Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

December 14, 2001

10 CFR 50,
Appendix E
Section V

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos.	50-259	50-390
Tennessee Valley Authority	)		50-260	50-391
			50-296	50-327
				50-328

TVA CENTRAL EMERGENCY CONTROL CENTER (CECC) - EMERGENCY PLAN IMPLEMENTING PROCEDURE (EPIP) REVISIONS

In accordance with the requirements of 10 CFR Part 50, Appendix E, Section V, enclosed are copies of the Effective Page Listing and revisions to CECC EPIPs.

PROCEDURE		EFFECTIVE DATE
EPIP	EPL	11/30/01
EPIP-9	Rev. 24	11/30/01
EPIP-12	Rev. 16	11/30/01

If you have any questions, please contact Terry Knuettel at (423) 751-6673.

Sincerely,

Mark J. Burzynski

Mark J. Burzynski
Manager
Nuclear Licensing

Enclosures
cc: See page 2

A045

Rec'd 01/31/02

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DOCUMENT RELEASE AND FILING INSTRUCTIONS

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- ☒ QA Records/Documents
- ☐ Non-QA Records/Documents

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CECC EPIP-12, cover sheet	16	1	✓		11-30-01	cover sheet	cover sheet
CECC EPIP-12, rev. log	16	2 ~~1~~	✓			rev. log	rev. log
CECC EPIP-12	16	6	✓			All	1 - 6

Date

Contact: Ext.

Acceptance:
Lana L. Farmer 11-30-01
Signature Date

TENNESSEE VALLEY AUTHORITY
CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN
IMPLEMENTING PROCEDURES
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CECC EPIP Coversheet

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title EMERGENCY ENVIRONMENTAL RADIOLOGICAL MONITORING PROCEDURES	CECC EPIP-9 REV. 24 Effective Date: 11/30/01

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CECC-EPIP-9
113001 24

WRITTEN BY: C. D. Pond *David Pond* (*Signature*) REVIEWED BY: Thomas E. Adkins *Thomas E. Adkins* (*Signature*) 11/28/01 (*Date*)

PLAN EFFECTIVENESS DETERMINATION: Thomas E. Adkins *Thomas E. Adkins* (*Signature*) 11/28/01 (*Date*)

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☐	

APPROVAL

APPROVED BY: Jon R. Rupert *for Chandhar* (*Signature*) Engineering & Technical Services (*Title* / *Organization*) 11/30/01 (*Date*)

CECC-EPIP-9
EMERGENCY ENVIRONMENTAL RADIOLOGICAL MONITORING PROCEDURES
REVISION LOG

Rev. No.	Date	Revised Pages
0	3/22/88	All (Changed from IPD to EPIP)
1	07/08/88	Pages 1 & 2, Page 3 of App. E, Page 4 of App. G, Page 3 of App. I
2	4/26/89	All
3	5/15/90	All
4	07/02/90	1, 2, 5, Att. A, pg. 1; Added Att. R (pgs. 1-4)
5	11/09/90	Pages 4 & 5
6	12/11/90	Page 4 (only)
7	03/25/91	All (*Title changed)
8	10/25/91	All
9	5/15/92	All
10	11/25/92	All pages revised to issue instructions for use of new scalers which are being placed in the environmental monitoring vans.
11	06/15/93	Pages 4, 5, 9; Att. I, pg. 1; Att. J, pg. 1; Att. K; pg. 1; Att. M, pg. 1, Att. Q, pg. 1; Att. R, pg. 2; all other pages reissued.
12	11/09/93	2-8; 10-11; Att. A, pg. 1-4; Att. B, pgs. 1-5; Att. C, pg. 1; Att. D, pg. 1; Att. E, pg. 1; Att. F, pg. 1, 3; Att. G, pg. 1; Att. I, pg. 1; Att. L, pgs. 1-4; Att. M, pg. 1; Att. N, pg. 2; Att. O, pg. 1; Att. Q, pg. 1; Att. R, pgs. 1-2, 5.
13	11/30/93	Pgs. 1, 4-8, 10-13; Att. A, pg. 4; Att. G, pg. 1; Att. H, pgs. 1-2; Att. I, pg. 1; Att. J, pg. 1; Att. K, pg. 1; Att. L, pg. 4; Att. M, pg. 1; Att. O, pg. 1; Att. S, pgs. 1-2.
14	11/22/94	All
15	05/23/95	All
16	01/04/96	Procedure issued in new format which included in some cases altering the order of statements, editorial changes, and addition of boxes and shading to high light of statements. Additional updating was performed on pages 3, 4, 5, 7, 12, 14, 16, 17, 19, 21, 22, 23, 36. All pages issued.
17	12/9/96	1-4, 6-11, 13-19, 21-25, 28-30, 32-39. Changes per annual review. All pages issued.
18	12/23/97	7, 12, 15, 23, 25, 30, 34, 35 and 36. Update map rev. level, update telephone number, update air sampler instructions, update Barium source chart, change field team form so social security numbers are not read over the radio, update inventory checklists. All pages issued.

CECC-EPIP-9
EMERGENCY ENVIRONMENTAL RADIOLOGICAL MONITORING PROCEDURES
REVISION LOG

Rev. No.	Date	Revised Pages
19	10/27/98	Delete references to TAC backup radios, area code changes, delete reference to BLN HP radio transmitters, revise air sampler operation instructions, add reference for Iodine concentration, revise sample parameters for soil and snow samples, revise air sampling instructions, add statement for van crew to take any attendant respirator eye ware, update Ba-133 check source table, clarify items for RMCC and courier kits. AI pages issued.
20	12/21/99	Change "Attachments" to "Appendix". Update Ba-133 check source decay charts. Editorial changes. All pages issued.
21	6/15/00	Annual review, editorial changes, remove reference to BLN repeaters, remove requirement to keep copy of latest inventory check in vans, indicate new packaging for KI remove reference to second Bicron Analyst/NaI set.
22	12/27/00	Update Barium Source Activity Chart on page 23. All pages issued.
23	11/09/01	Clarify SRMAC definition, clarify courier instructions, provide information concerning how sampling points are to be used, indicate dates of interim map changes, update BFN Stack release table per CECC-EPIP-8 changes, update Barium Source Activity Chart, update field team forms based on training feedback comments, add fire extinguisher information to inventory forms and other minor equipment or supply additions, minor editorial changes. All pages issued.
24	11/30/01	Clarify initial site boundary survey, pp. 6, and App. B. Added information on GPS units page 7 and added Appendix N. Revised data forms to include data column for GPS Bearing degrees on Appendix F, G, H, I. Added GPS as line item on van inventory , page 33, Appendix J.

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Appendix B: Monitoring Team Activation / Shift Turnover

Appendix C: Scaler Set-Up

Appendix D: Dose Log

Appendix E: Emergency Authorizations

Appendix F: Dose Rate Measurements

Appendix G: Air Sample Data Form

Appendix H: Terrestrial and Fixed Monitor Samples

Appendix I: Environs Monitoring Record

Appendix J: Monitoring Team Vehicle Inventory

Appendix K: WARL Screening Van Inventory

Appendix L: Field Coordinator Kit Inventory

Appendix M: Courier Kit Inventory

Appendix N: Global Positioning Satellite Unit Operation

1.0 PURPOSE

This procedure describes environmental radiological monitoring during or after an emergency at a TVA nuclear facility.

2.0 SCOPE

This procedure provides instruction for environmental monitoring under the direction of the plant Radiological Control (RADCON) staff, the Central Emergency Control Center (CECC) or the Radiological Monitoring Control Center (RMCC).

The location term SRMAC (State Radiological Monitoring Assessment Center) is referenced in the Alabama Radiological Emergency Response Plans for Nuclear Plants. For the purpose of this procedure, it is considered synonymous with the term RMCC.

Checklists and instructions for the inspection, inventory and use of field equipment are also included within this procedure. Several sequences or options may be used to obtain the same results with equipment operation or sampling techniques. Only one method will be discussed in this procedure.

3.0 ACTIVATION

OPTIONAL: At an Alert or Unusual Event classification.

MANDATORY: At a Site Area Emergency or General Emergency unless directed otherwise by the Site Emergency Director.

3.1 Command and Control

As emergency response facilities become operational, command and control shall progress from the Site RADCON staff to the CECC and RMCC. The CECC Environs Assessor has responsibility for control of environmental monitoring efforts.

Since the time of operational status of facilities may vary, instructions may generically refer to "Field Control".

3.2 Site RADCON staff

- Shift Supervisor to dispatch Environs Monitoring Teams using **Appendix A.**
- Record field data on **Appendix I.**

A quick reference Table of Contents is provided at the front of this procedure for detailed instruction on emergency authorizations, dose control and field monitoring strategies and priorities.

Ensure that any DOSE RATE or AIR ACTIVITY survey results are PROMPTLY reported to assist in determining emergency classification levels by the Site Emergency Director. Report survey locations as a distance and direction.

Anticipate contact by the CECC Environs Assessor to coordinate a turnover of field control. The transfer of control should be announced on the radio. Thereafter, contact with all field team personnel should be routed through Field Control to avoid conflict of assignments.

3.3. Environs Assessor (EA) & Field Coordinator (FC)

- Activate per CECC EPIP-7 if not already done.
- Record field data on **Appendix I.**

A quick reference Table of Contents is provided at the front of this procedure for detailed instruction on emergency authorizations, dose control and field monitoring strategy and priorities.

Ensure that any DOSE RATE or AIR ACTIVITY survey results are PROMPTLY reported for considerations on declaration of emergency classification levels by the Site Emergency Director. Report survey locations as a distance and direction.

If reporting to a RMCC obtain a FC kit from the CECC. Ask CECC Emergency Preparedness staff if other equipment needs to be taken to the RMCC (fax, etc.).

BFN RMCC = Morgan County Courthouse basement, Decatur, AL
SQN RMCC = Air National Guard Armory, Lovell Field, Chatt., TN
WBN RMCC = TEMA Operations Center, Alcoa, TN

Upon arrival at the RMCC, establish TVA phone, radio and fax machine communication.

Ensure other field monitoring support staff are adequately briefed on their expected roles (Courier, Fixed Monitor Retrievers, Field Support).

Direction and control of all field operations shall be limited to one individual on the radio.

3.4 Environs Monitoring Teams

- Activate per **Appendix B.**
- Record field data on **Appendixes F** (dose rates), **G** (air) **and H** (terrestrial).

Use column heading numbers for communication of data. Report survey locations as a distance and direction, and if applicable, the sample point. Command centers need distance and direction for decision logic.

A quick reference Table of Contents is provided at the front of this procedure for detailed instruction on radiological protection, equipment operation and sampling techniques.

3.5 Screening Van team

Obtain dosimeters (TLD and 200 mrem self-reading dosimeter). Prepare the vehicle for departure according to WARL procedures. Establish radio contact with the field team control to ascertain team member dose information and obtain assignment.

3.6 Courier

Couriers transport radioactive samples or deliver personnel, supplies and equipment. Courier personnel shall be familiar with concepts for basic radiation protection. The Courier should avoid plumes or radioactivity contaminated areas due to interface requirements outside the affected area, but may do so at the discretion of Field Control.

Obtain a radio equipped vehicle. If needed, a Courier Kit and sample transport containers can be provided by Corporate Emergency Preparedness.

Obtain briefing from the Environs Assessor or Field Coordinator.

Prior to deployment into the EPZ or receiving samples, don dosimeters (TLD and 200 mrem self-reading dosimeter). Re-zero as necessary.

A quick reference Table of Contents is provided at the front of this procedure for detailed instructions (emergency phone numbers, inventory lists and operation of equipment).

Upon arrival at the vehicle, establish radio contact with the CECC Environs Assessor or RMCC Field Coordinator.

Obtain the appropriate maps and sample point description book from the Courier Kit for ready reference.

3.7. Fixed Monitor Retrievers

Fixed Monitor Retrievers collect specific samples and environmental TLDs as requested by Field Control. Their duties are similar to non-emergency responsibilities.

Obtain job-specific supplies and equipment and establish communication with the Environs Assessor/Field Coordinator.

Refer to Table of Contents (front of procedure) for detailed instruction on emergency authorizations, dose control and field monitoring techniques and equipment operation.

4.0 FIELD OPERATIONS

4.1 Priorities

During the early phases of a radiological emergency when protective actions must be initiated quickly to be effective, environmental measurements used to calculate the inhalation dose commitment rate to the thyroid and the total body external gamma dose rates to the general public are the most important.

Knowledge of radiological conditions at the site boundary and at a distance of 5 miles out from the plant are critical for decisions on emergency classifications and for Protective Action Recommendations to the State.

Environs Monitoring Teams shall perform their tasks according to the following priorities unless directed otherwise by Field Control:

1. The first team to activate shall promptly obtain dose rate measurements along the designated site boundary at the down wind areas (see 2 mile map) to obtain site boundary survey prior to scaler set-up.

2. Upon detection of plume immersion, collect and analyze an air sample for radioiodine and particulates at estimated plume centerline.

3. The second team to activate shall focus on locating the (offsite) touchdown point of the plume and collect air samples for analyses.

4. As additional teams become available, dispatch to the opposite side of the river should be considered for the contingency of (near plant) wind shifts and the travel time required.

5. Send air filter media to the screening van or WARL for further analyses as directed by Field Control.

4.2 Plume Tracking and Survey

When directed by Field Control, Environs Monitoring Teams shall traverse along the assigned route to locate the plume. Travel at approximately 20 mph (during drills, simulate reduced speed as necessary to avoid traffic hazards). Practice safe vehicle operation with attention to height limitations, safe roadside pull-offs and parking, accessing private property and use of the warning strobe lights. Secure cabinets, lead shields, and personnel seat belts prior to vehicle movement.

Sample Points (clarification for PER CRP 01-000161-000)

The intent and use of sample points has evolved in consideration of REP van upgrades and dose assessment methods. Prior to the installation of onboard gas generators in the vans, sample points with sirens were of greater value as a source of AC power. With improvements of equipment and dose assessment capability, field data is now used for comparisons with computer dose assessments, with the desired data being the actual plume centerline location, which may or may not be at a sample point.

Therefore, although sample locations are described as a particular point, sample points should be used as a reference to a vicinity where plume search and traverse is begun (pin-point accuracy is not essential). This is why our ability to communicate survey locations using distance and direction is more important. Global Positioning Satellite (GPS) units are an available tool to supplement our field navigation using the sampling point maps. GPS instructions are provided in Appendix N.

In regard to timeliness during plume monitoring the expectation is for monitoring without delay when requested. However, the need to backtrack your travel path to confirm a location is not considered a delay. Examples include backtracking to confirm a peak radiation (centerline) level, or to continue down the road to locate a crossroad or reference point. And as always, road safety should never be compromised.

Monitor the survey meters (open and closed beta shields) to determine plume immersion versus shine.

- Record and report data per **Appendix F.**

Report "Plume Traverse" readings at the estimated PLUME CENTERLINE. If instructed to survey plume edge, report EDGE. If the centerline cannot be determined (i.e., if required to turn back with rates still increasing), report plume location as UNKNOWN.

NOTE: If less than 2 mrem/hr, report Geiger-Mueller Survey Meter (GMSM) measurements. If greater than or equal to 2 mrem/hr, use measurements from the Ion Chamber Survey Meters (ISM).

If plume immersion is suspected, the following ALARA practices are recommended if surveys are requested: (1) stop vehicle and obtain ISM "Plume Traverse" measurements by placing the meter against the opened air sampling portal, (2) obtain "Near Ground" surveys by use of the rear air lock exit.

4.3 Sample Point Maps (latest revision levels)

Map	Rev.	Date	Interim Change Date
BFN 2-mile	2	1 July 1994	08/02/2001
BFN 10-mile	2	16 May 1994	None
BFN 50-mile	2	1 July 1994	None
SQN 2-mile	1	16 December 1994	07/13/2001
SQN 10-mile	1	1 February 1994	None
SQN 50-mile	1	30 June 1991	None
WBN 2-mile	2	1 October 1997	08/02/2001
WBN 10-mile	1	20 May 1993	None
WBN 50-mile	2	30 August 1993	None

4.4 Radio Protocol

NOTE: During drills or exercises, all personnel should state "THIS IS A DRILL" when transmitting simulated radiological or plant accident conditions, or other information which may cause public concern if it were monitored. Use of "repeat-back's" and phonetic alphabets are recommended.

Maintain communication with field team control according to the following sequence. Use the vehicle's external speaker during exits.

1. Motorola mobile radio (with repeater activated frequencies)
2. Cellular phone
3. Leave area of hazard and contact by public phone

The following call signs are designated for field operations:

Base Stations	Mobile Units
CECC	Truck # (monitoring vehicle)
Site TSC	Screening Van
Site Plant Lab	Courier
RMCC	Portable # (misc.)

4.5 Routine Dose Control

The dose of personnel during emergency operations shall be maintained As Low As Reasonably Achievable (ALARA).

CAUTION!: Personnel should be aware of potential rapidly changing conditions.

For purposes of this implementing procedure, radiation exposure as expressed in units of R and subunits, thereof, is equivalent to dose (rad) and dose equivalent (rem) based on ANSI N 13.11 development and terminology. Any acute dose greater than 10 rem is generally denoted in units of rad, since that level is considered as the accident range of personnel exposure. Any dose less than that level is considered the protective range of personnel exposure. For purposes of this procedure the assumption of 1 rad = 1 rem is assumed for all levels of exposure.

Field personnel shall report their self-reading dosimeter readings to Field Control at approximately every 100 mrem increment and record doses on **Appendix D**.

Until isotopic assessments of airborne radioactivity are available, the CECC Environs Assessor shall apply an administrative correction factor of 2 to estimate TEDE doses in airborne radioactivity areas:

Estimated TEDE = dosimeter reading x 2

When accident specific radionuclide assessments are available, dose assessment activities should be performed to adjust the correction factors.

Personnel shall advise Field Control when TEDE doses (including pre-emergency doses) approach their individual dose limits. Limits used for declared REP emergency events are based on 10 CFR 20, versus TVA administrative levels. Perform this notification early enough to allow exit from the area prior to exceeding any limits, if higher doses are not authorized.

- Dose limits are to be listed on **Appendix D**.

- Take protective actions listed in **Appendixes F, G and I.**

The Environs Assessor shall coordinate appropriate post exposure dose assessments for field personnel.

4.6 Emergency Dose Limits

The dose of personnel during emergency operations shall be maintained As Low As Reasonably Achievable (ALARA). If circumstances require field personnel to remain in a radiologically hazardous area, higher whole body dose limits may be authorized. Any decisions to embark on emergency operations which would result in doses in excess of 10 CFR 20 should be done in consultation with the most senior member of RADCON who is available on a timely basis.

Emergency Dose Authorizations

- The SED authorizes if field teams are under control of the site.
- The CECC RAM authorizes if teams are under the control of the CECC (The RAM shall inform the CECC Director and TSC RADCON Manager)
- Document authorization and acceptance of emergency dose on **Appendix E**.

Receipt of emergency dose above normal limits shall be on a voluntary basis. Other factors being equal, older volunteers should be selected first. In addition, selection of female volunteers capable of reproduction should be avoided if other volunteers are available.

The use of respiratory protection equipment and protective clothing should be considered to minimize personnel contamination. Personnel shall not enter any area where dose rates are unmeasureable with instruments and dosimetry (i.e., offscale high reading).

Personnel receiving emergency doses shall be informed of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred, and numerical estimates of the risk of delayed effects. Recipients shall acknowledge review of this information (located on Appendix E, page 2 of 2) by signature on **Appendix E**. Dose under these conditions shall be limited to once in a lifetime.

For Lifesaving or Protection of Large Populations the limit is 25 rad TEDE, (when lower dose is not practicable). In this situation, the limit for lens of eye is 75 rad, or three (3) times the TEDE value. The limit for any other organ (including skin and body extremities) is 250 rad, or ten (10) times the TEDE value.

NOTE: Situations may occur in which a dose in excess of 25 rad would be required for lifesaving operations. It is not possible to prejudge the risk that one person should be allowed to take to save the life of another. However, persons undertaking an emergency mission in which the dose would exceed 25 rad to the whole body should do so only on a voluntary basis and with full awareness of the risks involved.

For Protection of Valuable Property the limit is 10 rem TEDE (when lower dose is not practicable). In this situation the limit for lens of eye is 30 rad, or three (3) times the TEDE value. The limit for any other organ (including skin and body extremities) is 100 rad, or ten (10) times the TEDE value.

4.7 Potassium Iodide (KI)

If field personnel are expected to receive a cumulative dose to the thyroid (from inhalation of radioactive iodine) which might exceed 10 rem, then a dose regimen of Potassium Iodide (KI) should be considered. Since Environs Monitoring teams have the greatest potential need for thyroid blocking, KI should be administered at the time of initial dispatch. This action would allow absorption of the KI prior to the exposure. Authorization shall be provided by the most senior member of RADCON who is available on a timely basis. Otherwise, teams are granted authorization by this procedure to self-administer KI in accordance with the TVA Protective Action Levels on **Appendixes F, G, and I**. Field Control is to be immediately informed of such action.

The decision of KI for field team members other than Environs Monitoring Teams shall be based upon their needs. The CECC Environs Assessor has the responsibility to authorize the administration of KI for field staff under CECC control. The Environs Assessor shall inform the CECC RAM of that action. The person authorizing the issuance of KI shall be familiar with the Food and Drug Administration's approved package insert and ensure each recipient is similarly informed.

- Document the authorization and acceptance of KI on **Appendix E.**

4.8 Contamination Control

Use equipment and materials to identify contamination and minimize its spread to personnel and the vehicle interior. Interior air-lock door should remain closed. Exercise precautions with use of personal protective equipment, such as respirators against adverse impacts to safe vehicle operation. Place contaminated clothing and waste in plastic bags and store in the van until arrangements can be made for final disposal. Contact Field Control for arrangements with personnel and vehicle decontamination.

5.0 COMMUNICATIONS

5.1 Primary Motorola Radio

CAUTION!: Avoid radio damage caused by operating two mobile units which are closer than a few hundred feet. If a backup radio is used, turn the primary radio off.

The **POWER** switch is on the bottom right side of the front control unit.

Select transmitters with **MODE** switch. Selections are programmed in the following order:

1. WILSON - BFN	4. deleted	7. MONTLKE - SQN
2. BRINLEY - BFN	5. deleted	8. OSWALD - WBN
3. MONTE S - BFN	6. SIGMTN - SQN	9. RSVLT - WBN

VOL adjusts the volume, (range 1-15 with normal volume around 10).

SQL button on keypad unsquelches radio. Press SQL momentarily to display "MONITOR ON" to allow channel monitoring. Display alternates between "MONITOR ON" and "MONITOR OFF".

SQL also used to set the squelch level (0-4). Depress SQL and hold until the beep, then adjust up or down using the MODE switch. Then press HOME to return to normal operation. Repeat adjustment to the minimal level at which continuous static is eliminated.

HOME button returns the unit to normal operation after adjustment of squelch. HOME button also returns the unit to the first transmitter in the programming sequence.

DIM adjusts brightness of the display (four levels with one off).
The primary position for the **DIR** button should be with the red light OFF (unit will now automatically activate the repeater).

F/R switch is for activation of either the front/rear control. "REMOTE" or "REAR" display indicates the other control head is operational. Depressing the F/R button repeatedly alternates the front and rear control function.

The **SCAN, EMER** and keypad keys are not operational.

Use Microphone keypad for entry of radio-phone patch numbers.

NOTE: Ensure the active repeater is displayed (versus "REMOTE" or "REAR") prior to attempting data transmission.

5.2 Cellular Telephones

Depress **PWR** [power]. If unit reads "*Loc'd*", enter the unlock code of "*REP*" or *737*.

To use unit as a speaker phone (hands-free operation) leave unit in the cradle. The microphone is mounted above the driver's window.

- To answer a call, press **SND**.
- To hang-up, or clear a number, press **CLR/END**.
- To place a call, enter number then press **SND** [send]. If calling long distance, dial the area code with the number (use of "0-" or "1-" may vary with location).

- 24 hour assistance: Public telephone 1-800-922-0204, From vehicle 611

5.3 Important Phone Numbers

Location	Phone	Phone	Fax Machine
CECC Environs Assessor	423-751-1623	423-751-1624	423-751-1681
BFN RMCC	423-751-1672	256-351-0441	256-355-1680
SQN RMCC	423-899-9858	423-751-1676	423-855-0190
WBN RMCC	423-981-5608		865-981-5632
BFN TSC RADCON	256-729-3767	256-729-3763	256-729-3742
SQN TSC RADCON	423-843-6472		423-843-6461
WBN TSC RADCON	423-365-8606	423-365-8608	423-365-8365
CECC Operations Duty Specialist (24 hr)	423-751-1700	800-237-2322	
TVA Police (to report accidents)		800-824-3861	

Vehicle Cellular Phones		
CECC Truck 1	TV-44062	423- 240-6267
SQN Truck 2	TV-44063	423- 240-6268
SQN Truck 3	TV-44053	423- 667-4921
WBN Truck 4	TV-44054	423- 667-4918
BFN Truck 5	TV-44084	256- 508-4872
BFN Truck 6	TV-44052	256- 656-9623
Screening van (voice & fax)	TV-44019	256- 740-1566

5.4 HP Radio System Phone Patch

To place a telephone call from a mobile radio:

Enter proper access code and wait for a dial tone (if no tone, depress # to clear command and restart).

Access Code	Transmitter Locations	Plant Site/Local Area
"*" 01	Wilson Hydro Plant	BFN/Muscle Shoals
"*" 02	Brinley Mountain	BFN/Decatur
"*" 03	Monte Sano	BFN/Huntsville
"*" 06	Signal Mountain	SQN/Chattanooga
"*" 07	Montlake	SQN/Soddy-Daisy, Dayton
"*" 08	Oswald Dome	WBN/Cleveland, Athens
"*" 09	Roosevelt Mountain	WBN/Spring City, Rockwood

After the dial tone, dial "9" for a second dial tone.

Depress "1" + (Area Code) + 7 digit number + "*". (Chattanooga calls may not require long distance area code.)

Depress "#" to disconnect (hang up).

6.0 ELECTRICAL POWER SUPPLIES

Circuit breakers for the vehicle's electrical system are located in a gray breaker box inside the cabinet 8. Additional circuit breakers for the onboard generator are located on the rear facing side of the generator housing.

CAUTION!: Avoid contact with unshielded energized components.

6.1 Vehicle-Installed Generator

Place **GENERATOR-SHORE POWER** switch to the ***neutral*** position to avoid attempted starts under load.

Depress generator **START/STOP** button, and hold until the engine is running.

Place **GENERATOR-SHORE POWER** switch to the ***generator*** position.
Primary vehicle outlets are now supplied power.

The onboard generator may be run continuously during vehicle operation, using the vehicle tank for fuel. If the generator is no longer needed, depress the **START/STOP** button and **hold** until the engine stops completely.

6.2 **DC to AC Power Inverter** **(back up use only)**

Ensure vehicle engine is running and **MASTER** switch on the front console is ON.

Place the **INVERTER** switch, located on the cabinet door panel, to the ON position.

> If power to the wall outlets is not available, ensure the **DC Input Circuit Breaker** switch on the inverter panel face is in the ***ON*** position and ensure the **ON/OFF switch** is in the ***OFF*** position (units run on remote hookup setting).

6.3 **TVA Siren**

> ***CAUTION!:*** **Beware of wasps in the power outlet boxes and potential electrical hazards such as wet ground!**

Unlock outlet box using key # 0896. Check Ground Fault Interrupter breaker status.

6.4 **Honda Generator** **(EX1000)**

Remove generator from vehicle, add fuel as necessary and attach **Ground Fault Interrupter** (GFI) cord to generator socket.

Slide **ENGINE** switch, on front of unit, upward to ***ON.***

Push **CHOKE** lever, on rear of unit, in direction of arrow to ***CLOSED***.

Pull start cord and prevent it from snapping back against unit.

Turn the **CHOKE** lever to ***OPEN*** as the engine warms up.

7.0 AIR SAMPLING

7.1 **Preparation for Plume Air Sample**

> ***CAUTION!:*** **Silver Zeolite has a heat-up/explosive potential and may require disposal as a mixed waste.**

Load head with a Silver Zeolite cartridge, marked to indicate direction of the air flow.

Install a prefilter (rough side out).

Position the vehicle so that the air sample port is toward the plant or upwind direction.

Record 1-meter dose rates for the area on Appendix F. Use ISM if above 2 mrem/hr. Do not obtain near ground dose rates unless instructed.

Note: Onboard generator power fluctuations affecting flow rate may occur during simultaneous use of the roof top air conditioner unit. It may be necessary to cut the air conditioner off during sampling; or to use the AC/DC inverter as the power source. If power is interrupted during a sample collection, the unit will display the collected sample data upon restoration of power.

7.2 Radeco H810 Air Sampler - GRAB SAMPLE

Grab Sample: 5 minute run at 60 LPM (2 CFM) flow rate

Turn power ON using rocker switch on side of unit.

After display stops scrolling, depress the **CLEAR** key to reset the unit. Display should now read *"TARGET VOLUME: 300 LITERS"*.

Depress green **START** key to begin sample collection, then following the message *"WARM UP DELAY IN PROGRESS"*, observe the display to confirm the desired flow rate of 60 LPM. Adjust as necessary using the recessed slotted screw head above the on-off switch. To perform adjustments, turn the slotted screw head clockwise to increase flow rate and counter-clockwise to decrease flow rate. Since the digital display is very accurate, a flow rate $\pm$ 6 LPM (10%) is satisfactory. Close cabinet door during sampling.

Sampler will automatically shut off upon collection of pre-set volume (300 Liters).

7.3 Radeco H810 Air Sampler - CONTINUOUS RUN

Continuous Run: 30 LPM (1 CFM) flow rate

Turn power ON using rocker switch on side of unit.

After display stops scrolling, depress the **CLEAR** key to reset the unit. Display should now read *"TARGET TIME XXXX" or "TARGET VOLUME XXXX"*.

Depress green **START** key to begin sample collection, then following the message *"WARM UP DELAY IN PROGRESS"*, observe the display to confirm the desired flow rate of 30 LPM. Adjust as necessary using the recessed slotted screw head above the on-off switch. To perform adjustments, turn the slotted screw head clockwise to increase flow rate and counter-clockwise to decrease flow rate. Since the digital display is very accurate, a flow rate $\pm$ 3 LPM (10%) is satisfactory.

Depress STOP key to end sample.

7.4 Analysis of Air Sample

Close sampling portal and cabinet door at end of sampling. If using a power inverter, turn it OFF when not in use.

Relocate as necessary for ALARA purposes prior to continuing.

Remove the cartridge and seal it in plastic wrap. Be cautious of cartridge heat up and the effect on the plastic wrapping. Survey the cartridge with a GMSM (beta shield closed).

If $\leq$ 1 mrem/hr, analyze with the NaI detector, record data on **Appendix G, column 12**.

If > 1 mrem/hr, do **NOT** analyze with the NaI detector. Advise Field Control and approximate iodine concentration using the formula below:

$$\mu \text{ Ci/cc} = \frac{\text{Average Front \& Back contact rate (mrem/hr)} \times 5.1 \times 10^{-3}}{\text{Sample Volume in Liters}}$$

Note: Formula referenced in RIMS L91 880217 801

Remove the prefilter with tweezers, and survey using the Bicron Surveyor 50.

If $\leq$50,000 CPM, analyze in GM detector, record data on **Appendix G, column 13.**

If >50,000 CPM, do **NOT** analyze in the GM detector. Contact Field Control for instructions.

Label and package all samples for transfer to the Courier. (Refer to section 8.5).

Report data per **Appendix G**. Report results as "Less than MDA" if below values and background rates listed on **Appendix G**.

Note: Minimum Detectable Activities for Bicron Analysts per memorandum to C. D. Pond, from J. L Lobdell, dated March 28, 1995 (RIMS L91 950328 800). **Do not delete!**

8.0 TERRESTRIAL SAMPLES

8.1 Vegetation Sample

If possible, avoid sampling an area sheltered by trees and obtain samples which are representative of the pasturage where the grass depth is as close to uniform as practical.

RECORD a one-meter GMSM window-closed measurement on a sample label.

Using grass cutters, cut grass near the ground. Avoid pulling up grass since roots are not desired. Pack a marinelli beaker to obtain as large a mass as practical. The sample parameter is activity per kilogram.

Seal the beaker cover with electrical tape, keeping the tape slightly stretched while wrapping.

Affix a sample label with the date, time, location, sample type, exposure rate at one meter above ground and the initials of the collector.

Repeat the sampling process, placing the second sample in a zip-lock plastic bag instead of a beaker. Label in the same manner, using a separate sample number.

8.2 Soil Sample

Soil samples should be collected from areas that are relatively free of vegetation, rocks and roots. If vegetation cover can not be avoided, it should be sampled with the soil and the analytical results combined to measure the total deposition per surface area.

RECORD a one-meter GMSM window-closed measurement on a sample label.

Prepare the hole cutting tool (approx. 4.25 inches in diameter) to obtain the soil sample by adjusting the collar above the cutting tube for a 2 or more inch cutting depth.

Collect 5 core samples from a square meter area (4 corners and 1 center). The desired sample parameter is square meters, do not obtain more or less core samples.

Note: 5 core diameters equals 0.046 square meters. Screening van/fixed lab may multiply activity/sample results by 22 to obtain activity/square meter).

The correct sample depth is obtained by pushing the core tool fully into the ground, and removing the top one centimeter (about one-half inch) from the top of the core (using the putty knife) as the sample retained.

If the soil is too dry or sandy to allow coring, use the shovel or putty knife to collect material about one centimeter deep (approx. 1/2 inch) in the pattern described above.

Place the sample in a marinelli beaker and seal with electrical tape. Affix a sample label with the date, time, location, sample type, sample area, dose rate at one meter above ground and the initials of the collector.

Repeat the sampling process, placing the second soil sample in a large zip-lock plastic bag instead of a beaker. Label in the same manner, using a separate sample number.

8.3 Snow/Ice Sample

RECORD a one-meter GMSM window-closed measurement on a sample label.

Set the core tool for a 4 inch depth. Collect 5 core samples from a square meter area (4 corners and 1 center). The sample parameter is surface area, do not obtain more or less core samples. Ascertain the desired sampling depth from the Environs Assessor, based upon meteorological history.

Note: 5 core diameters equals 0.046 square meters. Screening van/fixed lab may multiply activity/sample results by 22 to obtain activity/square meter).

Place the snow/ice in double plastic bags. Check bags for leakage.

Take a second sample (new sample number) approximately 3 meters from the first by repeating the above steps.

Affix a sample label to both samples.

After the snow/ice melts, pour each sample into separate sample jugs and transfer the sample labels to the jug(s). The funnel in cabinet 10 may be useful for filling the jug.

NOTE: Instructions for sampling of snow and ice are required per INPO SOER 83-002, "Steam Generator Tube Ruptures", recommendation 11. WBN TROI ID: INPO SOER 83-002, August 22, 1994. . **Do not delete this reference!**

8.4 Other Samples

RECORD a one-meter GMSM window-closed measurement on a sample label.

Any liquid sample container shall be placed in double poly bags with absorbent material.

Outside bags/container of samples should be dry, non-contaminated, labeled and if necessary display a caution radioactive material tag.

Certain types of environmental samples (i.e., rainwater, milk, food crop, fodder and feed, well water) may be requested by Field Control to assist State activities. The minimum sample quantity, type of container and any special controls will be defined dependent on the needs of the situation.

8.5 Sample Identification and Labeling

Each sample shall be tagged with an identification label containing the following appropriate data:

Sample Number	Sample Type
Sampling Start and Stop Time	Sampling Flow Rate
Location sampled	Time/Date
Name of the Collector	Sample Area (if applicable)

The sample number is composed of the abbreviation of the Truck number (T2-xx), assigned to the vehicle followed by a dash and the consecutive number of the sample and type of sample (i.e., T2-1I, T2-1P). This is important to avoid confusion with State collected samples which may be labeled as "S-#", **(T =T VA, S = State).**

8.6 Isotopic Analysis of Samples

Isotopic analysis of samples may be provided by the screening van or by WARL. Analysis results are to be reported to the Environs Assessor and Field Coordinator.

9.0 OPERATIONAL READINESS - (Equipment and vehicles)

As a minimum, inspections/inventory checks shall be completed each calendar quarter. Additional inspection guidelines may be contained in location-specific procedures.

9.1 Monitoring Team Vehicles

- Inventories and inspections shall be in accordance with **Appendix J.**
- Inspection checklists shall be forwarded to the applicable site Emergency Preparedness (EP) Manager prior to the end of the calendar quarter.

A site-specific method of providing accountability control of equipment and materials between inspections shall be practiced. Inventories shall be completed after drills, training, or emergency use. The training instructor is responsible for inventories following training activities and the RADCON organization is responsible for inventories following drills or emergency response. In either case, a signed inventory form with comment confirming the vehicle was returned in the "as found" condition is sufficient. These inventories shall be forwarded to the Site EP Manager prior to the end of the calendar quarter.

9.2 Screening Van Equipment

A screening van is stationed at the Western Area Radiological Laboratory (WARL). Inventories and inspections shall be performed in accordance with **Appendix K**.

9.3 Field Coordinator Equipment

A Field Coordinator Kit is available at BFN and the CECC. Inventories and inspections shall be performed in accordance with **Appendix L**.

9.4 Courier Equipment

A Courier Kit is available at BFN and the CECC. Inventories and inspections shall be performed in accordance with **Appendix M.**

10.0 REFERENCES

10.1 Radiological Emergency Plan.

10.2 Collection of Environmental Monitoring Samples, SC-01, Radiological Laboratory Procedures Manual.

10.3 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654 FEMA-REP-1, Rev. 1 (1980).

10.4 "Emergency Dose Assessment Procedures for Atmospheric Releases of Radioactivity from TVA Nuclear Plants," TVA Publication RH-82-1-RA1 (1984).

10.5 "Evaluation of Radiation Emergencies and Accidents Selected Criteria and Data," International Atomic Energy Agency, Vienna (1974).

10.6 "Manual of Protective Action Guide and Protective Actions for Nuclear Accidents", EPA-400, October 15, 1991.

10.7 Data Systems Radiological Emergency Procedures, CECC-EPIP-12.

10.8 "Domestic Licensing of Production and Utilization Facilities," 10 CFR 50.

10.9 TVA CECC EPIP-7, CECC RADIOLOGICAL ASSESSMENT STAFF PROCEDURE FOR ALERT, SITE AREA EMERGENCY, AND GENERAL EMERGENCY

10.10 INPO SOER 83-002, "Steam Generator Tube Ruptures", recommendation WBN TROI ID: INPO SOER 83-002, August 22, 1994.

10.11 "Standards for Protection Against Radiation", 10 CFR 20.

Appendix A

Plant Lab Dispatch

1. Select two qualified persons per team and instruct them to complete Appendix B.

Qualifications

Environs Monitoring Van training	Radiation Worker Training (or equivalent)
Use of full face respiratory protection	Valid Driver's License

NOTE:	Environs Monitoring Van training is not required if person is limited to vehicle driver duty under direct supervision of a fully qualified team leader.

2. For WBN emergencies immediately request a second team from SQN. Instruct SQN staff to establish radio contact with WBN upon arrival at the van (attempt both WBN repeaters, use cell phone for back up), for instructions related to the recommended travel approach to the WBN EPZ and for a recommendation on the need of KI.

3. If the response is for a plant release with known or potential radioiodine exposure, request authorization for teams to take KI prior to leaving the building (refer to section 4.7) Simulate for drills and do not take if known allergy exists.

4. **Complete the following on field personnel: (Provide to CECC for transfer of control.)**

Team Member	Social Security Number	Y.T.D Dose	10CFR20 Limit	KI Taken Yes/No	Time of KI

5. Obtain the following from the Control Room or ICS and advise teams for deployment:

Suspected Release in progress? Yes / No		Time:
Wind Direction (from)	(degrees)	(compass direction)
Wind Speed	(m.p.h)	(Note: meters/sec. x 2.2 = m.p.h)

6. As teams establish radio contact, test available transmitters to determine the best reception and advise teams of same. If reception is poor, depress "MUTE" for transmitters not selected.

7. Report field team data to the TSC per **Appendix I.**

8. Update wind direction periodically to adjust field team deployments.

Appendix B
Monitoring Team Activation / Shift Turnover

*Complete **PROMPTLY!** Emergency classifications may depend on field data.*

INITIAL DEPLOYMENT ACTIONS

- Identify which radio transmitter to use for initial contact.
- Collect keys, instruments, sources, KI and any personal respirator spider glasses.
- Request/administer KI if authorized. *Simulate for drills and do not take if known allergy exists.*
- Monitor dose rates with GMSM while enroute to truck.

⇓

UPON ARRIVAL AT TRUCK

- Don TLD, 200 mrem and 5 rem DRD. (Record DRD readings ONLY on **Appendix D.)**
- Wrap one GM probe in plastic (bag or saran wrap) and secure outside window with beta window open and facing up. Place second GM and ISM (window closed) inside vehicle.
- Establish contact with Field Control and synchronize watches.

⇓

IF YOU ARE THE FIRST TEAM TO ACTIVATE

- **DELAY** scaler set-up. Obtain updated wind direction and plant release status.
- Unless directed otherwise, immediately obtain dose rate measurements at the down wind areas along the designated site boundary route per the 2 mile EPZ map. NOTE: Wind direction may fluctuate from the reported direction, therefore, actively search for the plume and report survey results per **Appendix F**.
- Upon arrival at downwind sector, COLLECT a GRAB air sample, (I & P) even if survey meters indicate background levels. If necessary, go to a low background area to complete the remaining items below and report air sample results per **Appendixes F & G**.

⇓

COMPLETE FULL OPERATIONAL READINESS ACTIONS (or if second team to activate)

- Complete scaler set up per **Appendix C.**
- Complete **Appendix E** if KI was authorized and administered.
- Confirm the truck has at least three-quarters capacity of gas. If equipped, operate on rear tank first (generator runs off front tank).
- Contact field team control to report/confirm dose and limits, report operational status and request assignment. Note key events in logbook. If you are a van responding to another site, contact that site for instructions on the recommended travel approach and if KI is recommended.

⇓

Unless directed otherwise, the second team to activate should obtain surveys at **5 miles downwind to support SED decisions.** Refer to the table below for BFN releases.

Estimated plume maximum for BFN Stack release						
Stability Class	A	B	C	D	E	F - G
Downwind (miles)	0.62	0.62	0.62	2.0	2.0	5.0

Coordinate inventory requirements per section 9.1 at the end of shift or event termination.

Appendix C **Page 1 of 2**

Scaler Set-Up : Bicron Analyst/NaI Detector	
Name:	Analyst Serial #:
Date:	Calibration due date:

1. Perform battery check and position NaI detector in shielded pig.

2. Install cables. Set unit to: Range: x1000 Channel: 1 Response: S Audio: OFF

3. Enter a 1 minute background count: _____ counts

Note: If count time is not 1 minute, set the 1/1/10 selector inside the instrument cabinet to 1. See illustration on instrument.

4. Enter a 1 minute Ba^{133} contact count: _____ counts

5. Enter net counts: (Step 4 minus Step 3) _____ counts

6. Enter Ba^{133} activity from chart below: _____ µCi

7. Enter Step 5 divided by Step 6: _____ $\frac{\text{counts}}{\mu\text{Ci}}$

8. Enter acceptance range from instr. label: _____ to _____.

If Step 7 result is within the acceptance range, instrument is ready for use.
Record NaI correction factor from label to Air Data form.

9. If unit fails, check source position. NaI probe, cable, and Bicron Analyst are paired, DO NOT SWITCH. Contact Field Control if replacement scalers are necessary.

Barium Source Activity Chart							
Half-life 10.5 yr	2001	2002					
Source ID	Nov-Dec	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec
Ba^{133}-02-Pt84	.062	.061	.061	.060	.059	.059	.058
Ba^{133}-04-Pt84	.064	.063	.063	.062	.061	.060	.060
Ba^{133}-05-Pt84	.063	.062	.061	.061	.060	.059	.059
Ba^{133}-08-Pt84	.063	.063	.062	.061	.061	.060	.059
Ba^{133}-10-Pt84	.061	.061	.060	.059	.059	.058	.058
Ba^{133}-11-Pt84	.064	.063	.063	.062	.061	.061	.060
Ba^{133}-12-Pt84	.063	.062	.062	.061	.060	.060	.059

Appendix C **Page 2 of 2**

Scaler Set-Up : Bicron Analyst/GM Detector	
Name:	Analyst Serial #:
Date:	Calibration due date:

1. Connect cable to shielded detector and perform a battery check.

2. Set unit to: Range: x1000 Channel: Out Response: S Audio: OFF

3. Enter a 1 minute background count: _____ counts

Note: If count time is not 1 minute, set the 1/1/10 selector inside the instrument cabinet to 1. See illustration on instrument.

4. Place Tc^{99} source on planchet shelf closest to GM tube.

5. Enter a 1 minute Tc^{99} count: _____ counts

6. Enter net counts: (Step 5 minus Step 3) _____ counts

7. Enter Tc^{99} activity from source box label: _____ dpm

8. Enter Step 6 divided by Step 7: (efficiency) _____ $\frac{\text{counts}}{\text{dpm}}$

If Step 8 result is within the acceptance range of 0.06 to 0.10, instrument is ready for use. **Record GM efficiency (step 8) onto Appendix G.**

9. If unit fails, check source position. If necessary, the GM tube height can be adjusted slightly. Contact Field Control if replacement scalers are necessary.

Appendix D

Dose Log

Vehicle Call Sign: (1)_____ Social Security # _____

Name: (17)_____ Emergency TLD # _____

10 CFR 20 Limit _____ (mrem) YTD (Prior to incident) _____ (mrem)

Time	Dosimeter Reading "AS READ" (mrem) (18)	Total Incident Dose "AS READ" (mrem) (19)	TEDE Estimate "AS CORRECTED" per Field Control (mrem)

Vehicle Call Sign: (1) _____ Social Security # _____

Name: (17) _____ Emergency TLD # _____

10 CFR 20 Limit _____ (mrem) YTD (Prior to incident) _____ (mrem)

Time	Dosimeter Reading "AS READ" (mrem) (18)	Total Incident Dose "AS READ" (mrem) (19)	TEDE Estimate "AS CORRECTED" per Field Control (mrem)

CAUTION: BE ATTENTIVE TO PROTECTIVE ACTION LEVELS.

Appendix E

Emergency Authorizations

1. Emergency Dose Limits

The persons listed below acknowledge they have volunteered to receive an emergency dose, have been briefed on the emergency situation, and are aware of possible consequences of being exposed to a radiation dose up to the authorized limits (see page 2 of 2).

Signature	Social Security #	Limit	Date

AUTHORIZED BY: _____ _____ _____
(Name and title) (Date) (Time)

2.0 Issuance of Potassium Iodide (KI)

The persons listed below acknowledge they have been authorized to take KI on a voluntary basis and have read and understand the information provided on the Food and Drug Administration approved package insert.

Approved Dose: 1 tablet (130 mg) per day

Signature	Social Security #	Time Taken	Date

AUTHORIZED BY: _____ _____ _____
(Name and title) (Date) (Time)

Appendix E

Emergency Authorizations

EPA EMERGENCY DOSE RISK INFORMATION

I.

Health Effects Associated with Whole Body Absorbed Doses Received Within a Few Hours[1]				
Whole Body Absorbed Dose (rad)	Early Fatalities[2] (percent)		Whole Body Absorbed Dose (rad)	Prodromal Effects[3] (percent)
140	5		50	2
200	15		100	15
300	50		150	50
400	85		200	85
460	95		250	98

[1] Risks will be lower for protracted exposure periods.
[2] Supportive medical treatment may increase the dose at which these frequencies occur by approximately 50 percent.
[3] Forewarning symptoms of more serious health effects associated with large doses of radiation.

II.

Approximate Cancer Risk to Average Individuals from 25 rem Effective Dose Equivalent Delivered Promptly		
Age at Dose (years)	Risk of Premature Death (deaths per 1,000 persons exposed)	Average years of life lost if premature death occurs (years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

Note: Tables referenced from the Environmental Protection Agency's "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", (EPA-400), May 1992, tables 2-3 and 2-4., page 2-12.

DOSE RATE MEASUREMENTS

GMSM #	ISM #	Surveyor 50 #
GMSM #	ISM #	Surveyor 50 #
Date	Team Members	

REPORT COLUMN NUMBERS FOR TYPE OF SURVEY
1 thru 7 = Plume Traverse
1 thru 10 = Stationary Survey

①	②				③	④	⑤	⑥	⑦	⑧	⑨	⑩
TEAM #	LOCATION SAMPLE POINT	DISTANCE MILES	DEGREES BEARING	FROM	TIME TAKEN	PLUME E C ?	GM or ISM	1 METER mrem/hr W / Closed	W / Open	GM or ISM	CONTACT mrem/hr W / Closed	W / Open

TVA PROTECTIVE ACTION LEVELS

1 A.	Any exposure rate > 25 mrem/hr and radioiodine (I-131) air activity is not known.	1A.	Potassium Iodide (KI) recommended, notify Field Control.
1 B.	Any measured dose rate > 200 mrem/hr.	1 B.	Evacuation recommended, notify Field Control.
1 C.	Any measured dose rate > 10 rem/hr.	1 C.	Evacuation mandatory, notify Field Control.
2 A.	TEDE dose of 5 rem.	2 A.	Evacuate unless higher dose is authorized, notify Field Control.
2 B.	TEDE dose of 25 rad.	2 B.	Evacuation mandatory, notify Field Control.

AIR SAMPLE DATA

Date:	Na I Scaler #	GM Scaler #:
Grab Air Sampler #	Na I Correction Factor:	GM Efficiency:
Cont. Run Sampler #	^{131} Iodine MDA = 2.0 E -9 (if bkg. < 255)	Particulate MDA = 2.0 E -9 (if bkg < 276)
Team Members	^{131} Iodine µCi/cc = (CPM) (Correction Factor) / volume in liters	Particulate µCi/cc = (CPM) (4.505 E -10) / (efficiency) (volume in liters)

(1)	(2)			(3)				(4)	(16)				(12)	(13)
TEAM #	LOCATION Distance	Bearing	degrees From	Start Stop	Run Time	Flow LPM	Sample Vol.-L	Plume E C ?	Sample ID	Counts Rates in CPM Bkg.	Gross.	Net	^{131} Iodine µCi/cc	Particulate µCi/cc

TVA PROTECTIVE ACTION LEVELS

3 A.	Radioiodine (I-131) air activity > 8.0 E-7 µCi/cc (40 DAC)	Potassium Iodide (KI) recommended, notify Field Control.
4 A.	Particulate air activity > 1.2 E-7 µCi/cc (40 DAC)	Respiratory protection recommended, notify Field Control.
4 B.	Particulate air activity > 6.0 E-7 µCi/cc (200 DAC)	Respiratory protection mandatory, notify Field Control.
4 C.	Particulate air activity > 6.0 E-6 µCi/cc (2000 DAC)	Evacuation mandatory, notify Field Control.

One radioiodine DAC = 2.0 E -8 µCi/cc	One particulate DAC = 3.0 E -9 µCi/cc

DATE:	TEAM MEMBERS:

(1)	(2)				(3)	(16)	
TEAM #	**LOCATION** SAMPLE POINT	DISTANCE MILES	DEGREES BEARING	FROM	TIME COLLECTED	SAMPLE IDENTIFICATON	REMARKS or Where SAMPLE was TRANSFERRED to

SAMPLE IDENTIFICATION ABBREVIATIONS

P	Particulate (paper filter)	S	Soil	M	Milk
I	Radioiodine (charcoal filter)	V	Vegetation	WW	Well Water
TLD	Environmental TLD	SN	Snow	DWSS	Drinking Water Surface Source / River
RW	Rainwater	ICE	Ice		

TVA ENVIRONS MONITORING RECORD

ORIGIN
CECC ❒
RMCC ❒
SITE ❒

RECORDED BY:	DATE:	TIME:	❒ SQN ❒ WBN	❒ BFN

CECC USE ONLY
RAC REVIEW:

APPENDIX F DATA

① TEAM #	② SAMPLE POINT	DISTANCE MILES	DIRECTION BEARING	DIRECTION FROM	③ TIME TAKEN	④ PLUME E C ?	⑤ GM ISM	⑥ 1 METER mrem/hr W / CLOSED	⑦ 1 METER mrem/hr W / OPEN	⑧ GM ISM	⑨ CONTACT mrem/hr W / CLOSED	⑩ CONTACT mrem/hr W / OPEN

APPENDIX G DATA

① TEAM #	② SAMPLE POINT	DISTANCE MILES	DIRECTION BEARING	DIRECTION FROM	③ TIME TAKEN	④ PLUME E C ?	(16) SAMPLE IDENTIFICATION	(12) ^{131} IODINE AIR µCi/cc	(13) PARTICULATE AIR µCi/cc

APPENDIX D DATA

✓ **ALL DOSE UNITS IN MILLIREM**

(17) INDIVIDUAL	(3) TIME	(18) DRD "AS READ"	(19) TOTAL DRD "AS READ"	CORREC. FACTOR	TEDE ESTIMATE "AS CORRECTED	TEDE LIMIT	KI TAKEN ? Yes/No	Time

Similar to form TVA 7918A

See next page for **TVA PROTECTIVE ACTION LEVELS**

Line denotes revision

TVA PROTECTIVE ACTION LEVELS

IF	THEN
1 A. Any exposure rate > 25 mrem/hr and radioiodine (I-131) air activity is not known.	Potassium Iodide (KI) recommended, notify Field Control.
1 B. Any measured dose rate > 200 mrem/hr.	Evacuation recommended, notify Field Control.
1 C. Any measured dose rate > 10 rem/hr.	Evacuation mandatory, notify Field Control.

2 A. TEDE dose of 5 rem.	Evacuate unless higher dose is authorized, notify Field Control.
2 B. TEDE dose of 25 rad.	Evacuation mandatory, notify Field Control.

3 A. Radioiodine (I-131) air activity > 8.0 E-7 μCi/cc (40 DAC)	Potassium Iodide (KI) recommended, notify Field Control.
4 A. Particulate air activity > 1.2 E-7 μCi/cc (40 DAC)	Respiratory protection recommended, notify Field Control.
4 B. Particulate air activity > 6.0 E-7 μCi/cc (200 DAC)	Respiratory protection mandatory, notify Field Control.
4 C. Particulate air activity > 6.0 E-6 μCi/cc (2000 DAC)	Evacuation mandatory, notify Field Control.

One radioiodine DAC = 2.0 E -8 μCi/cc	One particulate DAC = 3.0 E -9 μCi/cc

Appendix J Page 1 of 4

Monitoring Team Vehicle Inventory

Note: During quarterly checks, perform Operability Checks (OC) and check battery status with meter. Change out tape as needed.

1.0 The following items may need to be taken to the vehicle upon activation.

Qty	Item	"Sat"	Remarks
1	Bicron Analyst with NaI detector and cable		OC
1	Bicron Analyst for GM use with cable		OC
2	Ion Survey Meters (range to 10 R/hour)		OC
2	Geiger Mueller Survey Meters (14C or E-530)		OC
2	Bicron Surveyor 50s		OC
2	Air samplers for Grab Samples (H810)		OC
2	Air samplers for Continuous Run (H810)		OC
1	Package of Potassium Iodide		Expiration:
1	Ba^{133} check source		ID #
1	Tc^{99} check source		ID #

2.0 The following are minimum quantities stored in the vehicle.

Environs Monitoring Vehicle Booklet

1	CECC EPIP-9 (controlled copy)		Rev.
4	Appendix B, CECC EPIP-9 (photocopies)		Rev.
4	Appendix C, CECC EPIP-9 (photocopies)		Rev.
4	Appendix D, CECC EPIP-9 (photocopies)		Rev.
4	Appendix E, CECC EPIP-9 (photocopies)		Rev.
10	Appendix F, CECC EPIP-9 (photocopies)		Rev.
10	Appendix G, CECC EPIP-9 (photocopies)		Rev.
10	Appendix H, CECC EPIP-9 (photocopies)		Rev.
4	Appendix J, CECC EPIP-9 (photocopies)		Rev.
1	CECC EPIP-23 (controlled copy)		Rev.
5	Attachment G, CECC EPIP-23 (photocopies)		Rev.
1	Site-specific EPIP-10 (controlled copy)		Rev.
1	Georgia Public Service Commission Letter of Intent		Date:

Miscellaneous Locations

1	GM detector in lead shield		OC
1	Fire extinguisher (check pressure and record hydrostatic test date stamped on shell or from label affixed by service vendor) Note: Replace extinguisher 5-years from manufacture date		Within green band Date:
1	Primary Motorola radio		OC
1	Hand held spotlight		OC
1	First-aid kit		
1	GPS unit with 12 volt power cord and windshield bracket		OC

Appendix J Page 2 of 4

Monitoring Team Vehicle Inventory

Work Desk

Qty	Item	"Sat"	Remarks
1	Battery level tester		OC
2	Flashlights (check battery status)		OC
4	Spare batteries each size (D-cell and 9 volt)		
1	Scientific calculator		OC
2	200 mrem Direct Reading Dosimeters		re-zero
2	5 rem Direct Reading Dosimeters		re-zero
2	TLDs (list expiration date)		Date:
1	Scissors		
1	Allen wrench to fit lead shield top cap bolts		
1	Tweezers		
2	Pens or pencils		
6	Planchets		
20	Radioactive Material tags		
40	Sample labels		

Cabinet 1

4	Full-face respirators w/cartridges		
8	Spare respirator cartridges (hepa)		
1	Spray cleaner for decontamination		
15	Massilin cloths		
15	Paper towels		
1	Water-less hand cleaner		

Cabinet 2

	Air Sampling Portal vents and electrical outlets		OC

Cabinet 3

14	Marinelli beakers (500 ml)		
10	Liquid Sample containers)		
1	Sample Transport bag		

Cabinet 4

1	DC to AC Power Inverter		OC

Cabinet 5

	(Space reserved for air samplers)		

Cabinet 6

20	Large plastic radwaste bags		
20	Medium plastic radwaste bags		

Appendix J Page 3 of 4

Monitoring Team Vehicle Inventory

Cabinet 7

Qty	Item	"Sat"	Remarks
5	Screw on air sampler heads		
1	Box 2 inch prefilters (minimum of 30 each)		
30	Silver Zeolite air sampler cartridges (list manufacture date) NOTE: 10 year shelf life if packaging is unopened.		Date:
30	Petri dishes		
30	Small zip-lock bags		
30	Large zip-lock bags		
1	Roll of plastic wrap (Saran type)		
1	Box gloves - sample handling (min. 20 pair) hypo-allergenic recommended		
1	Box smears (minimum of approx. 200)		
1	Roll 2 inch duct tape		
1	Roll Radiation Warning Symbol tape		
1	Roll electrical tape		
1	Dosimeter charger		OC

Cabinet 8

	Electrical switch panel		OC
	Onboard generator (record run time displayed)		OC hrs.

Cabinet 9

1	Logbook		
1	DOT Emergency Response Guidebook		Year:
1	TN, AL and GA State road maps		
1	Sample Point Description book for BFN, SQN, WBN		
6	Area posting signs (Radiation and Contamination Area insert)		
6	Radioactive placards		
1	Trash can		
2	Rain Suits		
2	Insulated coveralls		
Sample Point Maps, latest revision per EPIP-9 section 4.3			
2	BFN 2-, 10-, 50- mile sampling point maps		
2	SQN 2-, 10-, 50- mile sampling point maps		
2	WBN 2-, 10-, 50- mile sampling point maps		

Cabinet 10

1	Set Jumper cables		
1	Funnel		
1	Siphon pump/hose		
1	Set of wrenches		
1	Set of screwdrivers		
1	Pair of Pliers		
1	Hammer		
1	Box of 3 reflective triangles		

Appendix J Page 4 of 4

Monitoring Team Vehicle Inventory

Cabinet 11

Qty	Item	"Sat"	Remarks
24	Pair booties		
24	Pair cotton inserts		
12	Pair Anti-C gloves		
12	Pair rubber shoe covers		
12	Pair coveralls (disposable)		
12	Dressout caps		
12	Hoods		
1	Roll dress-out tape		

Outside Compartments

1 ea.	110 volt extension cord (25-, 50-, 100 ft)		
1	External vehicle power supply cord (shore power)		
8	Wooden stakes		
1	Soil sampling tool		
1	Shovel		
400	Feet of radiological warning barrier rope/ribbon		
1	Box plastic sheeting		
1	Putty knife (4 inch)		
1	Grass cutters		
6	Traffic cones		
1	Can of spray paint for marking of areas (i.e., roadway)		
1	Pair of work gloves		
1	Fire extinguisher (check pressure and record hydrostatic test date stamped on shell or from label affixed by service vendor) Note: Replace extinguisher 5-years from manufacture date		Within green band Date:
1	Ground Fault Interrupter		OC
1	Honda gas generator (EX1000)		OC

Vehicle Location: _____ Vehicle tag #: _____

- Forward for signatures below. EP Manager to receive by end of calendar quarter.

Purpose of Inspection: ☐ Monthly ☐ Quarterly ☐ Post training/drill/response

Additional Comments: _____

Inspected by:		Date:	
Supervisory Review:		Date:	
EP Manager:		Date:	

Appendix K Page 1 of 4

WARL Screening Vehicle Inventory

Note: During quarterly checks, perform Operability Checks (OC) and check battery status with meter. Change out tape as needed.

1.0 Items stored in WARL.

Qty	Item	"Sat"	Remarks
1	Geiger Mueller Survey Meter with pancake probe		OC
1	Geiger Mueller Survey Meter		OC
1	Package of Potassium Iodide		Expiration:
2	Calibration sources for Germanium detectors		
1	Radioanalytical Laboratory Procedures Manual		
1	Sample Transport case		
1	ND-76 multi-channel analyzer		

2.0 The following are minimum quantities stored in the vehicle.

Miscellaneous Locations

2	Intrinsic Germanium detectors		
1	Liquid nitrogen dewar		
2	NIMBI standard power bins		
2	High-voltage power supply modules		
2	Spectroscopy amplifiers		
2	ND 570 ADCs		
2	Fire extinguishers (check pressure and record hydrostatic test date stamped on shell or from label affixed by service vendor) Note: Replace extinguisher 5-years from manufacture date		Within green band Date:
1	Uninterruptible Power Supply		
1	ND 6700 Gamma analysis system with terminal and printer		

Cabinet A

1	Set of wrenches		
1	Set of screwdrivers		
1	Pair of pliers		
1	Set of allen wrenches		
1	Pair insulated gloves (nitrogen handling)		
2	Pair leather or canvas work gloves		
2	Pair cloth glove inserts		

Cabinet B

1	Tape dispenser with 1 refill		
1	Roll of "Radioactive Material" tape		
1	Roll 3/4 inch fiber tape		
1	Roll 2 inch Scotch tape		
1	Roll 2 inch masking tape		

Appendix K Page 2 of 4

WARL Screening Vehicle Inventory

Cabinet B (continued)

Qty	Item	"Sat"	Remarks
1	Roll 3/4 inch masking tape		
3	Rolls electrical tape		
1	Calculator		OC
1	Box 2 inch filter papers		
10	Tags (with string)		
25	"Radioactive Material" tags		
1	Bottle alcohol		
1	Pack cotton swabs		
10	Pair rubber or plastic gloves		
1	Direct Reading Dosimeter charger (AC or battery powered)		OC

Cabinet C

10	Shallow planchets		
5	Deep planchets		
2	Boxes smears		
50	Small Ziplock bags		
20	Large Ziplock bags		
1	Roll clear plastic wrapping (Saran type)		
5	Yellow "Radioactive Material" plastic bags		

Cabinet D

10	Marinelli beakers (500 ml)		
20	Petri dishes		
1	500 ml graduated cylinder		

Cabinet E

4	D-cell batteries		
2	9-volt batteries		
4	AA batteries		
1	Siphon hose		
1	Box of replacement fuses for equipment		
1	Spotlight		OC
1	Flashlight with batteries		OC
1	Balance (3000 gram capacity) with check wts.		

Cabinet F

2	Rainsuits		

Cabinet G

6	Pairs disposable coveralls		

Appendix K Page 3 of 4

WARL Screening Vehicle Inventory

Cabinet H

Qty	Item	"Sat"	Remarks
2	Orange safety vest		
4	Pairs rubber shoe covers		

Cabinet I

1	Radiological Health Handbook		
1	DOT Emergency Response Guidebook		Year
2	Germanium Detector Manuals		
1	Sample Point Description Booklet (each site)		

Environs Monitoring Vehicle Booklet

1	CECC EPIP-9 (controlled copy)		Rev.
2	EPIP-9, Screening Vehicle Inventory (photocopies)		Rev.
2	EPIP-9, Dose Logs (photocopies)		Rev.
2	EPIP-9, Emergency Authorizations (photocopies)		Rev.
20	Isotopic Analysis forms		
1	Georgia Public Service Commission Letter of Intent		Date:

Cabinet J

	Miscellaneous spare cables for gamma systems		

Cabinet K

1	Can insect repellent		
1	Can de-icing fluid		
1	Can wasp insecticide		
1	First-Aid kit		
1	Can decontamination spray or foam		

Drawer 1

Sample Point Maps, latest revision per EPIP-9 section 4.3			
2	BFN 2-, 10-, 50- mile sampling point maps		
2	SQN 2-, 10-, 50- mile sampling point maps		
2	WBN 2-, 10-, 50- mile sampling point maps		
1	State Highway map for Georgia, Tennessee and Alabama		
2	Germanium detector logbooks		
1	Germanium detector control chart book		
1	Germanium detector efficiency table book		

Appendix K Page 4 of 4

WARL Screening Vehicle Inventory

Drawer 2

Qty	Item	"Sat"	Remarks
2	TLDs (list expiration date)		Date
2	200 mrem Direct Reading Dosimeters		
1	Control TLD (list expiration date)		Date
2	Lab markers		
2	Pens		
4	Mechanical pencils		
1	Steno pad		
1	Set of jeweler's screwdrivers		

Vehicle Location: _____ Vehicle tag #: _____

Purpose of Inspection: ☐ Quarterly ☐ Post Training ☐ Post Drill / Response

Additional Comments: _____

- Place completed copy of quarterly inventory in front of vehicle booklet.
- Forward for signatures below.

Inspected by:		Date:	
WARL Manager:		Date:	

Appendix L

Field Coordinator Kit Inventory

Emergency Preparedness Implementing Procedures

Qty	Item	"Sat"	Remarks
1	CECC EPIP-7 (controlled copy)		Rev.
1	CECC EPIP-9 (controlled copy)		Rev.
1	CECC EPIP-12 (controlled copy)		Rev.
1	CECC EPIP-23 (controlled copy)		Rev.
1	REND (controlled copy)		Rev.

Miscellaneous Items [1]

Qty	Item	"Sat"	Remarks
1	Radiological Health Handbook		
12	TLDs (list expiration date)		Date
1	Scientific calculator		
50	Copies of Environs Monitoring forms (TV 7918A)		Date
10	Copies of Clerical Logsheets		
1	Logbook		
1	Package of Potassium Iodide (list expiration)		Date
1	Flashlight & batteries		
1	DOT Emergency Response Guidebook		Year
1	Tennessee Highway road map		
1	Alabama Highway road map		
1	Georgia Highway road map		
1	Sample Point Description booklet for BFN		
1	Sample Point Description booklet for SQN		
1	Sample Point Description booklet for WBN		

Sample Point Maps, latest revision per EPIP-9 section 4.3			
2	BFN 2-, 10-, 50- mile sampling point maps		
2	SQN 2-, 10-, 50- mile sampling point maps		
2	WBN 2-, 10-, 50- mile sampling point maps		

[1] Miscellaneous office supplies may also be contained in the kit for convenience purposes.

Kit Location: ☐ CECC ☐ BFN

Purpose of Inspection: ☐ Quarterly ☐ Post Training ☐ Post Drill / Response

Additional Comments: _____

Inspected by:		Date:	
Manager Review:		Date:	

Appendix M

Courier Kit Inventory

Qty	Item[1]	"Sat"	Remarks
1	CECC EPIP-9 (controlled copy)		Rev.
1	200 mrem Direct Reading Dosimeter		
1	TLD (list expiration date)		Date
1	Dosimeter charger with battery		
1	Flashlight & batteries		
1	First-aid kit		
1	Scientific calculator		
1	Pair Disposable coveralls		
4	Pair booties		
10	Pair sample handling gloves and cotton liners		
1	Pair work gloves		
1	Package of Potassium Iodide (list expiration)		Date
12	Radioactive Material tags		
12	Sample labels		
12	Yellow "radioactive material" bags		
1	Roll of duct tape		
1	Roll of electrical tape		
1	Rain coat		
1	Logbook		
3	Pens		
1	Sample transport container		
1	DOT Emergency Response Guidebook		Year
1	Highway road map including TN, AL and GA.		
1	Sample Point Description booklet for BFN		
1	Sample Point Description booklet for SQN		
1	Sample Point Description booklet for WBN		

Sample Point Maps, latest revision per EPIP-9 section 4.3			
1	BFN 2-, 10-, 50- mile sampling point maps		
1	SQN 2-, 10-, 50- mile sampling point maps		
1	WBN 2-, 10-, 50- mile sampling point maps		

[1] Miscellaneous office supplies may also be contained in the kit for convenience purposes.

Kit Location: ☐ CECC ☐ BFN

Purpose of Inspection: ☐ Quarterly ☐ Post Training ☐ Post Drill / Response

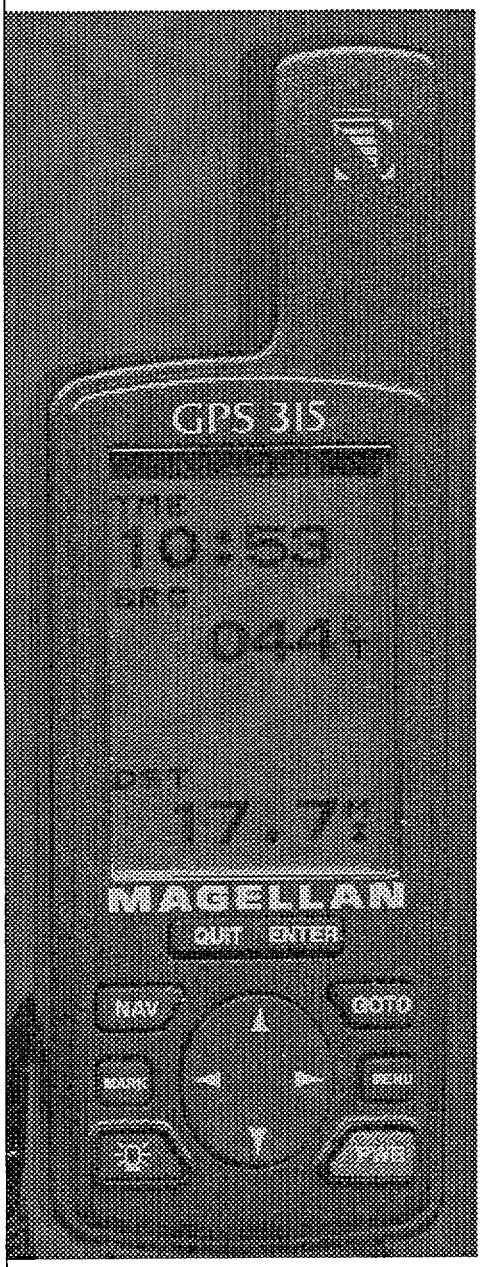
Additional Comments: _____

Inspected by:		Date:	
Manager Review:		Date:	

Appendix N
Page 1 of 4

Global Positioning Satellite Unit Operation

- **Keep unit mounted on windshield bracket with power plug installed.**
- **During night time, depress the light symbol for on, low and high screen illumination.**
- **Remember to turn the unit off by the PWR button when leaving the vehicle.**
- **DO NOT ATTEMPT TO ALTER MENU. Depressing the QUIT button is acceptable to "step back" or to start over on the sequence below.**



1. Depress the red **PWR** button.
2. Depress the **ENTER** button.
3. Depress the **NAV** button **2 TIMES** to bring up the screen with DST and BRG displayed.
4. Depress the **GOTO** button.
5. Use the 4 arrow button and depress the down arrow to highlight **USER**, then depress the **ENTER** button.
6. Use the 4 arrow round button to highlight the desired plant.
   BFN 01 SQN 02 WBN 03
7. Once the desire plant is highlighted, depress **ENTER**.
8. The unit should now display the Bearing in degrees (BRG) and Distance (DST) in miles from the selected nuclear site.
9. No further actions are needed. Simply drive and view the screen for continuous updates of your bearing and distance from the selected nuclear site.
10. To turn the unit off when leaving the vehicle, depress the **PWR** button to turn the unit off.

Note:
Bearing (**BRG**) indicates the compass direction back TO the nuclear site, versus the downwind FROM which we reported in the past. The Bearing (BRG) value is 180 degrees off from our method of communication to dose assessors and decision makers.

Therefore, when reporting data locations, field team members should report the **DISTANCE** and **BEARING** as displayed on their unit. Field Control (i.e., radio dispatcher) can record the adjusted value on the appropriate CECC Data form (Appendix I) using the conversion tables such as pages 2 through 4 of this appendix. An example radio report for the above illustration would be a "**Distance of 17.7** miles, **Bearing 44 degrees**".

Appendix N
Page 2 of 4

BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted
1	181	31	211	61	241	91	271
2	182	32	212	62	242	92	272
3	183	33	213	63	243	93	273
4	184	34	214	64	244	94	274
5	185	35	215	65	245	95	275
6	186	36	216	66	246	96	276
7	187	37	217	67	247	97	277
8	188	38	218	68	248	98	278
9	189	39	219	69	249	99	279
10	190	40	220	70	250	100	280
11	191	41	221	71	251	101	281
12	192	42	222	72	252	102	282
13	193	43	223	73	253	103	283
14	194	44	224	74	254	104	284
15	195	45	225	75	255	105	285
16	196	46	226	76	256	106	286
17	197	47	227	77	257	107	287
18	198	48	228	78	258	108	288
19	199	49	229	79	250	109	289
20	200	50	230	80	260	110	290
21	201	51	231	81	261	111	291
22	202	52	232	82	262	112	292
23	203	53	233	83	263	113	293
24	204	54	234	84	264	114	294
25	205	55	235	85	265	115	295
26	206	56	236	86	266	116	296
27	207	57	237	87	267	117	297
28	208	58	238	88	268	118	298
29	209	59	239	89	269	119	299
30	210	60	240	90	270	120	300

Appendix N
Page 3 of 4

BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted
121	301	151	331	181	1	211	31
122	302	152	332	182	2	212	32
123	303	153	333	183	3	213	33
124	304	154	334	184	4	214	34
125	305	155	335	185	5	215	35
126	306	156	336	186	6	216	36
127	307	157	337	187	7	217	37
128	308	158	338	188	8	218	38
129	309	159	339	189	9	219	39
130	310	160	340	190	10	220	40
131	311	161	341	191	11	221	41
132	312	162	342	192	12	222	42
133	313	163	343	193	13	223	43
134	314	164	344	194	14	224	44
135	315	165	345	195	15	225	45
136	316	166	346	196	16	226	46
137	317	167	347	197	17	227	47
138	318	168	348	198	18	228	48
139	319	169	349	199	19	229	49
140	320	170	350	200	20	230	50
141	321	171	351	201	21	231	51
142	322	172	352	202	22	232	52
143	323	173	353	203	23	233	53
144	324	174	354	204	24	234	54
145	325	175	355	205	25	235	55
146	326	176	356	206	26	236	56
147	327	177	357	207	27	237	57
148	328	178	358	208	28	238	58
149	329	179	359	209	29	239	59
150	330	180	0	210	30	240	60

Appendix N
Page 4 of 4

BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted	BRG displayed	FROM adjusted
241	61	271	91	301	121	331	151
242	62	272	92	302	122	332	152
243	63	273	93	303	123	333	153
244	64	274	94	304	124	334	154
245	65	275	95	305	125	335	155
246	66	276	96	306	126	336	156
247	67	277	97	307	127	337	157
248	68	278	98	308	128	338	158
249	69	279	99	309	129	339	159
250	70	280	100	310	130	340	160
251	71	281	101	311	131	341	161
252	72	282	102	312	132	342	162
253	73	283	103	313	133	343	163
254	74	284	104	314	134	344	164
255	75	285	105	315	135	345	165
256	76	286	106	316	136	346	166
257	77	287	107	317	137	347	167
258	78	288	108	318	138	348	168
250	79	289	109	319	139	349	169
260	80	290	110	320	140	350	170
261	81	291	111	321	141	351	171
262	82	292	112	322	142	352	172
263	83	293	113	323	143	353	173
264	84	294	114	324	144	354	174
265	85	295	115	325	145	355	175
266	86	296	116	326	146	356	176
267	87	297	117	327	147	357	177
268	88	298	118	328	148	358	178
269	89	299	119	329	149	359	179
270	90	300	120	330	150	0	180

CECC EPIP Coversheet

Tennessee Valley Authority CENTRAL EMERGENCY CONTROL CENTER EMERGENCY PLAN IMPLEMENTING PROCEDURES	Title EP FIELD SUPPORT STAFF RADIOLOGICAL EMERGENCY PROCEDURE	CECC EPIP-12 REV. 16 Effective Date: 11/30/01

4812129134
CHAT CECC EPIP
CECC-EPIP-12
113001 16

WRITTEN BY: Thomas E. Adkins (Signature) REVIEWED BY: David Pond (Signature) 11/29/01 (Date)

PLAN EFFECTIVENESS DETERMINATION: Thomas E. Adkins (Signature) 11/29/01 (Date)

CONCURRENCES

Concurrence Signature	Date
☒ Manager, EP Program Planning and Implementation David Pond	11/29/2001
☐ Manager, Emergency Preparedness B K Marks	11/30/01
☐ Manager, Radiological and Chemistry Services Chandra	11/30/01
☐	

APPROVAL

APPROVED BY: Chandra (Signature) for Jim Rupert	Vice President, E&TS (Title / Organization)	11/30/01 (Date)

CECC-EPIP-12
EP FIELD SUPPORT STAFF
RADIOLOGICAL EMERGENCY PROCEDURE

REVISION LOG

Rev. No.	Date	Revised Pages
0	3/22/88	All (Changed from IPD to EPIP)
1	04/26/89	All
2	07/02/90	App. B, C, D, and E
3	05/21/91	1, 2, & 3; App. A, Pg. 1, App. B, Pg. 1, App. G, Pg. 1
4	11/25/92	App. C, Pg. 1; App. D, Pg. 1; App. E, Pg. 1
5	05/13/93	1, 3, 5, 6; App. E, Pg. 1. All pages issued to maintain rev. level.
6	06/24/95	Pgs. 1-7; App. C; App. D; App. E; App. F; & App. G. All pages issued.
7	6/27/95	Pgs. 2 & 3; App. D, pgs. 1 & 2. All pages issued.
8	5/30/96	Pgs. 1-13; annual review, delete information contained in App. C, D, and E because it is contained in EPIP-10. All pages issued.
9	4/7/97	Annual review, editorial changes, add note to Appendix B to forward copy to David Pond. All pages issued.
10	8/8/97	Change reference CECC-EPIP-10 to CECC-EPIP-8. All pages issued.
11	6/9/98 ~~6/4/98~~ *RR*	Annual review. Revised procedure to match organization responsibility due to reorganization. EDS support activated moved to CECC-EPIP-17. All pages issued.
12	7/7/98	Update location for Browns Ferry Equipment. Editorial changes. Add equipment operational checks. All pages issued.
13	10/6/98	Update to indicate organization and title changes. Editorial changes to clarify duties under new organization. All pages issued.
14	8/20/99	Revise Radiological Emergency Response Equipment list. Re-label Appendixes B and C as Appendixes A and B. Editorial changes. All pages issued.
15	8/4/00	Annual review. Editorial changes, new location for BFN SIM office, indicate new packaging for KI.

CECC-EPIP-12
EP FIELD SUPPORT STAFF
RADIOLOGICAL EMERGENCY PROCEDURE

REVISION LOG

Rev. No.	Date	Revised Pages
16	11/30/01	Change frequency of equipment inspections for quarter to calendar quarter. All pages issued.

EP FIELD SUPPORT STAFF RADIOLOGICAL EMERGENCY PROCEDURE

1.0 PURPOSE

This procedure is designed to direct the field support staff in support of the CECC in mitigating the effects of a radiological emergency at TVA nuclear plants on the resources of the Tennessee Valley region.

2.0 SCOPE

This procedure covers anticipated requirements of the field support staff in its support of the CECC during a radiological emergency at TVA nuclear plants. This procedure also covers actions that may be taken subsequent to an emergency.

3.0 REFERENCES

3.1 CECC EPIP-8

3.2 CECC EPIP-9

4.0 ABBREVIATIONS AND DEFINITIONS

CECC	-	Central Emergency Control Center
EA	-	Environs Assessment
Field Coordinator	-	The member of the CECC staff responsible for directing the near site emergency radiological monitoring personnel in accordance with the directions issued by EA. (TVAN personnel)
PSCDB	-	Power Service Center Display Building
REND	-	Radiological Emergency Notification Directory
TVAN	-	TVA Nuclear

5.0 RESPONSIBILITIES

5.1 Upon notification from the CECC Director or his designee that an emergency condition exists and the CECC is being staffed, the EA is responsible for the following:

5.1.1 Providing technical advice on matters related to the collection of water samples.

5.1.2 Activating a Field Team Leader or placing on standby in accordance with TVAN's Fitness For Duty Program (Fitness For Duty form provided in Appendix B). Personnel shall be contacted from those listed in the REND.

5.2 Upon notification from the EA that an emergency condition exists, the EP Field Team Leader is responsible for the following:

5.2.1 Recruiting a field team from personnel listed in the REND and securing the necessary equipment and making sure it is ready for use.

5.2.2 Directing the field team once it is in the field as directed by the Field Coordinator or Environs Assessor depending on the level of facility activation.

5.2.3 Ensuring that the field team works safely and is properly protected from hazards, radiological or other.

6.0 PROCEDURAL REQUIREMENTS

6.1 Initial Notification

6.1.1 Upon arrival at the CECC, the EA contacts the EP Field Team Leader, informs them of the status of the emergency, and directs the EP Field Team Leader to report for duty or to stand by depending on the situation.

6.1.2 Activation of an EP Field Team Leader for Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants, shall be accomplished by calling the telephone number of the appropriate personnel listed in the REND.

6.2 Implementation Procedures

6.2.1 After completion of the initial notification procedures specified in 6.1, the EA:

6.2.1.1 Records pertinent information in the EA log book.

6.2.1.2 Schedules and notifies emergency personnel required to provide field teams on a 24-hour basis for sampling and other support as needed.

6.2.1.3 Keeps fully informed of the events related to the emergency and relays pertinent information to personnel (i.e., EP Field Team Leader) on standby.

6.2.2 Upon being notified that an emergency condition exists and being directed to report for duty, the EP Field Team Leader will:

6.2.2.1 Report to the PSCDB at Chickamauga Dam for Sequoyah and Watts Bar Nuclear Plants or to the SIM Field Office at Browns Ferry Nuclear Plant as soon as possible and contacts the EA to inform him that he is in position.

6.2.2.2 Ensure that personnel, boats, vehicles, safety equipment, maps, and other equipment are ready for use.

6.2.2.3 Advise the EA when all equipment and manpower are ready.

6.2.3 Upon being notified that an emergency condition exists and being directed to report for duty, the field crew:

6.2.3.1 Upon arrival at the PSCDB or the BFN SIM Field Office, collects and loads appropriate equipment listed in Appendix A.

6.2.3.2 As directed by the EA through the EP Field Team Leader, report to the Field Coordinator located at the Radiological Monitoring Control Center.

6.2.3.3 Under the leadership of the EP Field Team Leader and as directed by the Field Coordinator, collects samples of raw and finished water at public water supplies and from surface waters (streams and reservoirs) in accordance with the procedures specified in Section 3.0 and delivers them for analyses according to instructions received from the Field Coordinator. Communications are maintained at all times between the field team and the EA. Sampling frequencies and locations will be determined by EA.

6.2.3.3.1 Appendix K of CECC-EPIP-8 lists the public and industrial surface water supplies for 50 miles downstream of Sequoyah, Watts Bar, and Browns Ferry Nuclear Plants.

6.2.3.3.2 Personnel assigned to collect water intake samples by land will establish radio or telephone communications with the EA upon arrival at their designated locations.

6.2.3.3.3 Personnel assigned to collect reservoir and/or water intake samples by water will maintain radio contact at all times with the EA. If personnel are unable to maintain radio contact while on the water, they will immediately leave the area and go to a location where radio or telephone contact can be established in order to receive further instructions.

6.2.3.3.4 If there is the possibility of radioactive air release while personnel are in the field, the EA shall evaluate the need to assign RADCON support with proper monitoring equipment to accompany the field crew while in the plume.

7.0 SAFETY

Safety is the most important consideration in emergency response. Personnel are cautioned to exercise great care in approaching and working near any areas which are suspected of having been (or could become) exposed to radiological contamination or radiation.

7.1 The EA will ensure that field crews are briefed on the following:

7.1.1 The potential radiation hazards involved before they are asked to enter a potentially contaminated area.

7.1.2 The possible need for decontamination following completion of sampling in a potentially contaminated area. Decontamination will be performed, as necessary, by qualified RADCON personnel.

7.2 The type of release(s) which occur during a radiological emergency (i.e., water, air, water and air) will determine what type of protective equipment is required by field personnel. The Field Coordinator will consult with EA to obtain the needed determinations. If there is the possibility of radioactive exposure to personnel, a RADCON Tech. with proper monitoring
* may be assigned to accompany personnel. Appendix A contains a listing of safety equipment which may be required for use during a radiological emergency. The equipment is stored at the PSCDB at Chickamauga Reservation for Sequoyah and Watts Bar Nuclear Plants and at the SIM Field Office at Browns Ferry Nuclear Plant.

8.0 OPERATIONAL READINESS

* 8.1 The equipment inspections will be conducted each calendar quarter and after use and documented on Appendix A.

9.0 RECORDS

9.1 The EA maintains a chronological log of activities which occur during a radiological emergency.

9.1.1 The log book includes such information as telephone conversations (and parties involved), requests received and/or made (and from and/or to whom), decisions made (and by whom), status information received and/or transmitted (and from and/or to whom), and manpower assignments made including initial notifications and shift changes.

*Revision

APPENDIX A Page 1 of 1
RADIOLOGICAL EMERGENCY RESPONSE EQUIPMENT LIST

Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants - Special Radiological Emergency Equipment

1. **Water Sampling Equipment**[1]

___ 10 - eight-liter plastic pails

___ 100 - one-gallon cubitainers

___ 2 - six-volt battery hand flashlights (operational check)
___ 2 - 100-feet of rope
___ 2 - sets of Tennessee River navigation charts for area reservoirs
___ 2 - plastic zip-lock bags containing field sheets, marking pens, and sample tags
___ 2 - EP maps for the plants involved (2 mile, 10 mile and 50 mil). Confirm revision levels in CECC EPIP-9.
___ 4 - pairs of water proof gloves

2. **Radiological Control Equipment**[1,2]

___ 2 - Radios with EP radio frequency (operational check).
___ 4 - Packages of potassium iodide tablets. Expiration date _____ .
___ 6 - TLD Badges. Expiration date _____ .
___ 6 - 0-200 millirem pocket dosimeters: (re-zero)
___ 1 - Dosimeter charger (operational check).

3. Other field support equipment such as trucks, boats, water quality instrumentation, rainsuits, and lifejackets are available from general supplies and can be made available at any time upon request.

[1]This equipment is maintained at the Power Service Center for Sequoyah and Watts Bar Nuclear Plants and at the SIM Field Office in Athens, Alabama for Browns Ferry Nuclear Plant.
[2]Equipment maintained at SIM Ten Mile Office.

Inspected by: _____ Date: _____

Supervisory Review: _____ Date: _____

Forward a completed copy to David Pond, Emergency Preparedness, LP 6B-C.

APPENDIX B Page 1 of 1
FITNESS FOR DUTY
PROGRAM ADMINISTRATION
ENVIRONMENTAL RESEARCH AND SERVICES
CALL-IN SHEET

Person Calling: _____ Date: _____

Name	Time Called	Time Needed to Report	Alcohol 5 Hrs. Prior to Report (Y/N)	Fit for Duty (Y/N)	Duty Official Comments