10 CFR 50, Appendix E

CP&L
A Progress Energy Company

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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, Carolina Power & Light (CP&L) Company is transmitting a revision to the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, revisions to Emergency Implementing Procedures. A list of the procedure revisions and the effective dates is provided in Attachment I.

Descriptions of the procedure changes are provided on the "Summary of Changes" page for each emergency procedure. Please replace the superseded procedures with the attached revisions.

If you have any questions concerning this matter, please contact Mr. H. K. Chernoff.

Sincerely,

B. L. Fletcher III
Manager - Regulatory Affairs

Robinson Nuclear Plant
3581 West Entrance Road
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A045

CAC/cac

Attachments:

I. List of Procedure Revisions and Effective Dates
II. EPCLA-01, "Emergency Control"
III. EPRAD-01, "Environmental Monitoring"

c: L. A. Reyes, NRC, Region II (2 copies)
NRC Resident Inspector, HBRSEP
R. Subbaratnam, NRC, NRR (w/o Attachments)

List of Procedure Revisions and Effective Dates

Procedure	Revision No.	Effective Date
EPCLA-01, "Emergency Control"	10	5/30/2001
EPRAD-01, "Environmental Monitoring"	9	5/21/2001

EPCLA-01
EMERGENCY CONTROL
Revision 10

CP&L

R
Reference
Use

CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2
PART 5

EMERGENCY PROCEDURE

EPCLA-01

EMERGENCY CONTROL

REVISION 10

SUMMARY OF CHANGES

Step	Description of Change
Quick Start guide	Added new CR quick start guide for the initial moments of an event for the Control Room operators.
8.1.3..5c	Added step to evaluate severe weather protective actions. (CR 22292)
8.1.3.12	Added a step for a revised PAR 15 minute notification requirement.
8.1.5.1	Added guidance for sheltering all remaining sectors in 10 mile radius. (CR 30294)

TABLE OF CONTENTS

CR EMERGENCY CONTROL QUICK START GUIDE

NOTE:	This is a summary level guide and does not replace the procedure steps. EPCLA-01 is to be used with this guide.

1. Implement EALs as necessary. It is the expectation that the time between exceeding an EAL and declaration of event will not exceed 15 minutes unless extraordinary conditions prevail. Annotate time of the off normal condition on the top of the EAL board. Continue through the flowpath until a general Emergency has been identified or until the end of the flowpath.

2. Direct an Emergency Communicator to report to the Control Room at this time. This will support communication activities and augmentation of the ERO.

3. The EAL board will direct you to EPCLA-01, "Emergency Control" or to AP-030 if there is no event classification. EPCLA-01 section 8.1.3 provides guidance for classifying emergencies and control.

4. Declare the highest event classification identified by announcing the event to the Control Room and your assuming role as the SEC. This ends the 15 minute clock for the event declaration, and starts the 15 minute clock to notify the appropriate State and County agencies. Announce classification to the Site per EPCLA-01.

5. Develop, approve, and FAX/communicate the Emergency Notification Form. Notify State and County agencies via Selective Signaling System or an alternate means. The notification clock stops after the first voice contact is established with an approved form. This is the time entered on Attachment 8.1.5.1 of EPNOT-01 page 2 of 7.

6. Fill out the Emergency Notification Form. Detailed instructions are in EPNOT-01, Attachment 8.1.5.1, page 3 through 7.

   - Click on "Emergency Preparedness Function Menu.
   - Click on "Log into Network data Base and log in as CRSS.
   - Click on Declare Event, then OK.
   - At top of screen type ER to bring up Environmental Data and print screen.
   - Click on Event Notification Form (ENF)
   - Click "ADD" on ENF

7. Assess EALs for changing plant conditions. Attachment 8.1.5.4 in EPCLA-01 contains the checklist for turnover to the TSC.

8.1.1 PURPOSE

1. To provide consolidated guidance for classifying emergencies from the Control Room or Technical Support Center (TSC).

8.1.2 RESPONSIBILITIES

1. The Site Emergency Coordinator (SEC) has immediate and unilateral authority to implement this procedure.

2. The SEC may not delegate:

   a. the decision to notify offsite authorities;

   b. making offsite Protective Action Recommendations (PAR); and

   c. reclassifying or terminating the emergency.

3. The responsibility to notify offsite authorities and making offsite Protective Action Recommendations transfer to the Emergency Response Manager (ERM) upon activation of the Emergency Operations Facility (EOF).

4. The SEC may authorize exposure in excess of routine yearly limits for saving of life or protecting valuable equipment per EPOSC-04, Emergency Work Control.

8.1.3 INSTRUCTIONS

1. Enter the Emergency Action Level (EAL) flowpath, EAL-1, at the first step and determine the appropriate classification.

2. Declare or validate the highest classification of emergency determined.

   a. Announce to Control Room or TSC personnel that you are assuming the position of SEC.

8.1.3 (Continued)

3. Direct the Emergency Communicator to prepare for communication activities in accordance with EPNOT-01, CR/EOF Emergency Communicator.

4. Determine if there are any personnel injuries;

   a. Give priority to lifesaving activities over radiological exposure control, authorize exposures in excess of normal limits if required.

   b. Refer to EPSPA-02, First Aid and Medical Care, for additional guidance on first aid and transportation of contaminated injured personnel.

5. Determine if onsite protective actions are necessary;

   a. Evaluate radiological, chemical and other situations which may require evacuation.

   b. If evacuation or administration of potassium iodide is necessary, implement EPSPA-01, Evacuation and Accountability, or EPSPA-03, Administration of Potassium Iodide, respectively.

   c. Evaluate possible severe weather protective actions. (CR 22292)

6. Request any offsite assistance necessary;

   a. The Unit 2 Control Room should contact Darlington County 911 Center for fire, police or ambulance service.

   b. Logistics personnel may contact the 911 Center if Control Room staff are unable to request assistance.

   c. Contact other agencies as necessary, selected offsite agency numbers are maintained in the Emergency Response Organization (ERO) phone book.

8.1.3 (Continued)

7. Activate appropriate Emergency Response Facilities (ERFs) as noted below:

   a. **IF** all of the following occurs;

      - The Start-up Transformer is lost.
      - Backfeed through the Auxiliary Transformer is possible.
      - Only 1 (one) Emergency Diesel is powering its respective bus.

      THEN staff all of the **onsite** Emergency Response Facilities to assist with back feed logistics.

   b. For Unusual Event - no activation is required, facilities may be activated at SEC discretion.

   c. For Alert - activate TSC, EOF and OSC. Joint Information Center (JIC) activation is at SEC or ERM discretion.

   d. For Site Area and General Emergency - Activate all onsite and offsite facilities.

      – If the initial classification was an Alert or below and has escalated to Site Area Emergency or above, initiate scenario 41 to call out JIC non-beeper personnel per EPNOT-01.

8. Determine habitability of facilities for directing ERO personnel to the primary or alternate location via PA, pager code, etc.

9. For an Alert only, if the casualty has abated prior to or during notification of offsite agencies, ERO pagers and facilities need not be activated.

   a. If no facility activation is desired, modify the upcoming Public Address (PA) announcement with do not activate the Technical Support Center (TSC), Emergency Operations Facility (EOF), or Operations Support Center (OSC).

8.1.3 (Continued)

10. Sound applicable alarms and perform a PA announcement with the "VLC" switch in "Emergency" position;

    a. Announce "**Attention all personnel, attention all personnel, a(n) (give emergency declared) has been declared. The cause of the emergency is**

    _____

    _____

    _____

    _____. **Use of the plant public address is restricted to Emergency Communications only until further notice.**

    If Emergency Response Facilities are being activated announce
    "All EOF/TSC/OSC personnel report to your designated facility."

    b. Repeat announcement(s) and alarm (if sounded).

11. If a Site Area or General Emergency has been declared a site evacuation is mandatory unless doing so will jeopardize the safety of plant personnel. To evacuate the site, sound the site evacuation alarm for approximately 15 seconds, and announce "**All Non-Emergency Response personnel report to (give appropriate upwind location) immediately. "All Joint Information Center personnel report to your facility**."

    - Repeat announcement(s) and alarm (if sounded).
    - To avoid confusion site evacuation should only be initiated once.
    - Designated locations are: (others may be used if necessary)

      East - Building 110 next to Lake Robinson or parking lot.

      West - Unit 2 Administrative Building Cafeteria or parking lot.

8.1.3 (Continued)

12. If a General Emergency has been declared, formulate a protective Action Recommendation (PAR).

    a. Use guidance in Attachments 8.1.5.1, Initial Protective Action Recommendation Flowchart and Attachment 8.1.5.3, PAR Affected Zones Based on Wind Direction to formulate the initial recommendation and zones to be evacuated based on wind direction.

    b. Subsequent PARs are made by comparing dose projections and environmental monitoring results to Attachment 8.1.5.2, Protective Action Guidelines (PAG) and upgrading the initial recommendations as necessary.

    c. If conditions indicate the PAR needs upgrading, the 15 minute notification standard applies as this will be a new initial message.

13. Develop and transmit an initial Emergency Notification Form to at least one State and County agency within 15 minutes of emergency declaration.

    a. Follow up notifications are required at least every 30-60 minutes.

14. Within one hour of an Alert (or above) declaration, activate the Emergency Response Data System (ERDS) as noted below:

    a. If the ERDS is not currently operational (ERDS = NORMAL is not displayed at the bottom of an ERFIS terminal), the SEC will ensure that ERDS is activated. Any problems should be reported to Information Technology personnel.

    b. Display the ERDS activation screen by:

        - Depressing the ERDS key on the ERFIS keyboard, or
        - Typing the Turn-On-Code "ERDS" at the input field, or
        - Selecting ERDS from the EP Menu.

8.1.3.14 (Continued)

c. When the ERDS Control and Status Display window appears, click on the green "Start ERDS" button.

- An "Are You Sure" message is displayed. Click yes to initiate ERDS, click no to cancel.
- Observe the "Start ERDS" button changes to a yellow "Starting..." button.
- When ERDS connects to the NRC Operations Center the yellow "Starting..." button will change to a red "Stop ERDS" button.
- Other buttons are provided to review system status and data transmissions.
- It may take several minutes for the system status in the Control and Status Display window or at the bottom of the screen to update.

d. Within five minutes after activation, the ERDS function should become operational. This is determined by ERDS = NORMAL message displayed at the bottom of an ERFIS terminal.

e. If ERDS fails to become operational (ERDS = NORMAL is not displayed on an ERFIS Terminal) within five minutes, stop the ERDS function by clicking the red "Stop ERDS" button and notify onsite Information Technology.

15. If the Emergency Response Facility Information System/Electronic Display System (ERFIS/EDS) is out of service initiate manual transfer of safety parameter and other relevant data.

a. Forms for recording data are located in EPNOT-00, "Notification and Emergency Communications.

8.1.3 (Continued)

16. Continue to assess the plant status against the EALs to confirm, upgrade or downgrade the emergency classification.

    a. If the State and County facilities have been activated, they should be consulted prior to any downgrade of emergency classification.

17. If the TSC is activating, perform a turnover with the TSC SEC.

    a. A turnover checklist is provided as Attachment 8.1.5.4, Turnover Checklist.

18. Perform PA announcements periodically to update personnel in the field of any changing plant conditions.

19. When appropriate based on plant conditions, coordinate with any offsite agencies which have activated and terminate the emergency.

    a. Direct the Emergency Communicator to make termination notifications to all agencies.

        – Termination, as a change in classification, has a 15 minute time requirement.

    b. If not previously terminated by the Nuclear Regulatory Commission (NRC), coordinate the termination of ERDS.

8.1.4 **RECORDS**

N/A

8.1.5 **ATTACHMENTS**

8.1.5.1 Initial Protective Action Recommendation Flowchart

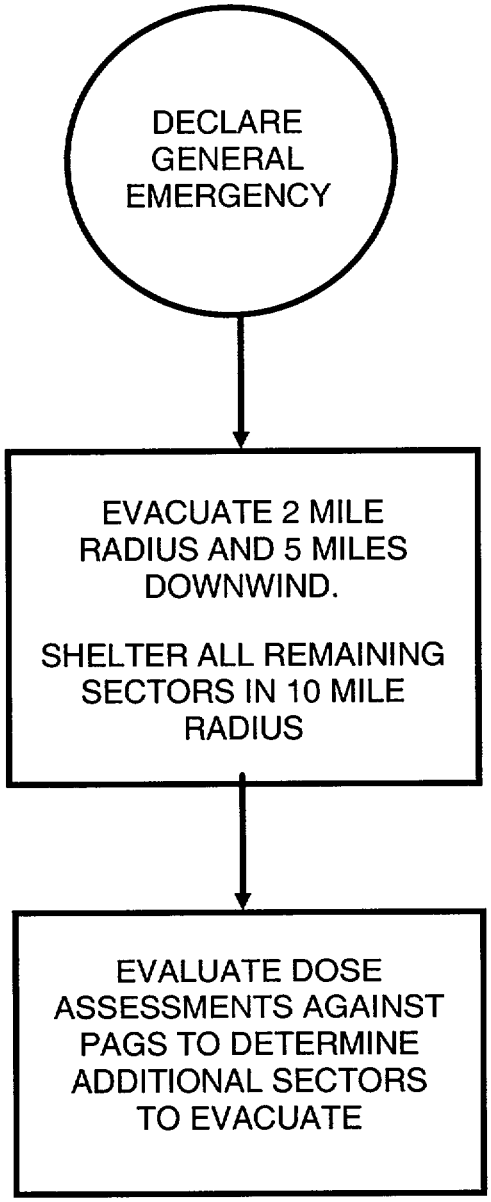
8.1.5.2 EPA Protective Action Guide (PAGs) for the Early Phase

8.1.5.3 PAR Affected Zones Based on Wind Direction

8.1.5.4 Turnover Checklist

ATTACHMENT 8.1.5.1
Page 1 of 2

INITIAL PROTECTIVE ACTION RECOMMENDATION FLOWCHART



INITIAL PROTECTIVE ACTION RECOMMENDATION FLOWCHART

PAR REFERENCE GUIDE AND DOCUMENTATION FORM

RULES FOR PROTECTIVE ACTION RECOMMENDATIONS

1. SHELTER ALL REMAINING SECTORS IN THE 10 MILE RADIUS NOT EVACUATED.

2. A PROTECTIVE ACTION RECOMMENDATION MAY NOT BE REDUCED FROM THE INITIAL RECOMMENDATION FOR ANY SECTOR UNTIL THE RELEASE IS TERMINATED AND THE DECISION IS COORDINATED WITH THE STATE AND COUNTIES.

3. A PROTECTIVE ACTION REQUIRED FOR ANY PORTION OF A SECTOR REQUIRES THAT ACTION BE IMPLEMENTED FOR THE ENTIRE SECTOR.

RECOMMENDATION

PLACE A √ IN THE APPROPRIATE BLANK FOR EACH SECTOR.

----------2 MILE RADIUS----------

EVACUATE	SHELTER	SECTOR
_____	_____	A-0

----------5 MILE RADIUS----------

EVACUATE	SHELTER	SECTOR
_____	_____	A-1
_____	_____	B-1
_____	_____	C-1
_____	_____	D-1
_____	_____	E-1

----------10 MILE RADIUS----------

EVACUATE	SHELTER	SECTOR
_____	_____	A-2
_____	_____	B-2
_____	_____	C-2
_____	_____	D-2
_____	_____	E-2

RECOMMENDED BY / TIME: _____ / _____
RCD OR RCM

APPROVED BY / TIME: _____ / _____
SEC OR ERM

EPA PROTECTIVE ACTION GUIDE (PAGS)

FOR THE EARLY PHASE*

PROTECTIVE ACTION	PAG	COMMENTS
Evacuate	1 Rem TEDE	Change any sheltering subzones/sectors to evacuate if the Total Effective Dose Equivalent dose within any area exceeds PAG.
Evacuate	5 Rem CDE	Change any sheltering subzones/sectors to evacuate if the Committed Dose Equivalent dose to the thyroid within any area exceeds PAG.

*The Early Phase is the time between the beginning of an incident and when the incident source and releases have been brought under control.

Reference: EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," U.S. Environmental Protection Agency, Washington, D.C., May 1992

PAR AFFECTED ZONES BASED ON WIND DIRECTION

(EVACUATION TIME IN MINUTES)[2]

WIND FROM	POTENTIALLY[1] AFFECTED SECTORS	WINTER WEEKDAY, FAIR WEATHER	WINTER WEEKNIGHT, FAIR WEATHER	SUMMER WEEKDAY, FAIR WEATHER	WINTER WEEKDAY, ADVERSE WEATHER
North (338° - 022°)	A-0, B-1, B-2, C-1, C-2, D-1, D-2	225	180	210	295
Northeast (023° - 067°)	A-0, C-1, C-2, D-1, D-2, E-1, E-2	225	180	210	295
East (068° - 112°)	A-0, D-1, D-2, E-1, E-2	225	180	210	295
Southeast (113° - 157°)	A-0, A-1, A-2, D-1, E-1, E-2	225	180	210	295
South (158° - 202°)	A-0, A-1, A-2, B-1, B-2, E-1, E-2	225	180	210	295
Southwest (203° - 247°)	A-0, A-1, A-2, B-1, B-2, E-1, E-2	225	180	210	295
West (248° - 292°)	A-0,A-1, A-2, B-1, B-2, C-1, C-2	225	180	210	295
Northwest (293° - 337°)	A-0, B-1, B-2, C-1, C-2, D-2	225	180	210	295
	ALL ZONES (10 MILE RADIUS)	240	180	215	315

1. Minimum recommendation for General Emergency is A-0 (2 mile radius) and affected (downwind) 5 mile radius sectors. Shelter all remaining sectors in the 10 mile radius.

2. Times listed are estimates based on evacuation times listed in the Emergency Plan.

NOTE: Conditions identified represent most limiting conditions.

TURNOVER CHECKLIST

This checklist is guidance for turning over Emergency Response activities from one facility to another or between personnel holding Emergency Response positions.

NOTE: Blanks are provided for place keeping √'s only, logs are the official record.

A. SYNCHRONIZE CLOCKS to ERFIS/EDS TIME _____

B. ONSITE SITUATION

1. Review Emergency Classification, basis for declaration, and mitigating actions. _____

   a. Review status of safety equipment and systems.
   b. Review status of fission product barriers.
   c. Review condition/stability of reactor.
   d. Review any Emergency Action Levels exceeded.
   e. Review cause, history, initiating events leading to declaration of emergency.

2. Review onsite protective actions taken. _____

   a. Assembly
   b. Shelter
   c. Evacuations (Local, Protected Area, Site, Exclusion Area)

NOTE: If there is a Site Evacuation, Unit 1 may need to continue operating.

   d. Potassium Iodide Administration
   e. Complete PLP-015 Overtime Form for ERO as appropriate.

TURNOVER CHECKLIST

3. Review status of offsite assistance requested for the site. _____

   a. Fire Department

   b. Rescue Squad

   c. Local Law Enforcement Agency

C. OFFSITE SITUATION

1. Review Status of Offsite Notifications. _____

   – State and County initial and any follow-up messages

   – NRC

   – Other: ANI, INPO, Westinghouse

   – Any needed notifications that have not been made

2. Review Protective Action Recommendations made and notifications made to the State and Counties. _____

3. Review any status received from the State or Counties regarding activation, readiness, protective actions, or requests for information. _____

4. Review data on any projected or actual radiological releases. _____

5. Review the time and content of any press releases or media briefing. _____

TURNOVER CHECKLIST

D. EMERGENCY RESPONSE

1. Review status of Emergency Response Organization Activation. _____
   - Notifications made to off-duty and offsite personnel. _____
   - Emergency Response Facilities that are activated. _____
   - Emergency Response Facilities that will be activated. _____
   - Other notifications needed. _____
2. Review outside organizations requested to mobilize. _____
3. Review assistance needed. _____

E. TURNOVER COMPLETED _____

United States Nuclear Regulatory Commission
Attachment III to Serial RNP-RA/01-0105
27 Pages

EPRAD-01
ENVIRONMENTAL MONITORING
Revision 9

CP&L

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CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2
PART 5

EMERGENCY PROCEDURE

EPRAD-01

ENVIRONMENTAL MONITORING

REVISION 9

SUMMARY OF CHANGES

STEP	REVISION COMMENTS
8.1.2	Re-ordered responsibilities section.
8.1.3	Re-aligned Instructions Section into two sub-sections for clarity: 8.1.3.1 Environmental Monitoring • Moved information previously contained in Steps 8.1.3.11 through 8.1.3.13 to this subsection. • Created a note describing where guidance for emergency exposure limits are located. • Deleted "If no dosimetry was issued in the Operational Support Center then". The EnMon Teams are dispatched from the EOF/TSC. • Corrected typographical errors throughout the body of the procedure. • Clarified instructions for estimating air sample results by performing field calculations of airborne particulate and iodine concentrations. • Created a note describing the purpose for the second field measurement of the particulate and iodine air samples. • Added step to report air activity results in corrected counts per minute(ccpm) to the EMTL for entry into Dose Projections program. • Created a note clarifying the use of Attachments 8.1.5.6 and 8.1.5.7 for estimating internal dose and thyroid doses based on field readings. • Added step to report airborne particulate and iodine concentrations to the EMTL to aid in field protective action considerations. • Added instructions for delivery of samples for transport/analysis. 8.1.3.2 In-plant/On-site Radiological Monitoring Moved and re-ordered information previously contained in applicable sections of Steps 8.1.3.4 through 8.1.3.10 to this subsection.
8.1.4	Added a step to forward documentation to EP following an emergency or drill/exercise.
Attachment 8.1.5.5	Deleted attachment for estimating particulate/iodine activity with a GM detector in mRem/hr and re-numbered subsequent attachments
Attachment 8.1.5.7 (old Attachment 8.1.5.8)	Reconciled the difference in soil sample collection methods to reflect state sampling procedures. Changed the size of sampling area from ~ 1 ft^2 and 2" (5 cm) deep to a sampling area of ~5" x 5" and 1" (2.5 cm) deep to yield a sample volume of 400 ml in agreement with state sampling procedures. (AR #12476) Changed amount of vegetation that is required to be collected from 3 lbs. to small plastic bag (~ 12" x 12"). The State of South Carolina does not require collection of 3 lbs. of vegetation. Placed emphasis on leaving the soil sample container unsealed until delivered to the designated location for transport/analysis to allow the radon to off-gas. Added instructions to label samples.

TABLE OF CONTENTS

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 assigned Environmental & Radiation Control (E&RC) Supervisor or Lead Technician 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 at the declaration of an Alert or higher emergency classification.

   a. Report to Room 420, the Training Building Library

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 old equipment shop (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. Perform radio check with Environmental Monitoring Team Leader (EMTL).

   a. Radio range is typically 10 miles, maximum of 20 miles depending on conditions.

   b. Normally Channel 3 will be used.

   c. If Channel 3 is not available, switch to Channel 1 then 2 (in order of priority).

   d. Use "open channel" to verify function, then switch to Digital Voice Protection (DVP).

   e. If the automatic signaling function is not operable, repeat the call letters "WGGN-381" (base station) and "KT-2890" (portable/mobile) every 15 minutes unless call letters are used to sign off following transmissions.

      – Guidelines for encoding and use of Environmental Radios are included in Attachment 8.1.5.9, Use of Environmental Radios.

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

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

8.1.3.1 **Environmental Monitoring** (Continued)

10. Load emergency kits, generators and mobile chargers (in green box) into survey vehicle(s).

    - The mobile chargers connect to the vehicles electrical system and convert "portable" radios to a mobile unit, thus extending the range of the radio.

11. Locate the plume or confirm offsite doses as follows.

    a. Obtain current information from the Environmental Monitoring Team Leader (EMTL).

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

    b. Travel downwind to initial survey location.

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

        - Attachment 8.1.5.9, Communications Log may be used to document communications.
        - If desired, the EMTL may maintain all communications records.

    d. At designated locations, travel at a right angle to the reported wind direction via most convenient roadway.

        - From designated locations, travel into the plume, record odometer readings coincident with entrance, maximum, and exit radiation levels as indicated by survey meter.

8.1.3.1 **Environmental Monitoring** (Continued)

- Maintain survey instruments on and near a window or windshield.
- Report readings greater than or equal to 0.2 mRem/hr to the EMTL.
- Drive slowly to ensure accurate readings and locations.

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.

NOTE: The sample period should be 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 minimum detectable limit of 1E-07 μCi/cc for radioiodines when using the appropriate curve.

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

h. Record sample start and stop times to the nearest whole minute on Attachment 8.1.5.1, Environmental Data.

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

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).

8.1.3.1 **Environmental Monitoring** (Continued)

- Open window radiation level at approximately six inches above ground.

- Record levels in the Dose Rate Data section on Attachment 8.1.5.2, Personal Dose/Dose Rate 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.

- Leave the bags open to allow the samples to off-gas.

- 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.

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** record 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** record the highest reading.

8.1.3.1 **Environmental Monitoring** (Continued)

- Determine the corrected counts per minute (ccpm) of the iodine cartridge by subtracting the background reading from the initial sample reading **AND** record the data.

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.

- Obtain a second set of measurements of the iodine cartridge after five minutes have elapsed.
- Repeat the measurement process for the particulate filter.

n. Report field estimates in ccpm from Attachment 8.1.5.1 to the EMTL for entry into the dose projections program.

NOTE: Attachment 8.1.5.5, Thyroid Dose From Inhalation, and Attachment 8.1.5.6, Internal Dose From Inhalation, may be used to estimate internal and thyroid doses based on field readings.

o. Determine the airborne concentration of radioiodines by plotting the highest calculated sample activity (ccpm) against the calculated sample volume using Attachment 8.1.5.3, Iodine Activity with a Frisker **AND** record the results in µCi/cc on Attachment 8.1.5.1.

p. Determine the airborne concentration of particulates by plotting the highest calculated sample activity (ccpm) against the calculated sample volume using Attachment 8.1.5.4, Particulate Activity With a Frisker **AND** record the results in µCi/cc on Attachment 8.1.5.1.

8.1.3.1 **Environmental Monitoring** (Continued)

q. Report field estimates of the airborne iodine and particulate concentrations in μCi/cc from Attachment 8.1.5.1 to the EMTL to aid in evaluation of field protective action considerations for team members.

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

s. 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.

12. Collect Environmental samples as directed by the EMTL.

a. Attachment 8.1.5.7, 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.

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.

8.1.3.1 **Environmental Monitoring** (Continued)

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 on site monitoring is located in the OSC storage location.

   b. Radiological monitoring teams use radio channel 1 or 2 as a default.

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.

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

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

d. Samples are to be counted in the E&RC facility 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 CP&L 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 .25 DAC airborne.

4. Perform surveys as per normal health physics practices in all areas which must remain habitable. 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 will be maintained in the EP files.

8.1.5 **ATTACHMENTS**

8.1.5.1 Environmental Data

8.1.5.2 Personal Dose/Dose Rate Data

8.1.5.3 Iodine Activity With a Frisker

8.1.5.4 Particulate Activity With a Frisker

8.1.5.5 Thyroid Dose From Inhalation

8.1.5.6 Internal Dose From Inhalation

8.1.5.7 Collection of Environmental Samples

8.1.5.8 Communications Log

8.1.5.9 Use of Environmental Radios

ENVIRONMENTAL DATA

SAMPLE LOCATION						
AIR SAMPLE START/STOP	/	/	/	/	/	/
AIR SAMPLE FLOWRATE (cfm)						
AIR SAMPLE VOLUME (ft^3)						
PART. FILTER READING (ccpm)*						
PART. FILTER READING (µCi/cc)**						
IODINE CARTRIDGE READING (ccpm) *						
IODINE CARTRIDGE READING (µCi/cc) **						
5 MIN. PART. FILTER READING (ccpm)						
5 MIN. PART. FILTER READING (µCi/cc)						
5 MIN. IODINE CART. READING (ccpm)						
5 MIN. IODINE CART. READING (µCi/cc)						
INSTRUMENT MODEL/SERIAL						
TECHNICIAN						

VOLUME (ft^3) = FLOWRATE (CFM) X TIME (MIN.)

*Report field activity results in **ccpm** to the EMTL for entry into the Dose Projections program.

Report airborne concentration in **µCi/cc to the EMTL to aid in evaluation of field protective action considerations for team members.

PERSONAL DOSE DATA

NAME	EMT#	TLD #	DOSIMETER#	INITIALDOSIMETER READING (mRem)	FINALDOSIMETER READING (mRem)	NET DEEP DOSE EQUIVALENT(mRem)

DOSE RATE DATA

LOCATION					
1 METER CLOSED WINDOW RADIATION LEVEL (mRem/hr)					
1 METER OPEN WINDOW RADIATION LEVEL (mRem/hr)					
6 INCH OPEN WINDOW RADIATION LEVEL (mRem/hr)					
INSTRUMENT MODEL/SERIAL NUMBER	/	/	/	/	/
DATE / TIME	/	/	/	/	/
TECHNICIAN					

ATTACHMENT 8.1.5.3
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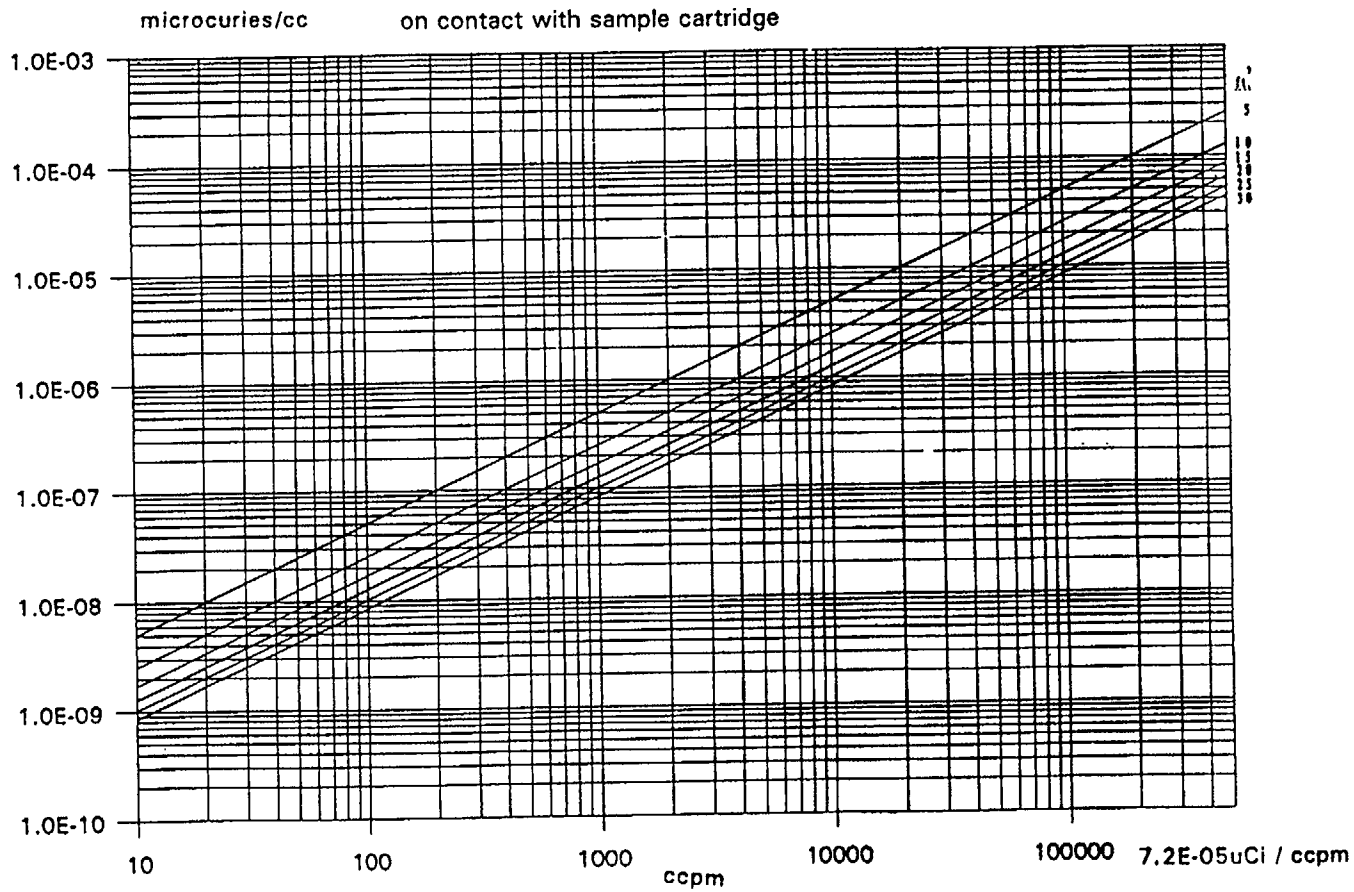
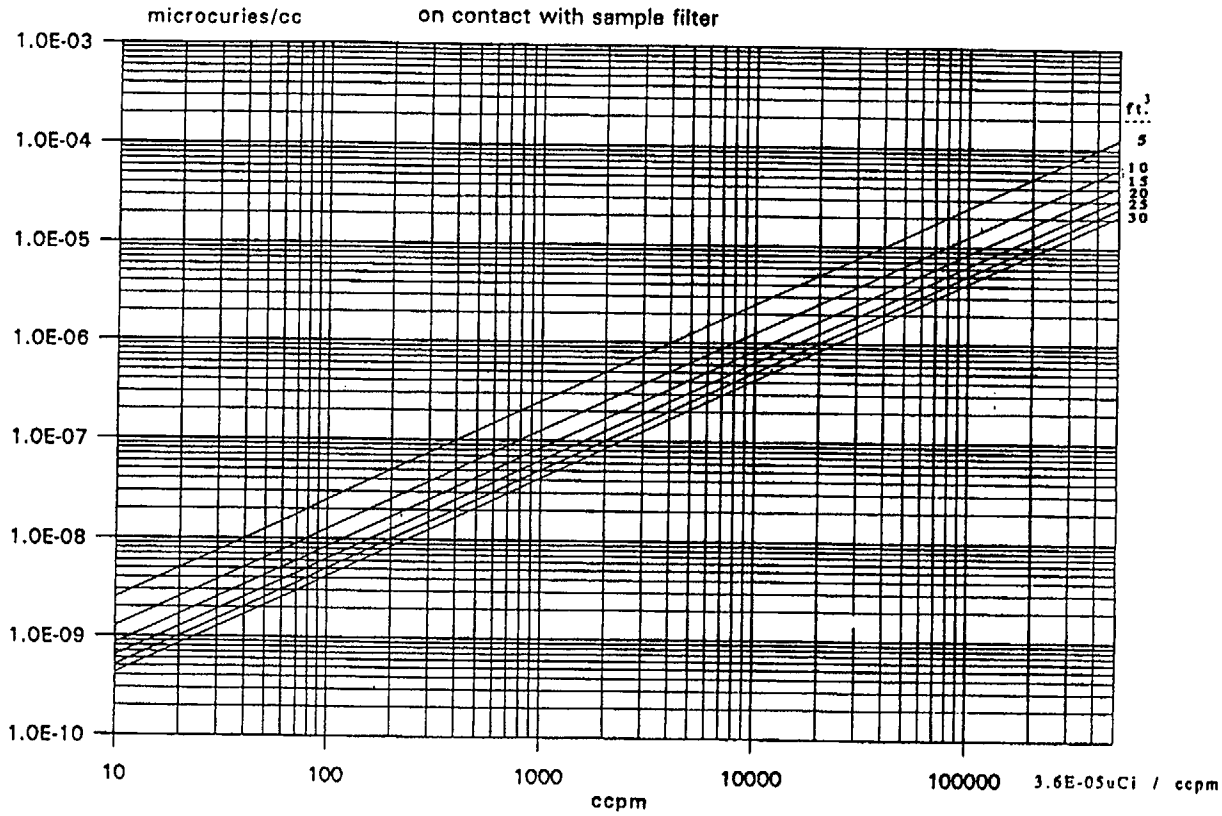
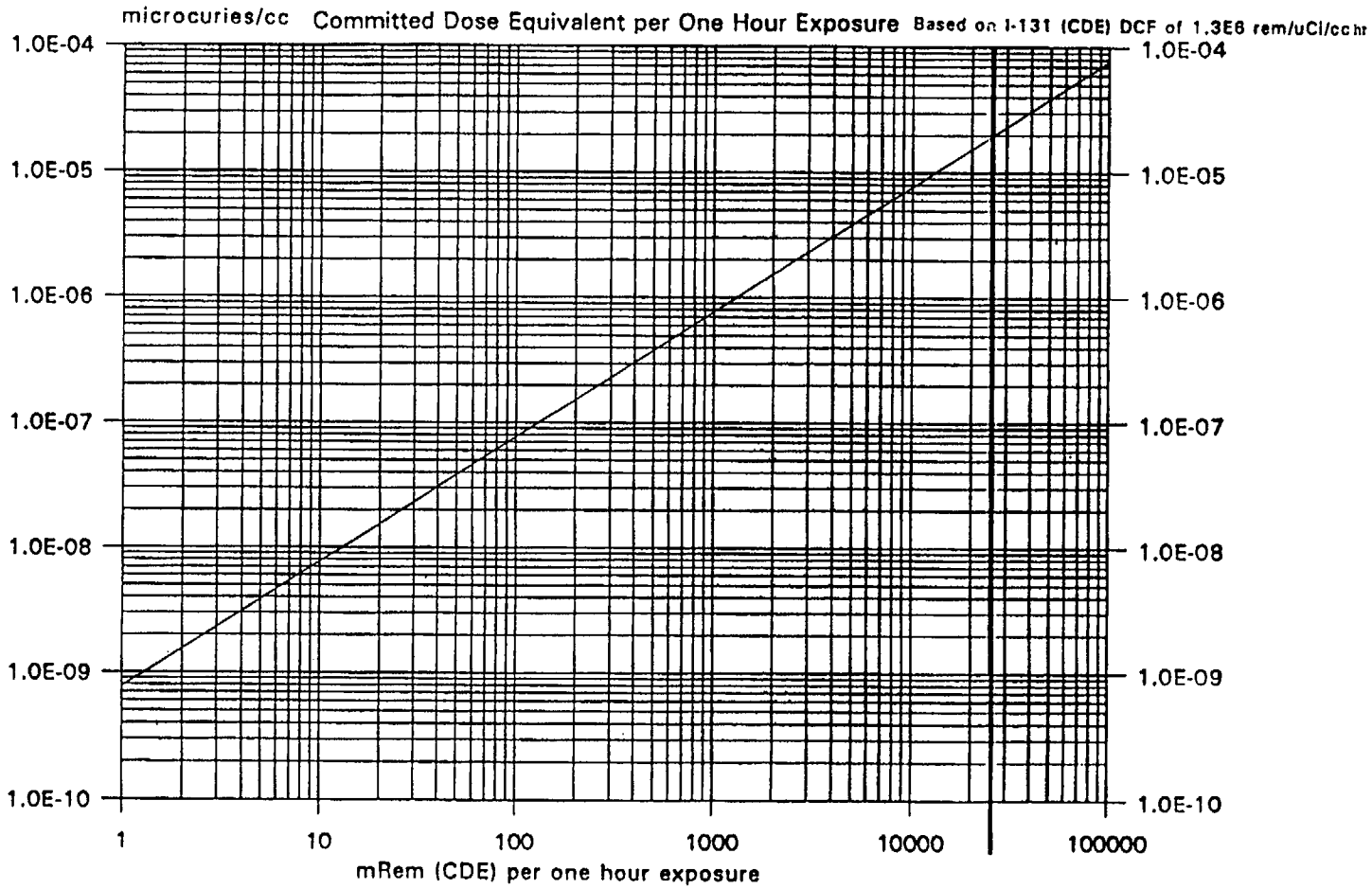
IODINE ACTIVITY WITH A FRISKER



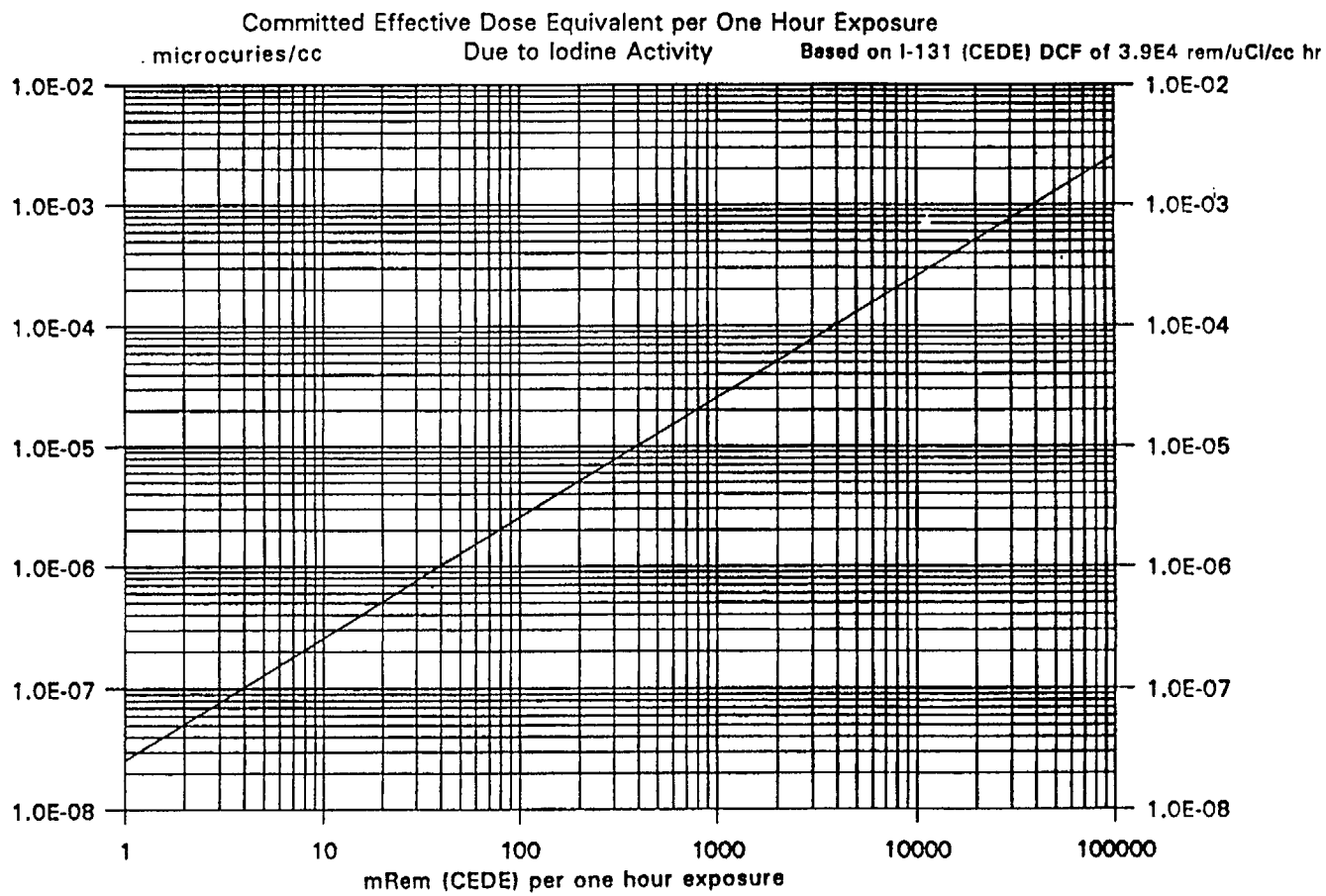
PARTICULATE ACTIVITY WITH A FRISKER



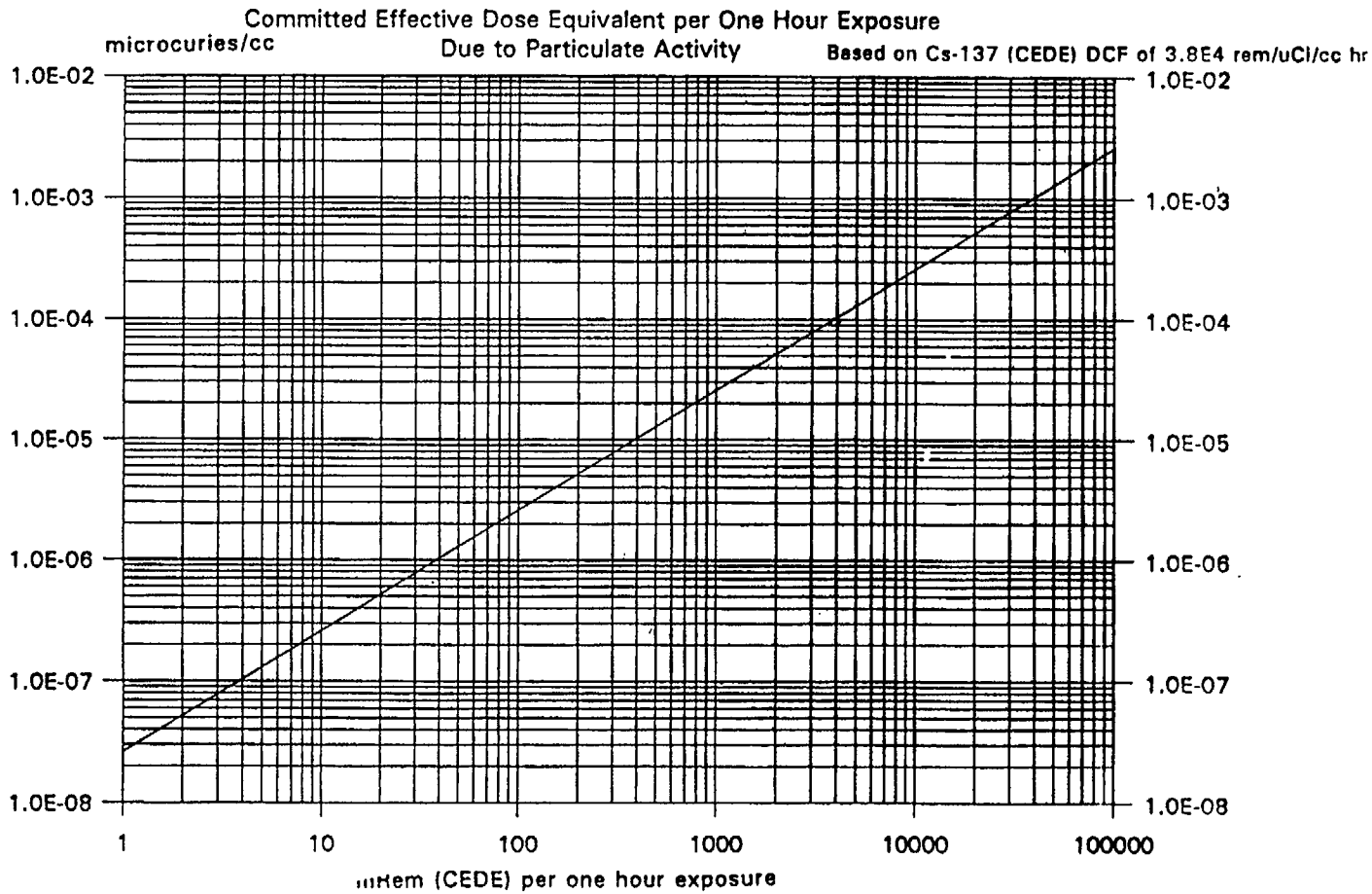
THYROID DOSE FROM INHALATION



INTERNAL DOSE FROM INHALATION



INTERNAL DOSE FROM INHALATION



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. 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 topmost 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.

ATTACHMENT 8.1.5.8
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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.

USE OF ENVIRONMENTAL RADIOS

(Old Style)

How to Encode Environmental Monitoring Radios

1 - Press "on" button of the Encoder

2- Select a channel to use for encoding, for example channel 1.

3 - Press the load button and selected channel from the previous step.

4 - Enter the following code: 1 2 3 4 5 6 6 5 4 3 2 1, 1 2 3 4 5 6 6 5 4 3 2 1*.
The encoder should display the channel number and ready.

5 - Press the "enter" button

6 - Turn on the radio(s) to be encoded

7 - Attach the encoder cord to the radio

8 - Press the "side button" on the Encoder

9 - Listen for a beep and/or the display says "beep."

10 - If a beep is heard, the code is loaded

11 - If a beep is not heard, repeat Steps 1 through 9

This process must be used for each radio AND the base unit to ensure that all parties can communicate in digital voice protection mode.

* The code was chosen arbitrarily; any sequence of numbers may be used as long as they are documented.

General Information on Radio Performance and Testing

1- When changing batteries the switch must be made within 15 seconds or encoding for digital voice protection will be lost.

2- If the Environmental Monitoring Radios are used without the repeater, the maximum communication range is slightly less than 2 miles.

3- If the Environmental Monitoring Radios are used with the repeater, the maximum communication range is approximately 20 miles.

4- Surrounding terrain may negatively affect the reception of the radios, if reception is unclear moving a few feet in either direction may help.

5- Use of the plug-in capability of the mobile (hand held) radios may increase reception capability, in addition, if reception is poor, stepping out of the vehicle may improve reception.

6- The Base Station and on site repeater are checked annually by Telecommunications personnel. During this check receiver frequency along with power output are verified to be within manufacturers specifications.

USE OF ENVIRONMENTAL RADIOS

(New GTX Style)

1. Turn radio on using "Vol - Off" knob.

2. "SLF - ELE" for self test will appear, when finished a beep will be heard.

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

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

The new style radio does not use the voice inscription. The directions for the old style radio will be deleted at the completion of the testing/field trials.