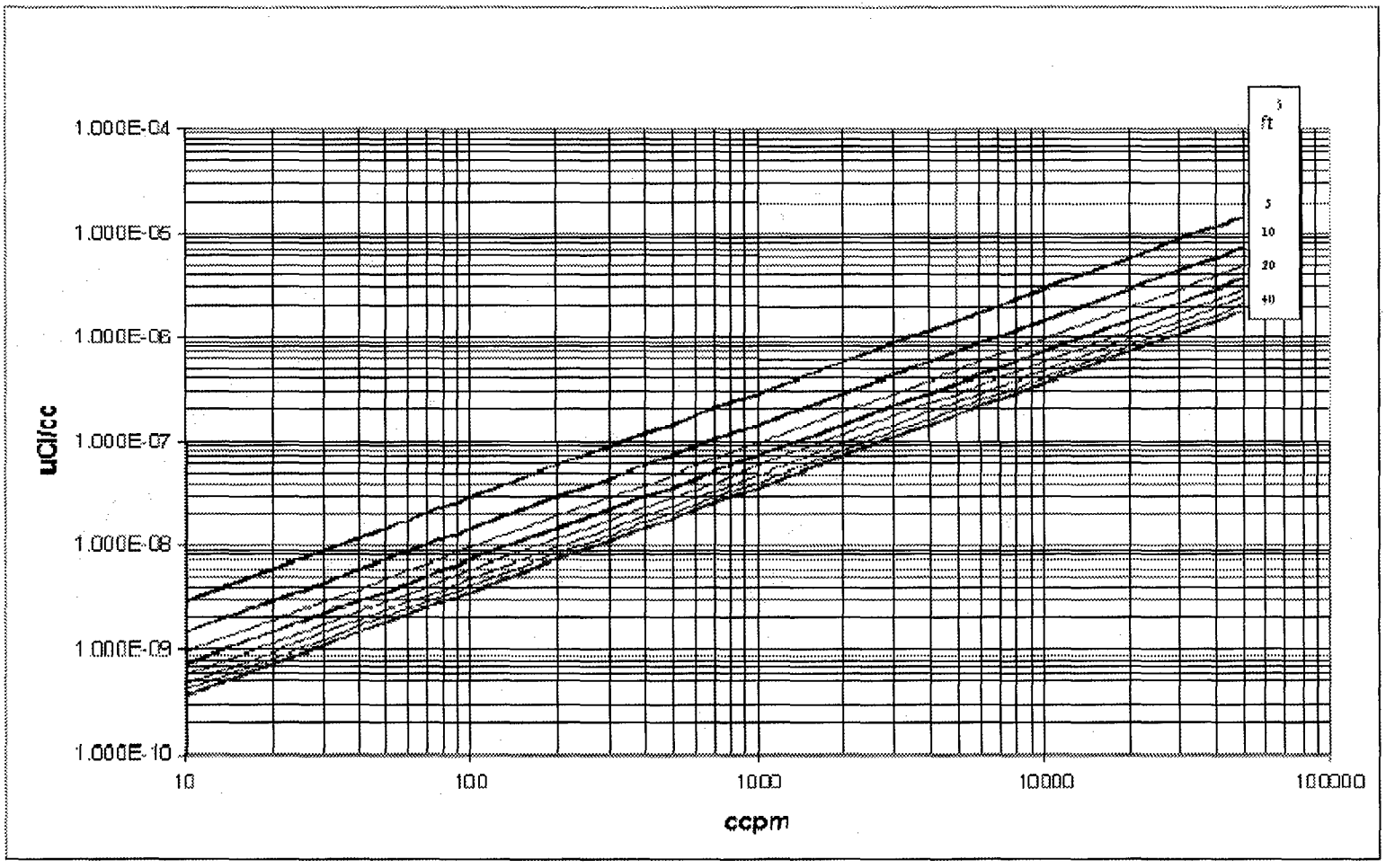
NAME	EMT#	TLD #	SRPD#	INITIAL DOSIMETER READING (mRem)	FINAL DOSIMETER READING (mRem)

IODINE ACTIVITY WITH A FRISKER

CCPM	TOTAL VOLUME (CUBIC FEET)										
	10	12	15	20	25	30	40	50	60	70	80
50	6.5E-08	5.4E-08	4.4E-08	3.3E-08	2.6E-08	2.2E-08	1.6E-08	1.3E-08	1.1E-08	9.3E-09	8.2E-09
100	1.3E-07	1.1E-07	8.7E-08	6.5E-08	5.2E-08	4.4E-08	3.3E-08	2.6E-08	2.2E-08	1.9E-08	1.6E-08
200	2.6E-07	2.2E-07	1.7E-07	1.3E-07	1.0E-07	8.7E-08	6.5E-08	5.2E-08	4.4E-08	3.7E-08	3.3E-08
300	3.9E-07	3.3E-07	2.6E-07	2.0E-07	1.6E-07	1.3E-07	9.8E-08	7.8E-08	6.5E-08	5.6E-08	4.9E-08
400	5.2E-07	4.4E-07	3.5E-07	2.6E-07	2.1E-07	1.7E-07	1.3E-07	1.0E-07	8.7E-08	7.5E-08	6.5E-08
500	6.5E-07	5.4E-07	4.4E-07	3.3E-07	2.6E-07	2.2E-07	1.6E-07	1.3E-07	1.1E-07	9.3E-08	8.2E-08
600	7.8E-07	6.5E-07	5.2E-07	3.9E-07	3.1E-07	2.6E-07	2.0E-07	1.6E-07	1.3E-07	1.1E-07	9.8E-08
700	9.2E-07	7.6E-07	6.1E-07	4.6E-07	3.7E-07	3.1E-07	2.3E-07	1.8E-07	1.5E-07	1.3E-07	1.1E-07
800	1.0E-06	8.7E-07	7.0E-07	5.2E-07	4.2E-07	3.5E-07	2.6E-07	2.1E-07	1.7E-07	1.5E-07	1.3E-07
900	1.2E-06	9.8E-07	7.8E-07	5.9E-07	4.7E-07	3.9E-07	2.9E-07	2.4E-07	2.0E-07	1.7E-07	1.5E-07
1000	1.3E-06	1.1E-06	8.7E-07	6.5E-07	5.2E-07	4.4E-07	3.3E-07	2.6E-07	2.2E-07	1.9E-07	1.6E-07
1500	2.0E-06	1.6E-06	1.3E-06	9.8E-07	7.8E-07	6.5E-07	4.9E-07	3.9E-07	3.3E-07	2.8E-07	2.5E-07
2000	2.6E-06	2.2E-06	1.7E-06	1.3E-06	1.0E-06	8.7E-07	6.5E-07	5.2E-07	4.4E-07	3.7E-07	3.3E-07
2500	3.3E-06	2.7E-06	2.2E-06	1.6E-06	1.3E-06	1.1E-06	8.2E-07	6.5E-07	5.4E-07	4.7E-07	4.1E-07
3000	3.9E-06	3.3E-06	2.6E-06	2.0E-06	1.6E-06	1.3E-06	9.8E-07	7.8E-07	6.5E-07	5.6E-07	4.9E-07
3500	4.6E-06	3.8E-06	3.1E-06	2.3E-06	1.8E-06	1.5E-06	1.1E-06	9.2E-07	7.6E-07	6.5E-07	5.7E-07
4000	5.2E-06	4.4E-06	3.5E-06	2.6E-06	2.1E-06	1.7E-06	1.3E-06	1.0E-06	8.7E-07	7.5E-07	6.5E-07
5000	6.5E-06	5.4E-06	4.4E-06	3.3E-06	2.6E-06	2.2E-06	1.6E-06	1.3E-06	1.1E-06	9.3E-07	8.2E-07
6000	7.8E-06	6.5E-06	5.2E-06	3.9E-06	3.1E-06	2.6E-06	2.0E-06	1.6E-06	1.3E-06	1.1E-06	9.8E-07
7000	9.2E-06	7.6E-06	6.1E-06	4.6E-06	3.7E-06	3.1E-06	2.3E-06	1.8E-06	1.5E-06	1.3E-06	1.1E-06
8000	1.0E-05	8.7E-06	7.0E-06	5.2E-06	4.2E-06	3.5E-06	2.6E-06	2.1E-06	1.7E-06	1.5E-06	1.3E-06
9000	1.2E-05	9.8E-06	7.8E-06	5.9E-06	4.7E-06	3.9E-06	2.9E-06	2.4E-06	2.0E-06	1.7E-06	1.5E-06
10000	1.3E-05	1.1E-05	8.7E-06	6.5E-06	5.2E-06	4.4E-06	3.3E-06	2.6E-06	2.2E-06	1.9E-06	1.6E-06
15000	2.0E-05	1.6E-05	1.3E-05	9.8E-06	7.8E-06	6.5E-06	4.9E-06	3.9E-06	3.3E-06	2.8E-06	2.5E-06
20000	2.6E-05	2.2E-05	1.7E-05	1.3E-05	1.0E-05	8.7E-06	6.5E-06	5.2E-06	4.4E-06	3.7E-06	3.3E-06
25000	3.3E-05	2.7E-05	2.2E-05	1.6E-05	1.3E-05	1.1E-05	8.2E-06	6.5E-06	5.4E-06	4.7E-06	4.1E-06
30000	3.9E-05	3.3E-05	2.6E-05	2.0E-05	1.6E-05	1.3E-05	9.8E-06	7.8E-06	6.5E-06	5.6E-06	4.9E-06
35000	4.6E-05	3.8E-05	3.1E-05	2.3E-05	1.8E-05	1.5E-05	1.1E-05	9.2E-06	7.6E-06	6.5E-06	5.7E-06
40000	5.2E-05	4.4E-05	3.5E-05	2.6E-05	2.1E-05	1.7E-05	1.3E-05	1.0E-05	8.7E-06	7.5E-06	6.5E-06
50000	6.5E-05	5.4E-05	4.4E-05	3.3E-05	2.6E-05	2.2E-05	1.6E-05	1.3E-05	1.1E-05	9.3E-06	8.2E-06

Estimated I-131 activity in air versus corrected counts per minute (CCPM) using Ludlum 177 with pancake probe. The average detector efficiency (DE) is 0.0015. Cartridge collection efficiency (CCE) is 0.90. The formula for calculating I-131 activity is $\mu Ci/cc = \frac{CCPM}{\text{Volume (cc)} \times DE. \times CCE \times 2.22\ E6\ (DPM/\mu Ci)}$

IODINE ACTIVITY WITH A FRISKER



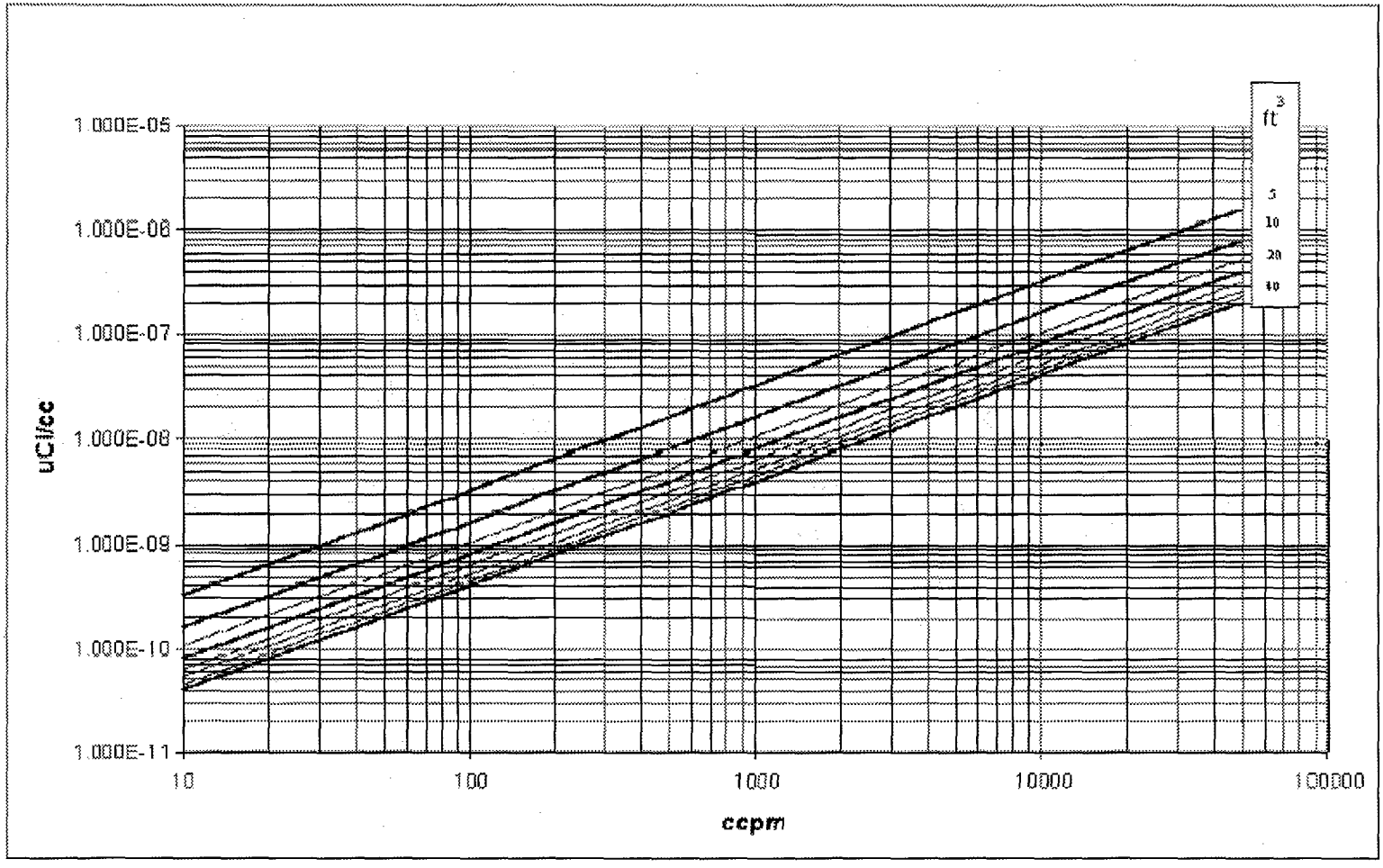
Estimated I-131 activity in air versus corrected counts per minute (CCPM) using Ludlum 177 with pancake probe. The average detector efficiency (DE) is 0.0015. Cartridge collection efficiency (CCE) is 0.90. The formula for calculating I-131 activity is $\mu Ci/cc = \frac{CCPM}{Volume\ (cc) \times DE. \times CCE \times 2.22\ E6\ (DPM/\mu Ci}$

PARTICULATE ACTIVITY WITH A FRISKER

CCPM	TOTAL VOLUME (CUBIC FEET)										
	10	12	15	20	25	30	40	50	60	70	80
50	8.4E-10	7.0E-10	5.6E-10	4.2E-10	3.3E-10	2.8E-10	2.1E-10	1.7E-10	1.4E-10	1.2E-10	1.0E-10
100	1.7E-09	1.4E-09	1.1E-09	8.4E-10	6.7E-10	5.6E-10	4.2E-10	3.3E-10	2.8E-10	2.4E-10	2.1E-10
200	3.3E-09	2.8E-09	2.2E-09	1.7E-09	1.3E-09	1.1E-09	8.4E-10	6.7E-10	5.6E-10	4.8E-10	4.2E-10
300	5.0E-09	4.2E-09	3.3E-09	2.5E-09	2.0E-09	1.7E-09	1.3E-09	1.0E-09	8.4E-10	7.2E-10	6.3E-10
400	6.7E-09	5.6E-09	4.5E-09	3.3E-09	2.7E-09	2.2E-09	1.7E-09	1.3E-09	1.1E-09	9.6E-10	8.4E-10
500	8.4E-09	7.0E-09	5.6E-09	4.2E-09	3.3E-09	2.8E-09	2.1E-09	1.7E-09	1.4E-09	1.2E-09	1.0E-09
600	1.0E-08	8.4E-09	6.7E-09	5.0E-09	4.0E-09	3.3E-09	2.5E-09	2.0E-09	1.7E-09	1.4E-09	1.3E-09
700	1.2E-08	9.8E-09	7.8E-09	5.9E-09	4.7E-09	3.9E-09	2.9E-09	2.3E-09	2.0E-09	1.7E-09	1.5E-09
800	1.3E-08	1.1E-08	8.9E-09	6.7E-09	5.4E-09	4.5E-09	3.3E-09	2.7E-09	2.2E-09	1.9E-09	1.7E-09
900	1.5E-08	1.3E-08	1.0E-08	7.5E-09	6.0E-09	5.0E-09	3.8E-09	3.0E-09	2.5E-09	2.2E-09	1.9E-09
1000	1.7E-08	1.4E-08	1.1E-08	8.4E-09	6.7E-09	5.6E-09	4.2E-09	3.3E-09	2.8E-09	2.4E-09	2.1E-09
1500	2.5E-08	2.1E-08	1.7E-08	1.3E-08	1.0E-08	8.4E-09	6.3E-09	5.0E-09	4.2E-09	3.6E-09	3.1E-09
2000	3.3E-08	2.8E-08	2.2E-08	1.7E-08	1.3E-08	1.1E-08	8.4E-09	6.7E-09	5.6E-09	4.8E-09	4.2E-09
2500	4.2E-08	3.5E-08	2.8E-08	2.1E-08	1.7E-08	1.4E-08	1.0E-08	8.4E-09	7.0E-09	6.0E-09	5.2E-09
3000	5.0E-08	4.2E-08	3.3E-08	2.5E-08	2.0E-08	1.7E-08	1.3E-08	1.0E-08	8.4E-09	7.2E-09	6.3E-09
3500	5.9E-08	4.9E-08	3.9E-08	2.9E-08	2.3E-08	2.0E-08	1.5E-08	1.2E-08	9.8E-09	8.4E-09	7.3E-09
4000	6.7E-08	5.6E-08	4.5E-08	3.3E-08	2.7E-08	2.2E-08	1.7E-08	1.3E-08	1.1E-08	9.6E-09	8.4E-09
5000	8.4E-08	7.0E-08	5.6E-08	4.2E-08	3.3E-08	2.8E-08	2.1E-08	1.7E-08	1.4E-08	1.2E-08	1.0E-08
6000	1.0E-07	8.4E-08	6.7E-08	5.0E-08	4.0E-08	3.3E-08	2.5E-08	2.0E-08	1.7E-08	1.4E-08	1.3E-08
7000	1.2E-07	9.8E-08	7.8E-08	5.9E-08	4.7E-08	3.9E-08	2.9E-08	2.3E-08	2.0E-08	1.7E-08	1.5E-08
8000	1.3E-07	1.1E-07	8.9E-08	6.7E-08	5.4E-08	4.5E-08	3.3E-08	2.7E-08	2.2E-08	1.9E-08	1.7E-08
9000	1.5E-07	1.3E-07	1.0E-07	7.5E-08	6.0E-08	5.0E-08	3.8E-08	3.0E-08	2.5E-08	2.2E-08	1.9E-08
10000	1.7E-07	1.4E-07	1.1E-07	8.4E-08	6.7E-08	5.6E-08	4.2E-08	3.3E-08	2.8E-08	2.4E-08	2.1E-08
15000	2.5E-07	2.1E-07	1.7E-07	1.3E-07	1.0E-07	8.4E-08	6.3E-08	5.0E-08	4.2E-08	3.6E-08	3.1E-08
20000	3.3E-07	2.8E-07	2.2E-07	1.7E-07	1.3E-07	1.1E-07	8.4E-08	6.7E-08	5.6E-08	4.8E-08	4.2E-08
25000	4.2E-07	3.5E-07	2.8E-07	2.1E-07	1.7E-07	1.4E-07	1.0E-07	8.4E-08	7.0E-08	6.0E-08	5.2E-08
30000	5.0E-07	4.2E-07	3.3E-07	2.5E-07	2.0E-07	1.7E-07	1.3E-07	1.0E-07	8.4E-08	7.2E-08	6.3E-08
35000	5.9E-07	4.9E-07	3.9E-07	2.9E-07	2.3E-07	2.0E-07	1.5E-07	1.2E-07	9.8E-08	8.4E-08	7.3E-08
40000	6.7E-07	5.6E-07	4.5E-07	3.3E-07	2.7E-07	2.2E-07	1.7E-07	1.3E-07	1.1E-07	9.6E-08	8.4E-08
50000	8.4E-07	7.0E-07	5.6E-07	4.2E-07	3.3E-07	2.8E-07	2.1E-07	1.7E-07	1.4E-07	1.2E-07	1.0E-07

Estimated particulate activity versus corrected counts per minute (CCPM) using Ludlum 177 with pancake probe. The average detector efficiency (DE) is 0.10. Filter collection efficiency (FCE) is 0.95. The formula for calculating particulate activity is μCi/cc = $\frac{\text{CCPM}}{\text{Volume (cc) x DE. x FCE x 2.22 E6 (dpm/}\mu\text{Ci)}}$

PARTICULATE ACTIVITY WITH A FRISKER



Estimated particulate activity versus corrected counts per minute (CCPM) using Ludlum 177 with pancake probe. The average detector efficiency (DE) is 0.10. Filter collection efficiency (FCE) is 0.95. The formula for calculating particulate activity is μCi/cc = $\frac{\text{CCPM}}{\text{Volume (cc) x DE. x FCE x 2.22 E6 (dpm/}\mu\text{Ci)}}$

COLLECTION OF ENVIRONMENTAL SAMPLES

SAMPLE TYPE	PRECAUTIONS	METHODS AND GUIDELINES
SOIL	1. Assume **ALL** samples are contaminated and handle using techniques to prevent cross-contamination. 2. Do not seal the container of soil **UNTIL** the sample is delivered to the sample control point for transport/analysis. This will permit radon gases to off-gas.	1. **When possible, select an open, level area for sampling**. Avoid areas that are shielded by buildings, trees, bushes, or dense vegetation. Avoid areas that show evidence of erosion water runoff or poor drainage. 2. Clear an area 5" x 5" of rocks, litter, and non-soil items. 3. Using a scoop or trowel, evenly dig out enough soil (including any vegetation) from the 5" x 5" area to a depth of 1" (~5 cm). This should yield a sample of ~400 ml. 4. Place soil in container. 5. Label sample container.
POTABLE WATER	1. Assume **ALL** samples are contaminated and handle using techniques to prevent cross-contamination.	1. Collect at least 1-gallon sample of drinking water. 2. Flush sample lines and rinse sample container before filling. 3. Cap and label sample container.
SURFACE WATER	1. Assume **ALL** samples are contaminated and handle using techniques to prevent cross-contamination.	1. Surface water samples from the plant cooling water and discharge structures may be collected from the automatic samples (SW 40 & 41, refer to EMP-001, Attachment 11.1, for sample location.) 2. If samplers are out-of-service, obtain a grab sample from boat, bridge, or shore. **Note:** More specific sampling instructions will be provided by the EMT Leader. 3. If possible collect 1-gallon sample and secure tightly. 4. Label sample container.

COLLECTION OF ENVIRONMENTAL SAMPLES

SAMPLE TYPE	PRECAUTIONS	METHODS AND GUIDELINES
SNOW & ICE	1. Assume **ALL** samples are contaminated and handle using techniques to prevent cross-contamination.	1. Obtain the equivalent of 500 ml liquid of snow or ice samples for analysis. This may require collection in 4-liter sample containers. 2. Label the sample container.
VEGETATION & CROPS	1. Assume **ALL** samples are contaminated and handle using techniques to prevent cross-contamination.	1. Obtain small bag (~12"x12") samples of broad leaf vegetables and/or other vegetation as directed by the EMT Leader. 2. **IF** milk is to be collected, **THEN** collect 1000 gram samples of pasture grass as close to the roots as possible without including dirt in the sample. 3. If possible, tree leaves should be sampled from outermost part of tree. 4. Large, leafy vegetation is better than small. 5. Ground covers should be selected from open areas. 6. Label the sample container.
MILK	1. Assume **ALL** samples are contaminated and handle using techniques to prevent cross-contamination.	1. Sampling should begin the day after an atmospheric release of radioactive material and every 2 days thereafter until levels of I-131 return to normal. Note: Peak Iodine(I-131) activity is expected on Day 3 following the release. 2. If available, collect at minimum a 1-gallon sample from a thoroughly mixed tank **OR** from a single milk cow. 3. Collect approximately 1000 grams of pasture grass and/or feed whenever milk samples are collected. 4. Label the sample containers.

COMMUNICATIONS LOG

Location: _____ Device: _____
Include Telephone # or Radio Call Sign

Date: _____

Time	Call From	Call To	Remarks (include data transmitted and decisions or recommendations made)

This log is to be routed to the Radiological Control Manager.

AREA DOSIMETRY LOG SHEET

Location	Dosimeter #	Time/Date of Placement	Time/Date of Retrieval	Comments