

**ALABAMA DEPARTMENT OF PUBLIC HEALTH
OFFICE OF RADIATION CONTROL**

**RADIOLOGICAL FIELD MONITORING TEAM
MANUAL**



1/2016

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NOTE: EQUIPMENT INVENTORY ON BACK OF MANUAL

INSTRUCTIONS FOR RADIOLOGICAL FIELD MONITORING TEAMS

General: The Alabama Department of Public Health (ADPH), Office of Radiation Control (ORC) is the agency responsible for coordinating off-site radiological monitoring operations. These emergency monitoring and sampling activities will be directed from the State Radiological Monitoring and Assessment Centers (SRMAC) located in the Montgomery, Alabama or in Houston County, Dothan, Alabama or in Morgan County, Decatur, Alabama.

Purpose: These instructions are to ensure that timely and accurate information about types, quantity, and location of any radioactive material released is provided in a uniform format for analysis and assessment.

Control: The SRMAC controls and directs all off-site monitoring and sampling efforts within the State of Alabama for Joseph M. Farley Nuclear Power Plant and for Browns Ferry Nuclear Power Plant. All agencies will coordinate their off-site Radiological Field Monitoring Teams (RFMT) through the SRMAC to ensure completeness of area monitoring and to avoid duplication of effort. Each organization will provide a liaison familiar with their organization, equipment, and operational procedure to the SRMAC to assist in the deployment of available resources.

Communications: The primary means of controlling the RFMT will be the SouthernLinc radios. For nuclear power plant emergencies, Alabama Power Company (APCo) teams will be controlled through the APCo radio system and the Tennessee Valley Authority (TVA) teams will be controlled through the TVA radio system. If additional monitoring or sampling teams from other agencies are needed, teams will be provided portable radios with the Radiation Control Agency/Alabama Emergency Management Agency fleet which will be controlled from the SRMAC. (Information on instructions for use of SouthernLinc Radios is provided in manual).

The secondary (back-up) means of communications will be conventional cellular telephones which use a different carrier. When communication is lost, conventional cellular phones will be utilized to maintain communication with the SRMAC.

Personal Protective Equipment: The Radiation Control Field Team Coordinator, in conjunction with the SRMAC Director, will determine what appropriate personal protective equipment (PPE) should be donned for the radiological accident or incident.

Assembly and Dispatch (Montgomery): Upon notification, the State Radiation Control Office will take the lead for all radiological emergencies. The senior ranking member present at the time of notification shall be known as SRMAC Director and will make the decision as to whether to activate and staff the SRMAC located at 201 Monroe Street, Suite 1250, Montgomery, Alabama. The SRMAC Director may assign staff various duties needed and required to support the event. If the situation warrants, the SRMAC Director may dispatch

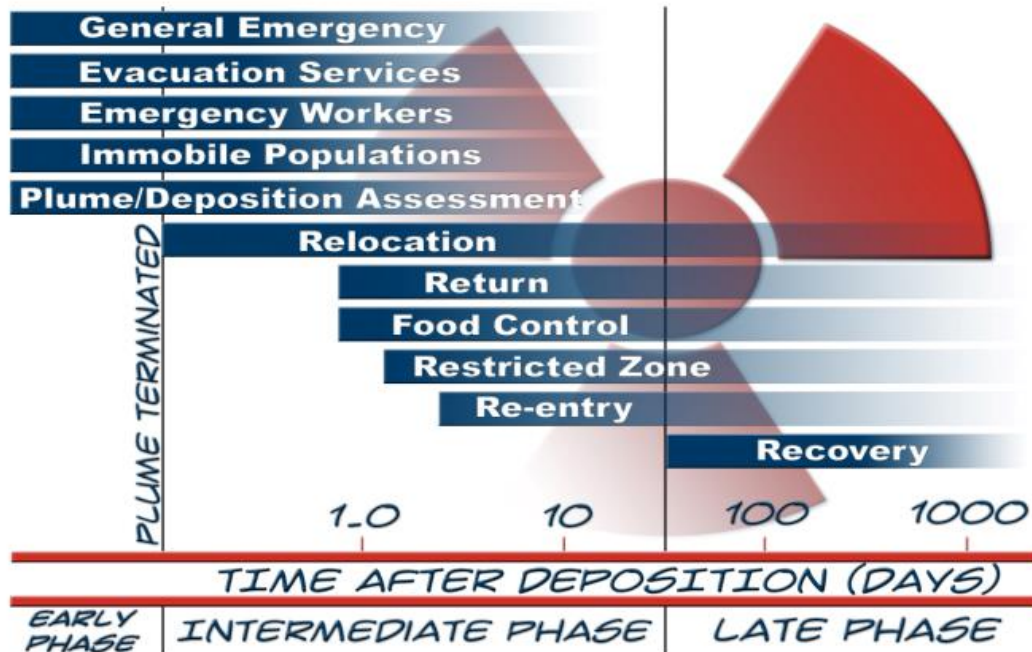
RFMTs from the office in Montgomery. All radiological equipment required for a response is maintained and stored at this location. Furthermore, the SRMAC Director will consider sending staff forward (Decatur SRMAC or Dothan SRMAC) to better manage response activities.

Assembly and Dispatch (Farley): Initial RFMTs will be dispatched locally from the Houston County Health Department in Dothan, Alabama. The equipment is maintained in the Office for Environmental Health and is inventoried by the Office of Radiation Control (ORC). Upon initial notification, RFMTs will proceed to the downwind boundary of the evacuation area or restricted area and begin monitoring while awaiting further instructions from SRMAC. Additional RFMTs will contact SRMAC in Dothan, Alabama, to receive instructions and maps. SRMAC will coordinate the deployment of additional RFMTs and/or relief for existing RFMTs. The equipment exchange meeting place will be at the Houston County Health Department unless otherwise directed by SRMAC. RFMTs should survey themselves and vehicles prior to arrival and return to the Houston County Health Department.

Assembly and Dispatch (Browns Ferry): Initial RFMTs will be dispatched locally from the Morgan County Health Department in Decatur, Alabama and Limestone County Health Department in Athens, Alabama. The equipment is maintained in both locations in their respective Office for Environmental Health and is inventoried by the ORC. Upon initial notification, RFMTs will proceed to the downwind boundary of the evacuation area or restricted area and begin monitoring while awaiting further instructions from SRMAC. Additional RFMTs will contact the SRMAC in Decatur, Alabama, to receive instructions and maps. SRMAC will coordinate the deployment additional RFMTs and/or relief for existing radiological field monitoring teams. The equipment exchange meeting place will be at the Morgan County Health Department unless otherwise directed by SRMAC. RFMTs should survey themselves and vehicles prior to arrival and return to the Morgan County Health Department.

Team Formation: Formation of RFMTs will be based on the three phases of a nuclear power plant accident (see phases below). These are Early/Plume Phase, Intermediate/Ingestion Phase and Late/Recovery Phase.

Three Phases of a Nuclear Power Accident



Early phase - The time interval at the beginning of a nuclear incident when immediate decisions based primarily on predictions of radiological conditions in the environment are necessary for effective use of protective actions. The early phase may last from hours to days. The early phase is assumed to last four days for the purpose of dose projection. In the Early/Plume phase team formation will consist of state and county RFMTs. The state team(s) will be composed of two trained Radiation Physicists from the State Office of Radiation Control. The county teams are made up of two trained Public Health Environmentalists who are employed in counties located in the 10-mile emergency planning zone.

Intermediate phase - The time interval beginning after the source and/or release has been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions. This phase continues until protective actions are terminated. This phase may overlap the early and late phases and may last from weeks to many months. The intermediate phase is assumed to last for one year for the purpose of dose projections. In the Intermediate/Ingestion Phase, the state and county RFMTs will be composed of the same aforementioned personnel in the Early/Plume Phase but will be supported by milk inspectors with the Alabama Department of Public Health, Division of Food, Milk, and Lodging and agriculture specialist with the Alabama Department of Agriculture and Industries. There are also numerous federal assets involved in field sampling who will be coordinated through SRMAC.

Late phase - The time interval that begins when recovery actions, designed to reduce radiation levels in the environment to permanently acceptable levels begin. This phase ends

when recovery actions have been completed. The late phase (or recovery phase) may extend from months to years. The Late/Recovery Phase will involve continued and extensive field sampling, damage and impact assessments, and coordination of federal assistance. Considering this, there will be coordinated RFMTs from the state, county and federal level who will work collectively in the remediation of contaminated areas and restoration to pre-incident conditions and activities.

Responsibilities: The *Field Team Coordinator* at the direction of the SRMAC Director is responsible for providing direct guidance to the RFMTs. The need for sample transport and the destination of samples as well as coordinating the activity with all personnel required to complete this function will be under the direction of the SRMAC.

The *RFMTs* are responsible for performing environmental monitoring and sampling activities as directed by the Field Team Coordinator through SRMAC. The RFMTs will properly package samples, record data on appropriate records, and deliver samples to a designated location or person as directed by the SRMAC.

The *Alabama Department Environmental Management (ADEM) Laboratory* is responsible for performing radiological analyses on samples and reporting analytical results to SRMAC. The ADEM lab is located at 1350 Coliseum Blvd., Montgomery, AL 36110.

The *Alabama Department of Agriculture and Industries* will have primary responsibility for enforcement of state laws that protect the consumer and producer against inferior farm products. Personnel with the Alabama Department of Agriculture and Industries will support agriculture sampling by providing directions to locations within the state. They will also be available to identify affected crops of farm products that will be collected by the RFMT. The Department of Agriculture will enforce any condemnation or summary destruction of food crops ordered by the Alabama Radiation Control Agency.

The *Alabama Department of Public Health, Division of Food, Milk and Lodging* is responsible for milk collection samples. Milk collection samples will be performed by the Milk Inspectors. Members of RFMT will package milk samples and prepare paper work for transport.

General Instructions: For early phase all teams will be issued a map showing the area within a ten-mile radius of the plant. No RFMT will enter evacuated areas unless specifically instructed by SRMAC and then will only enter and exit evacuated areas through traffic control points. All personnel entering the evacuated areas or radiation areas must have their personal direct-reading dosimeters (DRD) and a permanent/non-direct reading dosimeter (PRD). The DRD shall be: (1) a digital alarming dosimeter (DAD) or (2) high and low range pocket dosimeters. The PRD such as a TLD is to be used in conjunction with the DRD. No individual is authorized to exceed the annual occupational 5 rem Total Effective Dose Equivalent (TEDE) dose without permission from the Office of Radiation Control. The automatic turnaround value, using a survey meter with open window, is an exposure rate reading of 200 mR/hr (400 mrem/hr TEDE). The seek relief value on the DRD is 100 mR (200 mrem TEDE). The DRD should be monitored at least every 30 minutes in a radiation field less than 1 mR/hr and every 15 minutes in a radiation field greater than 1 mR/hr. In addition, record all DRD readings on the

appropriate Radiological Field Monitoring Team Data Record and report to the Field Team Coordinator in the SRMAC (a sample is provided in manual).

The Total Effective Dose Equivalent (TEDE) can only be determined from readings by use of a multiplicative factor which is dependent upon the mix of radioisotopes in the plume. Without such knowledge, an approximation is made by use of a factor of two (2). That is, a DRD reading of one (1) rem would give a TEDE of two (2) rem. Continue to report your DRD reading. Any corrections will be made by SRMAC.

NOTE: A reading of 2.5 R on your direct-reading dosimeter (digital or pocket) equates to the 5 rem TEDE limit.

Personnel, such as inspectors with the Department of Agriculture or Division of Food, Milk, and Lodging, accompanying a RFMT during sampling should receive direction from SRMAC for issuance of appropriate dosimetry. The dosimeter readings should be recorded on a Radiation Exposure Record (a sample is provided in manual) and reported to SRMAC.

All public information releases which pertain to off-site monitoring operations will be coordinated and released by the Joint Information Center (JIC) or the Emergency News Center (ENC). No individual or team is authorized to make a statement to the press about off-site radiation, emergency operations, or to speculate about on-site conditions. If approached by the press, direct them to contact the JIC or the ENC to be informed of the time and location of the next press conference. The JIC or ENC contact information can be obtained by the SRMAC.

INSTRUCTIONS FOR USE OF SOUTHERNLINC RADIOS

1. The **primary means of communication** between the SRMAC and RFMTs will be via the SouthernLinc radio supplied by the ORC. Contact with RFMTs and SRMAC should be attempted every 15-30 minutes after initial dispatch from the Field Team Coordinator.
2. All instruments are capable of being used as a radio with private conversations between two people and conferencing between many people (Use of Talkgroups 60-65).
3. **To make a Radio Call: (Private)**

i576/i686: Press the contact (Contacts) button and use the or key to select the appropriate ID (name or numeric). Press the Press to Talk (PTT) button (*button on the side of the radio with raised dots*) to talk and release to listen. In this mode, the two callers are linked together and their conversation is private.
4. **Conference Calls (Groups)**: For general instructions and warnings. Conference Calls or Group calls are made using the talk groups. Radiation Control has been assigned six talk group numbers (60-65).

NOTE: RFMTs will use the talk group 65 unless otherwise directed by the Office of Radiation Control.

5. **Join a Talk Group**: Before you make a Talk group call, you need to join the Talk group. Touch **Contacts** button and press the letter T for talk group or scroll for **Talk group**. Select the appropriate Talk group and press **Join**.
6. **Make A Talk Group Call**: Touch **Dialer (phone screen button)**, enter the Talk group number and press the PTT Button. TIP: Talk group numbers begin with a #. For example #65. Touch **Contacts**, select the Talk group and touch **Push to Talk** (or press the PTT Button). You may choose to listen to push-to-talk calls through your phone's speaker or earpiece. Press Speaker located on top of the phone to turn the speaker on or off.

i576/i686: Press the phonebook (PHBK) button and use the or key to select the appropriate talk group ID (name or numeric). Press the JOIN button to join the talk group. Press the Press to Talk (PTT) button (*button on the side of the radio with raised dots*) to talk and release to listen. In this mode, all callers that are on the same talk group will hear information at the same time.

PRE-DEPARTURE VEHICLE and EQUIPMENT GUIDANCE

Vehicle Set-Up

1. Verify that the zip strap is locked on the response tote prior to cutting. This guarantees all response tote contents on list are current. (inventory sheet of supplies inside of tote)
2. Remove equipment and tarp from tote and prepare back of vehicle for contamination control. Protect back of vehicle with tarp and tape.
3. Hang a bag for trash with radiation label. Trash bag is used for contamination control for items and disposable items (i.e., smears, gloves).
4. Place 2 ADPH decals on the vehicle front doors.
5. Ensure that the primary and secondary forms of communication are operational.
6. Prepare by lining 2 card board boxes with appropriate shipping labels. One box is for storage the other is for collection of environmental samples.
7. Use supplied Department identification when accessing traffic control and/or security points or locations while conducting official Department business.

Preparation of Radiological Equipment

1. Set up Ludlum Model 14C and other equipment if necessary (i.e., Low range meter).
 - a. Verify annual calibration due date on equipment has not expired.
 - b. Physically inspect (condition) survey instrument and conduct a battery response check.
 - c. Turn on audio and set toggle switch to **slow response**.
 - d. Conduct an Operational check, open the cover of the affixed check source, by placing an open window probe near the check source and look for a visual needle deflection and listen for an audio response.
 - e. Compare each probe with the calibration label for an acceptable range ($\pm 20\%$) of readings. Then cover probe(s) with plastic wrap, zip-lock bag or glove and take background radiation reading. Consider placing a survey meter in a 2-gallon bag.
 - f. Take background readings and record on the Radiological Field Monitoring Team Data Record (a sample is provided in manual).
 - g. Upon departure, set instrument to lowest range that provides an on-scale reading and turn response setting to **fast response**.
2. Set up Digital Alarming Dosimeter (DAD).
 - a. Check date of Accuracy label affixed to unit.
 - b. Press and hold the %On+key until the sound generator generates a beep.
 - c. The display shows %Learning+ which is finding background for location. During this time, do not expose the unit to any artificial gamma radiation.

The heart symbol next to battery must be **beating**. An error code will be displayed on the LCD if a problem is encountered.

- d. Place unit for a response check near the open window (1uCi, Cs-137) check source found on Ludlum 14C.
- e. Press the **Menu** key and toggle to **Clear dose**, press **Yes**, then **Yes** again.
- f. Press the Info button to monitor your **dose** every 15-30 minutes.
- g. Monitor your dose and record on appropriate Radiological Field Monitoring Data Record or Radiation Exposure Record.
- h. Place below neck line and above the waist.

NOTE: If DAD fails its operational check then use the (200 mR, 5R and 100R) pocket dosimeters found in the grey response case.

3. Zero and issue pocket dosimeters (200 mR, 5R, 100R), only if DAD fails its operational check.
 - a. Place below neck line and above the waist
 - b. Monitor your dose and record on Radiation Exposure Record.
4. Issue a permanent dosimeter (i.e., TLD card) to each RFMT member.
 - a. Record on the Radiation Exposure Record.
 - b. Place below neck line and above the waist.
5. Prepare air sampler by installing cartridge and filter paper.
 - a. Prepare the appropriate air sampling record (digital or rotameter).
 - b. Run air sampler 5-10 seconds for operational check.
 - c. Call SRMAC to report any failure or problems.

NOTE: Prior to dispatch: Receive an initial safety briefing from SRMAC Field Team Coordinator or assigned personnel.

Radiation Exposure Record

Name:		SS# (last 4):						
Agency:		DOS#: <small>200 mR</small>		<small>5 R</small>	<small>100 R</small>	<small>Digital</small>		
Date: (M/D/Y)		TLD#:						
Note! Read dosimeter every 30 minutes							7/2015	
#	Time (24 hr)	Reading				Status (✓)		
		Low (200 mR)	High (5R)	(100R)	Digital Dosimeter	Start	End	Total
1	Initial Reading							
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

Name: _____ Date: ____ / ____ / ____

GENERAL MONITORING GUIDANCE

1. Do not enter evacuated areas unless specifically directed by SRMAC. Monitor your DRDs at intervals every 30 minutes. Approach the sectors to be monitored with the survey meter set on the lowest scale possible. Drive in an arc perpendicular to the wind direction to find the center of the plume. Do not exceed your Total Effective Dose Equivalent (TEDE/5rem) or your turnaround dose rate (200 mR/hr or 400 mrem/hr TEDE) unless directed by SRMAC. Take radiological readings at the center line and approximate edges of the plume and report them to SRMAC.
2. Position the covered GM probe out the window of your vehicle with the GM tube parallel to the ground with shield open facing upward and response setting on fast. While in transit to designated monitoring area set by SRMAC observe the ambient exposure rate using the most sensitive scale to provide the first radiation measurements beyond background radiation levels. Proceed along your designated path recording your readings from your survey meter at designated points and/or landmarks (intersections) as determined by SRMAC. Upon direction by SRMAC stop your vehicle; take measurements at waist level (approximately 1 meter/39 inches above ground) and ground level (approximately 15 centimeters/6 inches above ground) with probe rotary window open and closed. Record all readings on the Radiological Field Monitoring Team Data Record (a sample is provided in manual).

Note: An open probe reading of 2-3 times the closed probe readings at waist level (approximately 1 meter/39 inches) and ground level (approximately 15 centimeters/6 inches) indicates the plume is at ground level. Advise the Field Team Coordinator of the open probe and closed probe readings. An air sample may be requested at the location.

3. By comparing readings to the table below determine the plume position

NOTE						
Record Gamma (beta window closed) readings at waist-level (1 meter/39 inches) and ground level (15 centimeters/6 inches). Record open window readings at both heights; open window facing upwards at 1meter/39 inches height and window open facing downward at 15 centimeters/6 inches ground level. The directional portion of the detector should be pointed upwards (away from the ground) while taking waist-level readings to avoid including beta radiation contribution from deposition on the ground in the reading.						
1. By comparing readings to the table below determine if the plume is elevated, at ground level or has passed.						
If at 1 meter (39 inches)		AND	If at 15 cm (6 inches)			Then:
WO			WC	WO		WC
+			1	+		1
+			>	+		>
+			1	+		>
						Plume is elevated
						Plume is immersing team
						Plume has passed - ground contamination
WO = detector window open; WC = detector window closed						
Check dosimetry and notify FMT Coordinator if readings reach prescribed limits.						
When the presence of the plume immersing the FMT is verified, air sampling is warranted at or near the plume centerline. Locating the centerline should be carried out using a survey meter with a fast response setting.						
2. If directed to take an air sample, repeat open and closed window readings at conclusion of air sample at both heights to verify RFMT was immersed by plume during entire duration of air sample.						
3. Survey equipment and personnel periodically. Change gloves and dispose in labeled radiation bag as needed.						

4. A GM meter reading of more than 10 times background is an indication that you are in the plume. The windows and the outside ventilation of your vehicle should be closed. Notify the Field Team Coordinator in SRMAC.

5. Decision criteria for release of personnel, vehicles, equipment and surfaces are based on a contamination limit of 2x (twice) background radiation level. A detector using a pancake GM or appropriate scintillator should be used in determining surface contamination. Move the probe within ½ to 1 inch of surface at a rate of 1 inch per second. Personnel or items exceeding contamination limits of 2x background radiation should be reported to SRMAC.

6. Report monitoring results to SRMAC in the following frequency, unless otherwise directed by SRMAC:

Whole Body Exposure Rate (mR/hr)		
If levels are:	Take Readings every:	Report Readings to SRMAC
Less < 1 mR/hr	30 minutes	As taken
Greater > 1 mR/hr	15 minutes	As taken

TOTAL DOSE TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE)

In Alabama, the following administrative limits will be used to address the radiation limits for emergency workers entering a plume during a radiological emergency involving a nuclear power plant.

The administrative limit is stated in terms of the external dose measured by a DRD (digital or pocket). There is currently no method available to assess internal exposure on a real-time basis. To account for the internal dose, which cannot be measured prior to or during a mission, ***the internal dose is assumed to be equal to the external dose as measured by the direct-reading dosimeters (digital or pocket).***

Therefore, an administrative default correction factor of two (2) to relate external dose to internal dose will be used.

A simplified version of the Total Effective Dose Equivalent (TEDE) can be stated as follows:

TOTAL DOSE = EXTERNAL DOSE + INTERNAL DOSE

OR

TOTAL DOSE = 2 X DIRECT-READING DOSIMETER (DRD)

Radiation Dosage Limits (For Radiological Field Monitoring Teams)

The administrative limit for emergency workers in Alabama has been set at one-half the limit for each class of activity recommended by the EPA.

RADIOLOGICAL FIELD MONITORING TEAMS		
Radiation Dosage Limits		
TEDE (Total Effective Dose Equivalent)		
Environmental monitoring and locating airborne releases		
	<u>TEDE</u>	<u>Meter/DRD</u>
Turn Around Value (Dose Rate)	400 mrem/hr	200 mR/hr
Seek Relief (<u>DRD</u>) (Digital or Pocket)	200 mrem	100 mR
Daily Maximum	1 rem	500 mR
MAXIMUM for ACCIDENT	5 rem	2.5 R

Alabama Radiation Control

- Read all DRDs every 15-30 minutes.**
 - Automatic seek relief exposure rate is 200 mR/hr unshielded with survey meter.
 - Do not exceed 2.5 R on your DRD (Annual Occupational Limit is 5 rem TEDE).**
 - An open probe reading of 2-3 times the closed probe reading at 1 meter/39 inches and 15 centimeters/6 inches indicates a touchdown of the plume at that location.
 - During the 15 minute air sample, take radiation field measurements before, during and after sampling; record measurements.**
 - Contamination level for samples and personnel monitoring is twice (2x) background.
 - Samples with a contact radiation level greater than 1 mR/hr may only be shipped with express written permission from SRMAC.**
 - Decontamination stations are the Houston County Farm Center for Farley and Morgan County Area Transportation Building for Browns Ferry.
 - RFMTs will use the talk group 65 unless otherwise directed by SRMAC.**
 - Establish contact with SRMAC at least every 30 minutes.
 - RadEye(DAD) (Digital Alarming Dosimeter): Install batteries and power on. Unit performs continuous self-checks and if failure is indicated on the LCD then use pocket dosimeter(s). Conduct a response check using the check source found on Ludlum and then clear dose.
- Alabama Radiation Control

RADIOLOGICAL FIELD MONITORING TEAM DATA RECORD

Digital Alarming Dosimeter

FMT CALL SIGN			GMSM Model/Serial #		Model		Serial #				
FMT MEMBERS	Name		GMSM Model/Serial #								
DATE	Background Reading (using):		GMSM Calibration Date		HP Probe		12/2015				
DATA RECORD											
1	2	3	4	5	6	7	8	9	10	11	12
Location/GPS	Time	1 meter/39+		15 cm/6+		Digital Dosimeter Readings Record every 15-30 minutes					
		w/o	w/c	w/o	w/c	FT#1	FT#1	FT#1	FT#2	FT#2	FT#2

RADIOLOGICAL FIELD MONITORING TEAM DATA RECORD

Pocket Dosimeters

FMT CALL SIGN			GMSM Model/Serial #		Model		Serial #				
FMT MEMBERS			GMSM Calibration Date								
DATE			Background Reading		HP Probe		12/2015				
DATA RECORD											
1	2	3	4	5	6	7	8	9	10	11	12
Location/GPS	Time	1 meter/39+		15 cm/6+		Pocket Dosimeter Readings Record every 15-30 minutes					
		w/o	w/c	w/o	w/c	200 mR	FT#1	FT#2	FT#1	FT#2	100 R

ENVIRONMENTAL SAMPLING TECHNIQUES

Take air, milk, water, soil, and vegetation samples as directed by the SRMAC in accordance with sample requirements. For all sample locations, a gamma exposure rate (window closed) reading should be taken at waist level (approximately 1 meter/39 inches) and above surface (approximately 15 centimeter/6 inches) of the ground. Record readings on the Sample Identification Label and Radiation Analysis Request & Sample Chain-of-Custody Record (a sample is provided in manual). A location description (degrees and miles or Global Positioning System) should be made for each sample site and recorded on appropriate records. For sample sites, place a large bag (ground cover) on the ground for equipment in order to minimize contamination. Environmental samples will be delivered to an environmental laboratory that has been designated by the SRMAC.

Sample Requirements:

Air: Fifteen (15) minute air sample using an air sampler followed by a charcoal or silver zeolite cartridge. Count the particular filter paper and cartridge then place each separately in a quart sealable bag. Report the iodine air concentration to SRMAC. Charcoal filter cartridge is used for training and exercises, while the silver zeolite cartridge is used only for a real event.

Milk: 1 quart minimum (1 946 milliliters), Plastic container. Add (1 10 milliliters or 6 caps full) of formaldehyde as a preservative or if unavailable, use three (3) caps full rubbing alcohol.

Soils: Take two (2) 100 cubic centimeters (cm³) (4+ x 4+) soil corings at 2 centimeters (1 1+) deep. Place in a 1 gallon sealable bag.

Vegetation: Collect vegetation from an area about 1 m² (1 10 square feet) unless otherwise specified. Place in a 2 gallon sealable bag.

Water: 1 quart minimum (1 946 milliliters), Cubitainer. Do not fill to the top.

Label: Each sample shall be tagged with a *sample identification label* (a sample is provided in manual). Request a sample identification number from the SRMAC Field Team Coordinator (i.e., FNP-01 or BFNP-01).

Complete: Radiation Analysis Request & Sample Chain-of-Custody Record.

Radiation Readings taken Above Ground:

- 15 cm/6": Take a gamma exposure rate (window closed) reading using HP probe at approximately 15 centimeters/ 6 inches above the surface of the ground.
- 1 m/39": Take a gamma exposure rate (window closed) reading using the HP probe at approximately at waist-level (1 meter/ 39 inches).

Radiation Readings of Sample Package:

- Swipe: Take a 100 cm² (area of a dollar bill) smear of the outer (second barrier) package surface using pancake probe to check for removable contamination at twice (2x) background radiation level.
- Contact: Take a gamma exposure rate reading using HP close probe at contact of the sample package.

SAMPLE IDENTIFICATION LABEL

Sample ID: _____
Collected by: _____
Date: _____ Time: _____
Location: _____
Media Type: Air <input type="checkbox"/> Milk <input type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Vegetation <input type="checkbox"/> Other <input type="checkbox"/> _____
For Air Samples: Flow Rate: _____
Filter Type: _____
Collection Time: _____
For Milk Samples: _____
Preservative Used: _____
Radiation readings taken of sample package:
Swipe: _____ cpm
Contact: _____ mR/hr
Radiation readings taken above ground:
15 cm/6": _____ mR/hr
1 m/39": _____ mR/hr

AIR SAMPLING GUIDANCE

The purpose of air sampling is to collect a sample of air on an appropriate media to determine airborne hazard. In a nuclear power event, the collection of radioiodine and particulate air samples downwind are to be taken downwind from sites of potential airborne radioactive releases.

A high volume sampler consists of two parts: the pump and the filter holder assembly. The entire assembly is removable but radiological field team members are instructed to remove only the black or blue filter holder. In most cases, a paper filter and a charcoal or silver zeolite cartridge are to be used together.

NOTE: Conduct an Operational Check for all air samplers prior to departure. Run sampler for approximately 5-10 seconds. For problems or questions, contact SRMAC

The air sampler should be positioned upwind from the motor vehicle facing forward and away from the exhaust with the car running. Place the air sampler on a level surface out front of the engine or close hood (not completely) and place air sampler on top of the hood. The air intake should be facing the source of release. Do not place the air sampler on the ground. Be certain that the red clamp is attached to the **positive** pole and the **black** clamp to the negative pole of the battery.

NOTE: Radiological exposure rate measurements should be taken before, during and after air sampling and recorded in the designated area on the air calculation record.

1. Fill out the **sample identification label** for each sample.
2. Label Sample ID (BFNP or FNP. 001). Numbers to be assigned to RFMT
3. Take a gamma exposure rate reading at 1 meter/39+ and 15 cm/6+. Record on sample identification label.
4. To insert a filter, remove outer black or blue filter holder from the entire air sampler. Remove the outer clamp ring by turning counter clockwise. Place filter paper on the metal grid of the filter holder. Be sure that it is centered (*rough side facing out*) and replace filter clamp ring (*hand tighten*).
5. Place the charcoal or silver zeolite cartridge inside the center filter holder. *Be sure that the **arrow** on the side of the filter cartridge points toward the pump.* Replace filter holder to air sampler (hand tighten).
6. Connect air sampler to battery and follow air calculation record for digital or rotameter air sampler.
7. Take exposure rate measurements before, during and after air sample.
8. Record flow rate then run the rotameter sampler for 15 minutes or as directed by SRMAC. F&J digital air samplers are preset for volume.
9. After sample has been collected, move to a background radiation area.
10. Count the cartridge with pancake probe and place in a quart sealable bag.
11. Count the particulate filter with pancake probe and place in a quart sealable bag.
12. Place the cartridge and particulate filter samples in a 1 gallon sealable bag (this is considered double bagged).

13. Use a swipe to smear 100 cm² (area of a dollar bill) of second bag to verify that removable contamination is less than twice (2x) background and record on sample identification label. Dispose of smear sample in labeled radiation bag as radioactive waste.
14. Take a gamma exposure rate reading at contact (second bag) and record on sample identification label.
15. Complete Radiation Analysis Request & Sample Chain-of-Custody record.
16. The RFMT should then complete the air calculation record and report the iodine concentration to SRMAC.

H-810 Digital Air Samplers:

1. Turn the unit ON.
2. Display will show calibrated flow range (1.0-3.5 CFM)
3. **If a volume and time are displayed press CLEAR. Do this after operational check.**
4. Press the **START** key.
5. Press the **SET** key, the display will prompt for a new target volume. Enter 10.0 ft³ or as directed by SRMAC and press **ENTER**.
6. Press the **START** key to begin air collection.
7. The unit will stop when it has reached the target volume or until the **STOP** key is pressed.
8. Upon completion or termination of a sample, the display will indicate the final time/volume of the sample.
9. Record start and stop time, number of minutes and total sample volume on the Air Calculation Record for digital air samplers (a sample is provided in manual).
10. After sample has been collected, move to a background radiation area and prepare sample for packaging.

F&J Digital Emergency Air Samplers

1. Open air sampler unit and press the **Charge Indicator** button to determine the level of charge the air sampler battery has. There is approximately 6 hours of operating time with a full charge. Alternatively, the air sampler can be powered using a 100VAC line power or a 12VDC vehicle battery power.
2. The air sampler is programmed to collect a minimum of 10 cubic feet (ft³).
3. Press the **On/Off** button to place sampler in stand-by mode. The LED indicator will be lit.
4. Set all values to zero (0). Press the **Units** button until the green LED is lit beside %time+. Press **RESET** to set to zero (0). Press **Units** button until green LED is lit beside %Total Volume+. Press **RESET** to set to zero (0).
5. Press the **Units** button until green lit is beside %flow+. Press **RESET** to start collection. Record **Flow** rate on air calculation record when the rate has stabilized and closed lid.

NOTE: You can toggle between **Flow**, **Time** and **Total Volume** by pressing **Units** button. If you press **Reset** while indicator is beside a specific unit other than **Flow**, that value will reset to zero (0). If you press **Reset** while the indicator is beside **Flow**, collection will stop and the sampler will go into stand-by mode.

6. The air sampler will automatically turn off when a minimum of 10 cubic feet (ft³) is collected.
7. Press %On/Off+button and place sampler then into a lined collection box.

8. Record start and stop time, number of minutes and total sample volume on the Air Calculation Record for digital air samplers (a sample is provided in manual).
9. After sample has been collected, move to a background radiation area and prepare sample for packaging.

Rotameter Air Samplers:

1. Turn on the pump.
2. When flow rate stabilizes, *(it should do so quickly)* read the red ball in the tube and record flow rate in cubic feet per minute (cfm).

NOTE: Recorded flow rate should be consistent with flow rate (1.5-2.5 cfm) used when the air pumps were calibrated. Contact SRMAC if the range exceeds 20 percent of calibrated range.

3. Let pump run for 15 minutes or as directed by SRMAC.
4. Turn off pump.
5. Record start and stop time, date, location, and flow rate on the Air Calculation Record for rotameter air samplers (a sample is provided in manual).
6. After sample has been collected, move to a background radiation area and prepare sample for packaging.

AIR CALCULATION RECORD – DIGITAL AIR SAMPLER

FMT CALL SIGN		Air Sampler Model/Serial #	Model	Serial #
FMT MEMBERS		Air Sampler Calibration Date		
DATE	LOCATION Degrees/Miles/GPS		TIME	12/2015

DATA RECORD									
1	2	3	4	5	7	8	9	10	
Bkg (air outside the plume)	Particulate Paper Filter	Net (Column 2-1)	Gross (front)	Net (Column 4-1)					Flow
CPM	CPM	CPM	CPM	CPM					Start Time
									# of Minutes
									MIN
									Total
									FT³

Conversion Factor	$1 \times 10^{-9} \frac{\mu\text{Ci}}{\text{CPM}} \times \frac{\text{FT}^3}{\text{CM}^3}$			
Iodine Concentration (Air)	Column 5		X 10⁻⁹ uCi/CC	
Exposure Rate Data mR/hr	<i>Before Air Sample</i>		<i>During Air Sample</i>	
	1 meter/39+	15 cm/6+	15 cm/6+	<i>After Air Sample</i>
	w/o	w/c	w/o	1 meter/39+
	w/o	w/c	w/o	15 cm/6+
	w/o	w/c	w/o	w/o
	w/o	w/c	w/o	w/c
	w/o	w/c	w/o	w/c
	w/o	w/c	w/o	w/c

Note: 3000 x 10⁻⁹ uCi/CC (I-131) for 1 hour causes an adult thyroid dose commitment of 1 rem.

AIR CALCULATION SHEET – ROTAMETER AIR SAMPLER

FMT CALL SIGN		Air Sampler Model/Serial #	Model	Serial #
FMT MEMBERS		Air Sampler Calibration Date		
DATE	LOCATION Degrees/Miles/GPS		TIME	12/2015

DATA SHEET									
1	2	3	4	5	6	7	8	9	10
Bkg (air outside the plume)	Particulate Paper Filter	Iodine Cartridge							Flow
	Gross CPM	Net (Column 2-1) CPM	Gross (front) CPM	Net (Column 4-1) CPM	Rate (from rotameter) CFM	Start Time	Stop Time	# of Minutes MIN	Total (Column 6 x 9) FT ³

Conversion Factor	$1 \times 10^{-9} \frac{\text{uCi}}{\text{CPM}} \times \frac{\text{FT}^3}{\text{CM}^3}$					
Iodine Concentration (Air)	$\text{Column 5} \times 10^{-9} \frac{\text{uCi}}{\text{CC}}$					
Exposure Rate Data	Before Air Sample		During Air Sample		After Air Sample	
mR/hr	1 meter/39+ w/o	15 cm/6+ w/o	1 meter/39+ w/o	15 cm/6+ w/o	1 meter/39+ w/o	15 cm/6+ w/o

Note: 3000×10^{-9} uCi/CC (I-131) for 1 hour causes an adult thyroid dose commitment of 1 rem.

MILK SAMPLING GUIDANCE

The purpose of milk sampling is to prevent milk and milk products containing excessive amounts of radioactivity from being used for human consumption. The primary concern is iodine which will be the limiting radionuclide in milk in a release from a nuclear power plant. Personnel from the Milk Branch of the Division of Food, Milk and Lodging will specify and collect samples of milk from dairies. The RFMT will provide equipment for milk collection and will package for transport.

NOTE: Consult with dairy farmer for documentation of the volume of milk in the storage tank being sampled and for date and time when each milking was added to the tank. Note if livestock (cow or goat) were on stored feed or pasture.

1. Fill out the **sample identification label** for each sample.
2. Label Sample ID (BFNP or FNP. 001). Numbers to be assigned to RFMT.
3. Take a gamma exposure rate reading at 1 meter/39+and 15 cm/6+ Record on sample identification label.
4. Collect 1 quart (1 946 milliliters) sample. Do not fill to the top.
5. Add approximately 10 milliliters (6 caps full) of formaldehyde as a preservative. If not available, then add three (3) caps full of rubbing alcohol.
6. Place sample in a 1 gallon sealable bag (this is considered double bagged).
7. Use a swipe to smear 100 cm² (area of a dollar bill) of second bag to verify that removable contamination is less than twice (2x) background and record on sample identification label.
8. Dispose of smear sample in labeled radiation bag as radioactive waste.
9. Take a gamma exposure rate reading at contact (second bag) and record on sample identification label.
10. Complete Radiation Analysis Request & Sample Chain-of-Custody record.

SOIL SAMPLING GUIDANCE

The purpose of soil sampling is to determine surface contamination at a location and/or site. In order to collect a representative soil sample, choose soil that is relatively dry and is in a flat location. Do not sample under trees, bushes, or other overhanging objects. The most important variable is the surface area of the sample. The depth of the sample is also important, as all activity is deposited on the surface of the soil and unnecessary depth will dilute the sample results.

1. Fill out the **Sample Identification Label** for each sample.
2. Label Sample ID (BFNP or FNP. 001). Numbers to be assigned to RFMT.
3. Take a gamma exposure rate reading at 1 meter/39+and 15 cm/6+ Record on sample identification label.
4. Use stainless steel soil sampling tool (2 pieces) to take two (2) samples beside one another.
5. Press sampling tool into the soil (use hammer if needed to tamp down) to a depth of 2 centimeters (1 1+) and slide pan underneath to collect sample.
6. Hold open 1 gallon sealable plastic bag (opening folded over gloved fingers) and deposit soil sample. Repeat for a total of two soil corings.
7. Place sample in a 2 gallon sealable bag (this is considered double bagged).
8. Use swipe to smear 100 cm² (area of a dollar bill) of second bag to verify that removable contamination is less than twice (2x) background and record on sample identification label.
9. Dispose of smear sample in labeled radiation bag as radioactive waste.
10. Take a gamma exposure rate reading at contact (second bag) and record on sample identification label.
11. Complete Radiation Analysis Request & Sample Chain-of-Custody record.

VEGETATION SAMPLING GUIDANCE

The purpose of vegetation sampling is to determine surface contamination at a location and/or site. Do not sample under trees, bushes, or other overhanging objects. The most important variable is the surface area of the sample. The Department of Agriculture and Industries personnel will support the State Radiation Control Agency in the location of farms within the state. Agriculture personnel will identify vegetation (food crops) to be collected by the RFMT for ingestion sampling.

1. Fill out the **Sample Identification Label** for each sample.
2. Label Sample ID (BFNP or FNP. 001). Numbers to be assigned to RFMT.
3. Take a gamma exposure rate reading at 1 meter/39+and 15 cm/6+ Record on sample identification label.
4. Cut vegetation using a Hawk Bill or appropriate tool from an area about 1 m² (1 10 square feet).
5. Use a 2 gallon bag and fill.
6. Place sample into a 3 gallon sealable bag (this is considered double bagged).
7. Use swipe to smear 100 cm² (area of a dollar bill) of second bag to verify that removable contamination is less than twice (2x) background and record on sample identification label.
8. Dispose of smear sample in labeled radiation bag as radioactive waste.
9. Take a gamma exposure rate reading at contact (second bag) and record on sample identification label.
10. Complete Radiation Analysis Request & Sample Chain-of-Custody record.

WATER SAMPLING GUIDANCE

The purpose of water sampling is to determine concentrations of various radionuclides dissolved or suspended in a water column. Water samples should be collected in open areas and not sheltered by trees or high bushes. Avoid areas of high turbidity or high sediment. Avoid stirring up sediment and including it in the sample. Sampling buckets should not be allowed to sink to the bottom. This material can bias the true activity concentrations of the collected water sample. Choose a location with minimal turbidity and little or no vegetative debris.

NOTE: Do not take water samples from recirculating water troughs.

1. Fill out the **Sample Identification Label** for each sample.
2. Label Sample ID (BFNP or FNP. 001). Numbers to be assigned to RFMT.
3. Take a gamma exposure rate reading at 1 meter/39+and 15 cm/6+ Record on sample identification label.
4. Set the sample container in a stable location on the ground with the funnel inserted in the opening.
5. Lower the collection apparatus (dipper or bucket) into the water column while not disturbing sediments and aquatic vegetation.
6. Collect one quart (1 946 milliliters) sample and place in cubitainer. Do not fill to the top.
7. Place cubitainer into a 1 gallon sealable bag (this is considered doubled bagged).
8. Use swipe to smear 100 cm² (area of a dollar bill) of second bag to verify that removable contamination is less than twice (2x) background and record on sample identification label.
9. Dispose of smear sample in labeled radiation bag as radioactive waste.
10. Take a gamma exposure rate reading at contact (second bag) and record on sample identification label.
11. Complete Radiation Analysis Request & Sample Chain-of-Custody record.

PACKAGING, TRANSPORTING AND TRANSFERRING OF EMERGENCY ENVIRONMENTAL SAMPLES

Purpose: To provide instruction for packaging, transporting, and transferring environmental samples to the Alabama Department of Environmental Management Laboratory (ADEM) (or other laboratory, as appropriate) to determine levels of residual radioactivity in the environment and in food products as a result of radioactive materials.

Scope: This procedure is applicable to all State of Alabama personnel and all personnel under the control and/or supervision of the State of Alabama during radiological field monitoring resulting from a significant release of radioactive materials from a nuclear power plant in or affecting the State of Alabama.

Required Equipment, Documentation and References

Required Equipment Per Team: (1) Automobile, (1) 10-mile and/or 50-mile Map, (2) Totes with supplies (Black and Grey), (1) Ludlum 14C kit, (1) Low range survey instrument (micro-R meter) - ORC will supply, if needed, (2) Cardboard boxes for contaminated equipment and samples (line box with garbage bag), (1) Air sampler, (1) Radio, (1) Cellular phone and (1) Global positioning system (GPS).

Documentation: Radiological Field Monitoring Team Data Record(s), Air Calculation Record(s), Radiation Analysis Request and Sample Chain-of-Custody Record(s), Sample Identification Label(s) and Radiation Exposure Record(s).

References: Alabama Radiological Emergency Preparedness (REP) Plan and the State of Alabama Radiological Field Monitoring Team Manual.

Limits and Precautions: All Radiological Field Monitoring Team members must be properly trained and qualified to perform all radiological field monitoring activities including packaging and transport of samples.

NOTE: Contamination levels on the outside of samples must be less than twice (2x) background.

Radiation Surveys:

1. Contamination surveys will be performed using a GM survey meter with a pancake probe. Measurements will be made using a swipe to smear approximately 100 cm² (area of a dollar bill) on the outside (second bag) of each sample.
2. Direct radiation measurements of sample packages will be performed using a GM survey meter with an energy-compensated beta-gamma probe (HP Probe) or a low range survey meter (micro-R meter).

3. Each environmental sample collected shall have a sample identification label affixed to the outside of the second bag. Information from the sample label shall be used to complete to the Radiation Analysis Request & Sample Chain-of-Custody Record.

Sample Transport:

Samples should be transported to the ADEM Environmental Laboratory at the end of each day unless directed differently by SRMAC. If earlier sample transport is required, arrangements will be made by the Field Team Coordinator under the direction of the SRMAC Director and the team(s) will be advised of the sample transfer point to be used.

Packaging Samples for Transport:

1. For all sample locations, a gamma exposure rate (window closed) reading should be taken at 1 meter/39 inches and 15 centimeters/6 inches. Radiation measurements shall be recorded on the sample identification label and transferred to the Radiation Analysis Request & Sample Chain-of-Custody Record.
2. Place the collected sample in a clear sealable bag. (Samples are to be double bagged).
3. Contamination surveys will be performed on each sample using a GM survey meter with a pancake type probe. Measurements will be taken from a swipe used to smear an area approximately 100 cm² (area of a dollar bill) on the outside of each sample package. Verify that the removable activity is less than twice (2x) background radiation level. If greater than twice (2x) background, attempt to decontaminate by using a dry and/or wet wipe first then survey for less than twice (2x) background radiation. Use water as a secondary measure to remove contamination from a sample package. For problems on decontamination of samples call SRMAC. Measurements will be recorded on the sample identification label and transferred to the Radiation Analysis Request & Sample Chain-of-Custody Record. Dispose of gloves and smear samples in a labeled radiation bag as radioactive waste.
4. Attach the sample identification label to the double bagged sample by folding the adhesive label over the opening of the bag. Place environmental sample(s) as they are collected into a durable, plastic-lined (garbage bag) shipping container (box).
5. As multiple environmental samples are collected, transfer the data each time from the sample identification label to the Radiation Analysis Request and Sample Chain-of-Custody form.
6. When sampling activities are complete seal the box liner (garbage bag) followed by taping closed the shipping container.

- 7 Use a swipe to smear an area of 300 cm² (area of 3 one dollar bills) on the external surface of the shipping container to verify the removable activity is less than twice (2x) background radiation. If activity of external surface of the shipping container is greater than twice (2x) background radiation, then the shipping container must be decontaminated prior to transport. Dispose of smear samples in a labeled radiation bag as radioactive waste.
5. Verify the dose rate using the HP (window closed) probe on the external surface of the shipping container does not exceed 0.5mR/hr.

Note: Assuming a representative mix of radionuclides following an incident at a nuclear power plant, up to one hundred (100) individual samples may be shipped in a single container as limited quantity

9. Prepare the shipping container for shipment as a Limited Quantity Radioactive Materials.
10. Place the following label on the outside of the shipping container (Radioactive shipping labels) can be found in the expandable folder located in the supply box.

RADIOACTIVE

Consignee:

Consignor: Alabama Department of Public Health

This package conforms to the conditions and limitations specified in 49CFR173.421 for excepted radioactive material, limited quantity, N.O.S. UN 2910; 49CFR173.422 for excepted radioactive material, instruments and articles manufactured from natural or depleted uranium or natural thorium, UN2909; or 49CFR173.427 for excepted radioactive material; empty packages, UN2908.

Note: Samples with a contact radiation level greater than 1 mR/hr may only be shipped with an express written permission from the SRMAC Director.

Sample Transportation:

1. When samples are picked up by the courier or turned in by the RFMTs, the Radiation Analysis Request and Sample Chain-of-Custody Record will be updated and signed off each time the sample changes possession. The Radiation Analysis Request and Sample Chain-of-Custody Record is in four (4) duplicates and a copy shall to be retained by each party.

2. When the samples are picked-up or transported from the field, the samples should be taken to the ADEM laboratory or lab designated by SRMAC.
3. The SRMAC shall secure the services of an enclosed vehicle to transport samples.
4. Place the sample container into the transport vehicle as far away from the operator as is reasonably achievable.
5. Upon the arrival at the designated lab, the field team or operator should relinquish the sample container to the lab personnel by completing the Radiation Analysis Request & Sample Chain-of-Custody Record.

MONITORING FOR CONTAMINATION GUIDANCE

1. When leaving an area of suspected contamination, an assessment of contamination should be made. At the first opportunity, after leaving the area, a survey of the vehicle should be made and recorded on the Vehicle Monitoring/Decontamination Record (a sample is provided in manual). If these readings are greater than twice (2x) background then monitoring of persons will be necessary.

2. To check persons for contamination, use a survey meter with a GM pancake detector. The toggle switch should be set for fast response. Position the pancake probe from the surface in question ($\frac{1}{2}$ to 1 inch away at a rate of 1 inch per second) to frisk for contamination. Work systematically over the entire surface of the team member's body (check bottom of shoes) and record on the Personnel Monitoring/Decontamination Record (a sample is provided in manual). Special attention should be given to body orifices and areas covered with hair.

Unless otherwise directed by the SRMAC Director, a sustained instrument reading (shield open) of twice (2x) background will be sufficient to warrant decontamination.

3. When either vehicle or persons are found to be contaminated, contact SRMAC which will direct the radiological field team to the appropriate station for decontamination. The decontamination stations are the Houston County Farm Center for Farley Nuclear Power Plant and the Morgan County Area Transportation Building for Browns Ferry Nuclear Power Plant.

CONTAMINATION AND THYROID UPTAKE LIMITS FOR INDIVIDUALS

Thyroid Uptake Limit (5 rem)

Instrument	CDE Thyroid Dose* (rem/cpm above background)
Ludlum 14C	.04

*Multiply count rate (cpm) by multiplier to determine thyroid dose in rem.

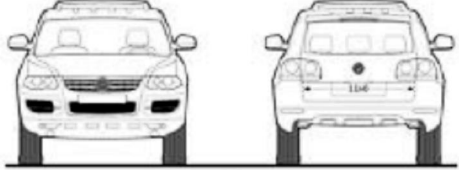

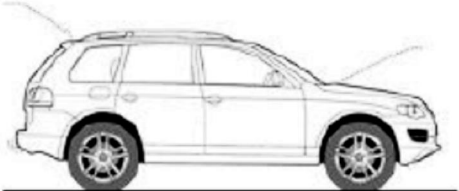
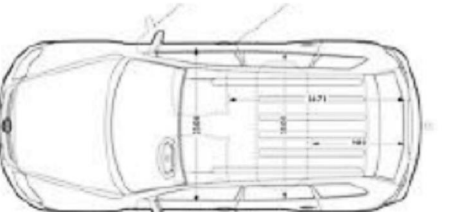
Vehicle Monitoring/Decontamination Record

VEHICLE MONITORING/DECONTAMINATION FORM				
Name:			Date:	
Address:			Phone#:	
City:		State:	Zip Code:	
Year:	Make:	Model:	Color:	Tag:

NOTE: Contamination Limit in Alabama is 2 X Background
Initial survey of vehicle:

Background Reading: _____ CPM

(Indicate the Location)

<p>Front Bumper _____ CPM</p>		<p>Rear Bumper _____ CPM</p>
<p>Driver's Side Tire/Wheel Well (Front) _____ CPM (Rear) _____ CPM</p>		<p>Driver's Side Door Handles (Front) _____ CPM (Rear) _____ CPM</p>
<p>Passenger's Side Tire/Wheel Well (Front) _____ CPM (Rear) _____ CPM</p>		<p>Passenger's Side Door Handles (Front) _____ CPM (Rear) _____ CPM</p>
<p>Roof _____ CPM</p>		<p>Interior Area(s) Steering Wheel _____ CPM Seat(s) _____ CPM Floorboard _____ CPM</p>

Remarks

Decontamination of vehicle:

_____ Monitor's Signature	_____ Decon Monitor's Signature
------------------------------	------------------------------------

Personnel Monitoring/Decontamination Record

PERSONNEL MONITORING/DECONTAMINATION RECORD			
PERSONAL INFORMATION			
Name:			SSN:
Address:			Sex: M/F
City:	State:	Zip Code:	Phone#:
Reception Center:			Date:

THYROID DOSE		
Ludlum 14C (multiply CPM x .04) CDV 700 (multiply CPM x .05)	Adult Thyroid Uptake Limit - 5,000 mRem (5 Rem) NOTE: If reading ≥ 5 rem, escort individual to hospital for internal decontamination.	
Initial Reading: _____ mRem	Following 1 st Decon: _____ mRem	Following 2 nd Decon: _____ mRem

EXTERNAL CONTAMINATION			
Note: Contamination Limit in Alabama is 2 x Background		Background Reading: _____ CPM	
Area of Contamination (Indicate Location on Diagram Below)	Initial Reading (Hairline x Dial)	Reading Following 1 st Decon	Reading Following 2 nd Decon
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Initial Reading	1 st Decon	2 nd Decon
<input type="checkbox"/> Not Contaminated <input type="checkbox"/> Sent to 1 st Decon	<input type="checkbox"/> Decontaminated <input type="checkbox"/> Sent to 2 nd Decon	<input type="checkbox"/> Decontaminated <input type="checkbox"/> Contact Radiation Control

Monitor's Signature

Decon Monitor's Signature

NUCLEAR POWER PLANT EMERGENCY CLASSIFICATION

Notification of Unusual Event (NOUE):

Events are in the process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No release of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Alert:

Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of EPA Protective Action Guideline exposure levels.

Site Area Emergency:

Events are in process or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of plant functions; or (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

General Emergency:

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

KEY TO STABILITY CATEGORIES

A-Extremely unstable conditions

B-Moderate unstable conditions

C-Slightly unstable conditions

D-Neutral conditions*

E-Slightly stable conditions

F-Moderately stable conditions

Surface Wind Speed (at 10 m), ^{***} (m/sec)	Daytime Conditions			Nighttime Conditions	
	Strong (sunny)	Moderate (partly cloudy)	Slight (very cloudy)	Thin Overcast	
				or ≥ 4/8 (Cloudiness)**	≤ 3/8 (Cloudiness)
<2	A	A-B	B		
2	A-B	B	C	E	F
4	B	B-C	C	D	E
6	C	C-D	D	D	D
>6	C	D	D	D	D
The neutral class, D, should be assumed for overcast conditions during day or night.					

**Applicable to heavy overcast, day or night.*

***The degree of cloudiness is defined as the fraction of the sky above the local apparent horizon which is covered by clouds.*

**** 1 mile per hour (mph) x 0.447 = meter/second (m/sec)*

1 meter/second (m/sec) x 2.236 = mile/hour (mph)

USE OF POTASSIUM IODIDE

Potassium iodide (KI) should be taken in dosage of 130 mg by all members of the Radiological Field Monitoring Teams if any of the following applies:

1. **Orders from the State Health Officer** or designee through the SRMAC Field Team Coordinator.
2. **An iodine concentration of 3000×10^{-9} uCi/CC** calculated using silver zeolite cartridge in air sample measurement.

The following page discusses potassium iodide side effects. If KI is to be taken by an individual serving on or with a RFMT, then sign the informed consent record and keep the bottom copy for your record. The original (top copy) shall be returned to SRMAC.



Evacuation Zone

HOW POTASSIUM IODIDE (KI) WORKS

In a radiation emergency, radioactive iodine may be released into the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it.

If you take potassium iodide, it will saturate your thyroid gland with nonradioactive iodine. This reduces the chance that harmful radioactive iodine will be absorbed by the thyroid gland.

SIDE EFFECTS

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).

A few people have an allergic reaction with more serious symptoms. These could be fever and joint pain, swelling of parts of the face and body, and at times severe shortness of breath requiring immediate medical attention.

Taking iodine, on rare occasions, may rarely cause over-activity of the thyroid gland, under-activity of the thyroid gland, or enlargement of the thyroid gland (goiter).

WHAT TO DO IF SIDE EFFECTS OCCUR

If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

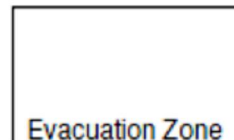
WHO SHOULD NOT TAKE POTASSIUM IODIDE

Pregnant and lactating women, as well as neonates, infants and children may take potassium iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or anti-thyroid drug). People who should not take potassium iodide include individuals with known allergy to iodine or with pre-existing thyroid disease (e.g., Graves' disease, thyroid nodules, Hashimoto's thyroiditis) that might predispose them to adverse reactions.

PLEASE KEEP THIS PART OF THE INFORMATION SHEET FOR YOUR RECORDS

I have read the information on this form about Potassium Iodide. I have had a chance to ask questions which were answered to my satisfaction. I believe I understand the benefits and risks of Potassium Iodide and request that it be given to me or to the person named below for whom I am authorized to make this request.

INFORMATION ON PERSON TO RECEIVE POTASSIUM IODIDE



Evacuation Zone

Name (Please print) _____ DOB _____ Age _____

Address _____ County _____ Cell Phone _____

X Signature _____

Date _____

EMERGENCY NUMBERS

Montgomery	(334)206-5357 (334)206-5358 (334)206-5391 (334)206-5387 (334)264-4396	(334)206-5382 (334)206-5371 Send Only Fax Receive Only Fax
Dothan SRMAC	(334)793-9080 (334)794-9639 (334)793-1565 (334)793-3550	SRMAC Director Communicator Field Team Coordinator Fax
Decatur SRMAC	(256)355-9076 (256)351-6024 (256)355-9158 (256)355-1680 (256)351-0441	SRMAC Director Communicator Field Team Coordinator Receive Only Fax Send Only Fax
Cell Phones	(334)868-9867 (334)868-9868 (334)868-9869 (334)868-9870 (334)868-9871 (334)868-9872 (334)868-9873	Emergency Vehicle RC 12 RC 14 HC 1 HC 2 Limestone Morgan
Houston County HD	(334)678-2815	(334)678-2816 Fax
Morgan County HD	(256)340-2105	(256)353-7901 Fax
Limestone County HD	(256)232-3200	(256)230-6632 Fax

ENVIRONMENTAL RADIATION MONITOR

(Pre-Departure Checklist)

Equipment (*One per team*)

1. Radiological Monitoring Kit
 - Ludlum 14C (Primary instrument)
 - HP probe
 - Pancake probe
 - Low range meter (Supplied by ORC)

2. Communications
 - SouthernLinc radio
 - SouthernLinc car charger
 - Cell phone and car charger
 - Dual car adapter

3. Supplies
 - EPZ Plant Map (10-mile and/or 50-mile)
 - Radiological Field Team Manual
 - Portable air sampler
 - RFMT large black pelican case and small grey box (inventory list inside each)
 - Brown cardboard sample box(s)
 - Personal Protective Equipment (PPE) (OREX Coveralls)

Prior to Departure:

- Assign a DAD to each RFMT member or zero 3 pocket dosimeters (200mR, 5R, 100R)
- Assemble meter with gamma probe (check for proper operation)
- Cover probe with plastic wrap or equivalent
- Turn on meter and speaker
- Check background with each probe and record and report background to SRMAC
- Prepare sample area in vehicle and sample box
- Prepare bag with a Radioactive Material label and place in back of vehicle for radioactive waste
- Establish radio contact with SRMAC and request update(s)

Unless Otherwise Instructed:

- Leave location if meter (dose rate) reads 200 mR/hr (400 mrem TEDE) or greater.
- Seek Relief if possible when DRD is 100 mR (200 mrem TEDE)
- Establish contact with SRMAC at least every 30 minutes
- Check DRDs at least every 30 minutes