FLORENCE POLICE DEPARTMENT
GENERAL ORDER

Subject: **Preventive Radiological/Nuclear Detection**	**Procedure:** General Order 25.6.1	**Total Pages:** 7
Authorizing Signature: Original with Authorizing Signature on File	**Effective:** 10/01/2016	
	( ) **New** (X) **Amended** ( ) **Rescinds**	

I. **POLICY**

The Florence Police Department may deploy an array of radiological/nuclear detection equipment to detect and identify radiological/nuclear materials and investigative techniques to determine their legitimacy. Members may deploy this equipment while on patrol, at special event venues, and at intelligence-driven locations. Members will utilize the protocols contained within this policy and the appendices to properly adjudicate alarms and share information while ensuring their personal safety and the safety of the community. Actions should be conducted in accordance with existing procedures for hazardous materials, suspicious device/packages, and unknown hazards. All responses to nuclear/radiological incidents should be treated as suspect until proven otherwise

II. **PURPOSE**

This policy provides guidance in the use of radiation detection and isotope identification equipment to classify radioactive substances and to ascertain their legitimacy. There are many legitimate sources of radiation including naturally occurring radioactive material (NORM) and authorized legitimate radioactive materials that may be encountered. The alarming of radiological detection equipment does not automatically imply a hazard or a violation. Unidentified radioactive materials or those deemed not in compliance with all applicable laws will be processed in accordance with this policy.

III. **SCOPE**

This policy shall apply to all Florence Police Department personnel trained in the use of Primary Screening Equipment (Personal Radiation Detector (PRD) or Backpack) or a Radiological Isotope Identification Device (RIID).

IV. **RESPONSIBILITY**

It shall be the responsibility of all employees to comply with this written directive.

A. **CAPTAIN, SPECIAL OPERATIONS DIVISION**: The Captain will oversee the department's use of radiation detection equipment, the training of department members in use of the equipment, and development of the department's policy for equipment use.

B. **COMMUNICATIONS SUPERVISOR**: The Communications Supervisor will oversee the development and maintenance of the Computer Aided Dispatch (CAD) for radiological/nuclear detection operations and training of dispatch staff.

V. ALARM RESOLUTION

Resolution or adjudication occurs when the source of the alarm has been determined and the event is brought to a close. The alarm adjudication involves determining if the material is benign or a threat, releasing or detaining the material or individual, and/or the assistance of outside technical experts.

Adjudication will fall into one of the following basic categories:

A. Non-Threat. Alerts generated by nuclear medicine patients, legitimate transport of radioactive materials, exempt consumer products or the presence of Naturally Occurring Radioactive Material (NORM). In these situations, the conveyance and occupants may be released at the discretion of on-scene authorities.

B. Non-Threat, Illegal Conveyance. This situation is not a threat, but some further action may be required due to unauthorized transportation or possession of radiological materials, license violation, environmental or public safety/health hazard, or other issues. Personnel on-scene will take appropriate action based on agency SOPs.

C. Threat/Potential Threat. This situation requires immediate action. A combination of situational information and materials indicate transport possession of radiological/nuclear materials with criminal intent. The first responder will immediately contact his/her immediate chain of command who in turn will immediately notify the FBI WMD Coordinator for response.

VI. OPERATIONAL PROCEDURE

Special Note: If immediate threat source(s) or conditions are encountered during any part of the alarm resolution process, secure the individual, isolate any belonging(s) or vehicle(s)/vessel(s), and notify dispatch to contact Alabama Emergency Management Agency (AEMA) to request 'secondary screening' support. Secondary screening shall be initiated at this time.

The adjudication of an alarm can take place at any time during the alarm response process. Officers will take into consideration the totality of circumstances to make a decision on whether to take no further action or to initiate the next phase of the alarm response procedure. For special events, the special event operations plan may define event-specific procedures and reachback.

A. Primary Screening:

a. When a radiation alarm is encountered during primary screening activities:

    i. Immediately note the dose rate/alert level and type of radiation (gamma or neutron) displayed on the detector.

    ii. Attempt to verify the alarm, either with same detector or independent device, and localize the source.

NOTE: For the purpose of this SOP, an RND equipment alarm, on its own, DOES NOT constitute reasonable suspicion to detain and search an individual/vehicle. The totality of the circumstances must be taken into account when conducting RND missions.

    iii. Once the source is localized, the Officer may detain the individual(s) for further investigation if they suspect criminal activity and or a regulatory compliance violation based on reasonable suspicion or the totality of circumstances.

    iv. If the perceived source is a vehicle or object, isolate the individual(s) from the vehicle/object(s) to determine the location of the detected source of radiation.

    v. Investigate/question to determine if source is non-suspect.

    vi. Officers will use the totality of the information available to them, including behaviors, interview information, and the nature/location of the possible radiological concern to support a preliminary assessment for the alarm and determine if further investigation is required.

    vii. If the Officer is ABLE to resolve the alarm, a notification will be made to the Dispatch to create a Computer Assisted Dispatch (CAD) that indicates Radiation Alarm Resolved.

    viii. If the Officer is UNABLE to resolve the alarm, contact Dispatch to contact Alabama Emergency Management Agency (AEMA) and request a secondary screening support.

    ix. Duration of the stop: In all cases in which a person or vehicle/vessel is stopped for a PRD alarm, personnel will use the "reasonableness standard" in determining the length of time available to resolve the alarm.

b. Readings above 2mR/h or "8" on PRDs with a scale of 1-9 may occur during the investigation, especially close to the person or object producing the radiation; however, if consistently elevated readings more

than a foot away from objects or walls are encountered that cannot be immediately explained, personnel should take the following protective measures:

i. Move away from the location of the suspected radiation source until a valid rate reading (less than 2 mR/hr or "8" on PRDs with a scale of 1-9) is displayed. This will help ensure personnel are not within a high radiation exposure area.

ii. Secure the area

iii. Establish a safety zone/control perimeter at the 2 mR/hr boundary (or where the PRD reading transitions from "9" to "8" on PRDs with a scale of 1-9)

iv. Notify Dispatch to request secondary screening support and continue to investigate.

B. Secondary Screening / Isotope Identification / Source Identification

a. In the event an alarm is unable to be determined as a legitimate radiological/nuclear material during the primary screening process, the secondary screening process using a radioisotope identifying detector (RIID) will be initiated. During this process, the RIID will be utilized to identify the isotope(s) present.
b. Upon arrival at the scene the secondary screening Officer will receive a situation brief.
c. Coordinate with on-scene partner agencies the areas of concern, ensuring full space accountability in the search pattern
d. Approach suspect items/area from several different directions to verify readings and detect/localize all radiation sources.
e. From the location with the highest readings, collect at least a 30 second spectrum to determine isotope using the RIIDs internal procedure.
    i. If the source identified is not consistent with the list of legitimate radiation sources (see Appendix F) or the level and distribution of the radioactivity does not correlate with the materials described in the manifest for the conveyance, notify the AEMA through dispatch. The AEMA personnel will notify the FBI WMD Coordinator, USCG Command Center (if maritime) and Alabama Office of Radiation Control.
    ii. If the source is unidentified by the RIID or is inconsistent with the manifest or investigation, initiate Technical Reachback. At the conclusion of the event, document the incident on the attached Reachback Incident Report Form, the appropriate Department report, and forward a copy of the report to the Alabama Office of Radiation Control**.**

iii. If neutrons or Special Nuclear Material are detected detain individual, isolate vehicle, notify dispatch to contact AEMA to make appropriate notification including the FBI WMD Coordinator, USCG Command Center (if maritime) and Alabama Officer of Radiation Control***. A multiagency call will be initiated to discuss next steps.***

f. Without compromising the safety of the officer, a supervisor shall be notified as soon as time allows.

Note: The Alabama Department of Public Health, Office of Radiation Control can be reached 24hrs/7 days a week through the AEMA Watch Desk (1-800-843-0699).

C. Technical Reachback

a. Trained personnel can be used to send spectra to the JAC as part of the Reachback process.

b. Any time during secondary screening, if RIID indicates special nuclear materials on the display, then an automatic Reachback will be initiated through the DHS Domestic Nuclear Detection Office (DNDO) Joint Analysis Center (JAC).

c. Personnel will gather a minimum of three, five-minute spectrums: one of the suspect item, one of the background (away from suspected item) and one additional sample of a known radiographic check source. Additional spectrum samples can be taken of the suspect item if the operator believes there are multiple "hot" spots.

d. Review of DNDO JAC Reachback Process:

Contact - JAC at **1-877-363-6522** (877-DNDO-JAC)
Identify - your name, agency, location, and callback number
Request - Reachback assistance
Detail - case facts and other information as requested including:

- Location and package description
- PRD reading/alarm information
- RIID gamma dose rate and neutron count rate (cps)/alarm information
- RIID nuclide identification information
- Trade/transport data (license/transportation paperwork, etc)
- Situation data deemed pertinent

Email - upload RIID spectral file to DNDO JAC at DNDO.JAC@dhs.gov
Background spectra file/Unknown spectra file/Known source spectra file
Follow - additional instructions as provided or additional information as requested

- The JAC will coordinate spectral analysis

- The JAC will coordinate response with recommendations

D. Evidence Handling

a. Officers will not take radiological evidence into custody. Any radioactive material that constitutes evidence should be turned over to the appropriate authority such as the Alabama Office of Radiation Control, the United States Department of Energy or the Federal Bureau of Investigation.

b. If a Officer initiates the case in which the radioactive material was seized, the investigating Officer is responsible for completing appropriate evidence tracking documents and maintaining evidence on an electronic storage device.

c. An Incident Report is required to be completed.

E. Equipment Preparation and Deployment

a. Prior to use, Officer's shall verify the detection equipment is functioning properly using the manufacturer's procedures.

b. If the unit is not operating properly, the Officer shall immediately notify their supervisor.

c. All personnel assigned PRDs shall be have their detector "powered on" while on duty.

F. Instrument Calibration/Verification of Functionality: Portable instruments used for detection and measurement of radiological/nuclear materials will be calibrated in accordance with the manufacturer's recommendations. When performing a background reading, all personnel should ensure there are no radioactive check sources nearby. All equipment will be periodically checked for operational readiness.

G. Training: All personnel issued and/or utilizing a PRD or RIID shall be fully trained in the proper use of the equipment.

VII. LAWS, PROCEDURES, AUTHORITIES, AND REFERENCES

- **State of Alabama, Preventive Radiological/Nuclear Detection, Concept of Operations**
- **Ohio Valley Area Maritime Security Committee, Maritime Radiological Nuclear Detection, Regional Concept of Operations, Eighth Coast Guard District**

- **COTP Ohio Valley Area Maritime Security Plan, Radiological/Nuclear Detection Concept of Operations, Port of Northern Alabama**
- **COTP Ohio Valley, RND Equipment, Training, and Exercise Guidelines, Port of Northern Alabama**
- **Code of Alabama**, § Title 31, Military Affairs and Civil Defense, Chapter 9, Emergency Management, Article 1, Alabama Emergency Management Act of 1955, Sections 4 – 6, and 23, as amended.
- **Code of Alabama**, § Title 31, Military Affairs and Civil Defense, Chapter 9A, Alabama Homeland Security Act of 2003, Sections 4 – 11, as amended.
- **Code of Alabama**, § Title 22, Health, Mental Health, and Environmental Control, Title 1, Health and Environmental Control Generally, Chapter 14, Radiation, Sections 2 – 4, 7, and 10 as amended.
- **18 USC Section 831 Prohibited transactions involving nuclear material** – Federal agencies work under this statute. The penalty for violation of this code ranges from a fine to life in prison dependent upon the intentional or reckless nature of the offending party.
- **18 USC Section 2332a Use of weapons of mass destruction.** It is illegal for a person who, without lawful authority, uses, threatens, or attempts or conspires to use, a weapon of mass destruction against any person or property within the United States, and

  - The perpetrator travels in or causes another to travel in interstate commerce in furtherance of the offense or
  - The offense, or the results of the offense, affect interstate, or, in the case of a threat, attempt, or conspiracy, would have affected interstate commerce
- **18 USC Section 2332 Radiological dispersal devices.** It is illegal for any person to knowingly produce, construct, otherwise acquire, transfer directly or indirectly, receive, possess, import, export, or use, or possess and threaten to use—

  - any weapon that is designed or intended to release radiation or radioactivity at a level dangerous to human life; or
  - any device or other object that is capable of and designed or intended to endanger human life through the release of radiation or radioactivity.

- **49CFR173 Subpart I – Class 7 Transportation, Shippers – General Requirements for Shipment and Packagings, (Radioactive) Materials**: Governs the appropriate packaging and shipping of radioactive material. Provides package activity limits, packaging and labeling requirements, radiation level limitations, and contamination controls and limits.

Definitions

Adjudication - Occurs when the nature of the alarm has been determined. The adjudication process involves determining if the cause of the radiation alarm is a threat, benign, or of a regulatory concern. Adjudication can occur at any phase in the alarm response process and should be performed at the lowest possible organizational level.

Commercial Vehicle – Any self-propelled or towed motor vehicle used on a highway in commerce to transport passengers or property when the vehicle:

- **a.** Has a gross vehicle weight rating or gross combination weight rating, or gross vehicle weight or gross combination weight, of 4,536 kg (10,001 pounds) or more, whichever is greater.
- **b.** Is designed or used to transport more than 8 passengers (including the driver) for compensation.
- **c.** Is designed or used to transport more than 15 passengers, including the driver, and is not used to transport passengers for compensation.
- **d.** Is used in transporting material found by the Secretary of Transportation to be hazardous under 49 U.S.C. 5103 and transported in a quantity requiring placarding.

Credible Threat - A threat that has been evaluated for technical feasibility, operational practicality, and adversarial intent and has been determined to be actionable.

Detection - Includes traditional technical means (sensors) to sense alpha, beta, gamma, or neutron emission from radioactive materials; technical means that use non-intrusive inspection (NII); other technical means, such as ultrasound or weight measurement; and non-technical approaches, to include conventional intelligence and law enforcement activities, intelligence cues, surveillance, or operational encounters by law enforcement. A detection event could entail either an instrument alarm or an information alert.

Enhanced Steady-State- Augmented RND operations in response to threat information or to support security related activities provided during planned mass public gatherings (e.g., National Special Security Event [NSSE], Special Event Assessment Rating [SEAR]).

Hot Zone - The control zone immediately surrounding a hazardous materials incident, which extends far enough to prevent adverse effects from hazardous materials releases to personnel outside the zone. (NFPA 472) The national standard for defining a Hot

Zone is 10 mR/hr (National Council on Radiation Protection and Measurement Report #165)

Improvised Nuclear Device - A device incorporating fissile materials designed or constructed outside of an official agency that has, or appears to have, or is claimed to have capability to produce a nuclear explosion. It also may be a nuclear weapon that is no longer in the custody of competent authority or custodian, or has been modified from its designated firing sequence, or may have been assembled from illegally obtained nuclear weapons components or special nuclear materials.

Incident Commander (IC) - the individual responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for management of all incident operations at the incident site. (NIMS 2007)

Isotope - One, two, or more atoms with the same number of protons, but different numbers of neutrons in their nuclei. Thus, carbon-12, carbon-13, and carbon-14 are isotopes of the element carbon. Isotopes have nearly the same chemical properties, but often have different physical properties.

Joint Analysis Center (JAC) is located within the Department of Homeland Security's Domestic Nuclear Detection Office (DNDO). This intelligence and analysis center maintains global situational awareness pertaining to radiological/nuclear events by fusing data and information (e.g., R/N detection capabilities, status, detector information, intelligence community and law enforcement information, etc.) to share with participating agencies and provides timely and actionable information to decision makers. The JAC can be reached at 1-877-DNDOJAC (1-877-363-6522), **dndo.jac@dhs.gov**.

Joint Analysis Center Collaborative Information System (JACCIS) provides Federal, State, Tribal, Territorial and local agencies adjudication connectivity, radiation detector database capability, radiological/nuclear (R/N) event information, intelligence, and status of R/N events and activities within the Global Nuclear Detection Architecture (GNDA). The completely web-based JACCIS allows users to adjudicate alarms at a local level or elevate to national level reachback at the touch of a button, submit Requests for Information (RFIs) using the convenient RFI tool, maintain inventory of their R/N detection assets including location and alarm history, and store and access secure, encrypted data. Stakeholders can apply for a JACCIS account by emailing dndo.jac2@hq.dhs.gov.

Joint Hazardous Explosives Response Team (JHERT) - An interagency group of personnel formed from jurisdictional agencies that provide Explosive Ordinance Disposal (EOD) and may be established to support a special event.

Joint Operations Center (JOC) - An operations center established by the local FBI field offices in response to a threat.

Jurisdiction - A range or sphere of authority. Public agencies have jurisdiction at an incident within their area of responsibility. Jurisdictional authority at an incident can be political, geographic (for example, city, and county, Tribal, State, or Federal boundary lines), or functional (for example, law enforcement, public health). (NIMS 2007)
Legitimate Radiological Material - The radiological material used, transported, and handled in compliance with applicable regulations. These materials may consist of nuclear medicine, industrial materials and construction materials, or normally occurring radioactive material.

Low Exposure Rate - The radiation exposure rate that marks the hot line if the radiation exposure hazard poses the greatest risk at an incident. It is recommended that the low exposure rate not exceed 10 milliR/h (mR/h) (0.1 milliSv/h). (ASTM E2601-08)

Low-Visibility Operations- A technique intended to blend an operation with the local environment to avoid alerting the adversary.

National Special Security Event (NSSE) - An event deemed of national significance and designated by the Secretary of Homeland Security. Generally, the USSS will serve as the lead federal agency for the coordination of security efforts.

Orphan Source - A radioactive source that is not under regulatory control, either because it has never been under regulatory control, or because it has been abandoned, lost, misplaced, stolen, illegally disposed, or transferred without proper authorization. (ICRP Publication 96)

Personal Protective Equipment (PPE) - The equipment provided to shield or isolate a person from hazards (such as TRACEM defined below) that can be encountered at hazardous materials/WMD incidents. (NFPA 472)

Personal Radiation Detector (PRD) - A small “pager” style detection instrument, such as the Laurus Systems miniRad-D, Polimaster PM1703, STE Pager S, or Thermo RADEYE, worn by an individual. A PRD can detect the presence of gamma radiation at

very low levels; some models can record the total accumulated dose received by the user (e.g., RADEYE). A PRD is often the first indication that radiological/nuclear material is present. Although good for finding contraband radioactive material, many PRDs do not have the range necessary for personnel protection (e.g., high dose rates) or distant detection.

Preventative RN Detection (RND) - Actions involving both technology and non-technology based assets (e.g.; detection, communications, information sharing, general LE investigative actions etc.), to prevent the importation, possession, storage, transportation, development, or use of RN material without authorization by the appropriate regulatory authority.

Primary Screening - The initial point of radiation detection and includes the first contact with a conveyance, individual, or shipment.

Radiation Alarm Adjudication - The process of identifying, with reasonable certainty, the type or nature of material or device causing a RN detector to alarm and assessing the potential threat that the material might pose the need for further action. The alarm adjudication process may result in the alarm being classified into Threat or Non-Threat.

Radiation Alarm Resolution - After an alarm has been adjudicated as Threat or Non-Threat, follow up action may be required to resolve the incident. Actions can include operational response activities to mitigate actual or perceived radiation hazards and risks to workers, the public, and the environment.

Radiological Dispersal Device (RDD) - RDDs are any device that causes the dissemination of radioactive material across an area with the intent to cause harm, but without the occurrence of a nuclear detonation.

Radiation Exposure Device (RED) - A RED consists of radioactive material, either as a sealed source or as material within some type of container, that directly exposes people to radiation. (NCRP commentary No. 19)

Radioisotope Identification Device (RIID) - RIID's are equipment used to identify the specific radionuclide(s) present on a person or object. Isotope identification devices are generally capable of transferring radionuclide information to offsite technical experts.

Radiological/Nuclear Search Operation (RNSO) - FBI-led operations in response to a credible threat (as determined by the Threat Credibility Evaluation [TCE] process) designed to locate and support the interdiction of RN materials or devices in a RN

Search Area. RNSO involves the management, planning, and execution of interagency search efforts and is conducted in direct support of an FBI investigation.

Radiological/Nuclear (RN) Threat - An RN threat is (1) any RN material/device (including INDs, RDDs, or REDs) out of regulatory control within or en route to the United States, that may be used for malicious purposes or (2) intelligence or LE information indicating a planned or potential attack against the United States using RN materials/devices.

Reachback - The process of communicating spectroscopic information obtained from an individual or object for analysis to determine the type of radioactive material present.

Rem - A unit of biological/risk equivalent dose; not all radiation produces the same biological effect, even for the same amount of absorbed dose; rem relates the absorbed dose in human tissue to the effective biological damage of the radiation.

Roentgen (R) - A unit of exposure to ionizing radiation. It is the primary standard of measurement used in the emergency responder community in the United States. For the purpose of the ASTM E2601-08 standard, 1 R of exposure is equal to 1 rem of dose to the human body.

a. 1000 micro-roentgen (microR = 1 milli-roentgen (mR)
b. 1000 milli-roentgen (mR) = 1 Roentgen (r), thus
c. 1 000 000 micro = 1 Roentgen (R)

Roentgen per hour (R/h) - A unit used to express exposure per unit of time (exposure rate). For the purpose of the ASTM E2601-08 standard, the roentgen unit is assumed to be equivalent to the Sievert unit and 1 R = 10 mSv will be applied as the basis for comparison of traditional and SI units.

Search Operation - A systematic application of radiation detectors and protocols to identify the presence of a source in a designated geographical location or region.

Secondary Screening - Screening conducted in an investigative manner where the source is identified and analyzed utilizing radioisotope identification detection equipment and or/other search techniques. This screening may include overt investigative methods, covert investigative methods, and or a combination of both.

Secondary Threats - Any object or person(s) designed to cause harm to persons responding to an incident (emergency responders) or to increase the number of civilian

casualties. Secondary threats are normally designed to cause harm after persons have responded to the scene.

Shelter-in-place - Taking shelter inside a structure and remaining there until the danger passes. Sheltering-in-place is used when evacuating the public would cause greater risk than staying where they are, or when an evacuation cannot be performed. In-place protection may not be the best option if flammable vapors are present, if it will take a long time for a gas to clear the area, or if the structure cannot be closed tightly.

Special Event - A significant domestic or international event, occurrence, circumstance, contest, activity, or meeting, which by virtue of its profile and/or status represents an attractive target for terrorist attack.

Special Event Assessment Rating

a. **SEAR I:** Events of significant national and/or international importance that may require extensive Federal interagency security and incident management preparedness. Pre-deployment of Federal assets as well as consultation, technical advice and support to specific functional areas in which the state and local agencies may lack expertise or key resources may also be warranted. In order to ensure unified Federal support to and appropriate national situational awareness, a Federal Coordinator (FC) will be designated, and an Integrated Federal Support Plan (IFSP) (Matrix of responsibilities for all agencies involved) will be developed.

b. **SEAR II:** Significant events with national and/or international importance that may require direct national-level Federal support and situational awareness. The magnitude and significance of these events calls for close coordination between Federal, State, and local authorities and may warrant limited pre-deployment of USG assets as well as consultation, technical advice and support to specific functional areas in which the state and local agencies may lack expertise or key resources. In order to ensure unified Federal support to the local authorities and appropriate national situational awareness, a Federal Coordinator (FC) will be designated and an Integrated Federal Support Plan (IFSP) will be developed.

c. **SEAR III:** Events of national and/or international importance that require only limited direct Federal support to augment local capabilities. Generally, state and local authorities adequately support these events; however, the significance of these events generally warrants national situational awareness and, depending on the jurisdiction, may require limited direct

support from specific Federal agencies. In order to ensure appropriate national situational awareness, an Integrated Federal Support Plan (IFSP) may be developed.

d. **SEAR IV:** Events with limited national importance that are generally handled at the state and local level. Unusual circumstances may sometimes necessitate the employment of specific Federal resources to address unique needs of a particular event. Existing Federal assistance programs are available to state and local jurisdictions hosting the event for training, exercise, and/or tailored program support.

e. **SEAR V:** Events that may be nationally recognized but generally have local or state importance. Federal departments and agencies will receive notice of these events for situational awareness purposes, but in most cases minimal, if any, Federal assets or resources will be expended to assist with management of these events. Federal officials will not normally actively monitor or coordinate support for these events unless specifically requested.

Special Nuclear Material - SNM is plutonium and uranium enriched in the isotope Uranium 235 or the man-made isotope Uranium 233.

Steady-State - RND operations conducted on a routine basis to detect or locate RN materials/devices and associated event reporting. RND operations are decentralized operations, may be single or multi-agency, and occur without any change in jurisdiction. Other related steady-state operations include routine counterterrorism activities such as border security, cargo security, and immigration enforcement.

Surge Operation - The augmentation or introduction of additional nuclear and radiological detection or search assets and capabilities into a geographical area or pathway for a limited time to address a potential threat or heightened vulnerability, increase deterrence, or respond to a credible threat.

Termination - termination in the context of this document is the end of the life safety operations, investigative work, and assurance of protective measure implementation. This will include documentation of hazards present and conditions found.

TRACEM -The acronym for additional hazards, which may be found at any incident, derived from thermal, radiological, asphyxiant, chemical, etiological, and mechanical harms.

Total Effective Dose Equivalent (TEDE) - *for the purpose of this standard,* TEDE is the sum of the dose to the body from external radiation plus the total eventual risk equivalent dose from intakes of radionuclides. Note that where the term "dose" is used in this document, it is understood to be used as a synonym of TEDE.

TRIAGE - NNSA's Triage is a non-deployable, secure, on-line capability that provides remote technical reachback support for R/N alarm adjudication to RND stakeholders and emergency responders. Triage has on-call scientists available 24 hours a day to analyze site specific data and confirm radioisotope identification in the event of a radiological incident. The data is transmitted through the Triage website (https://triage-data.net) or provided over the telephone via 202-586-8100 (ask for the Emergency Response Officer).

Common RND Acronyms

ADPH	Alabama Department of Public Health
AEMA	Alabama Emergency Management Agency
AFC	Alabama Fusion Center
AHP	Alabama Highway Patrol
ALARA	As Low As Reasonably Achievable
ALEA	Alabama Law Enforcement Agency
ATSA	Aviation and Transportation Security Act
BDO	Behavior Detection Officers
CBRNE	Chemical, Biological, Radiological, Nuclear, High Explosive
CEP	Center of Preparedness
CONOPS	Concept of Operations
CST	Civil Support Team
CVED	Commercial Vehicle Enforcement Division
DHS	Department of Homeland Security
DOE	Department of Energy
DoD	Department of Defense
DNDO	Domestic Nuclear Detection Office
DTRA	Defense Threat Reduction Agency
ECBC	Edgewood Chemical Biological Command

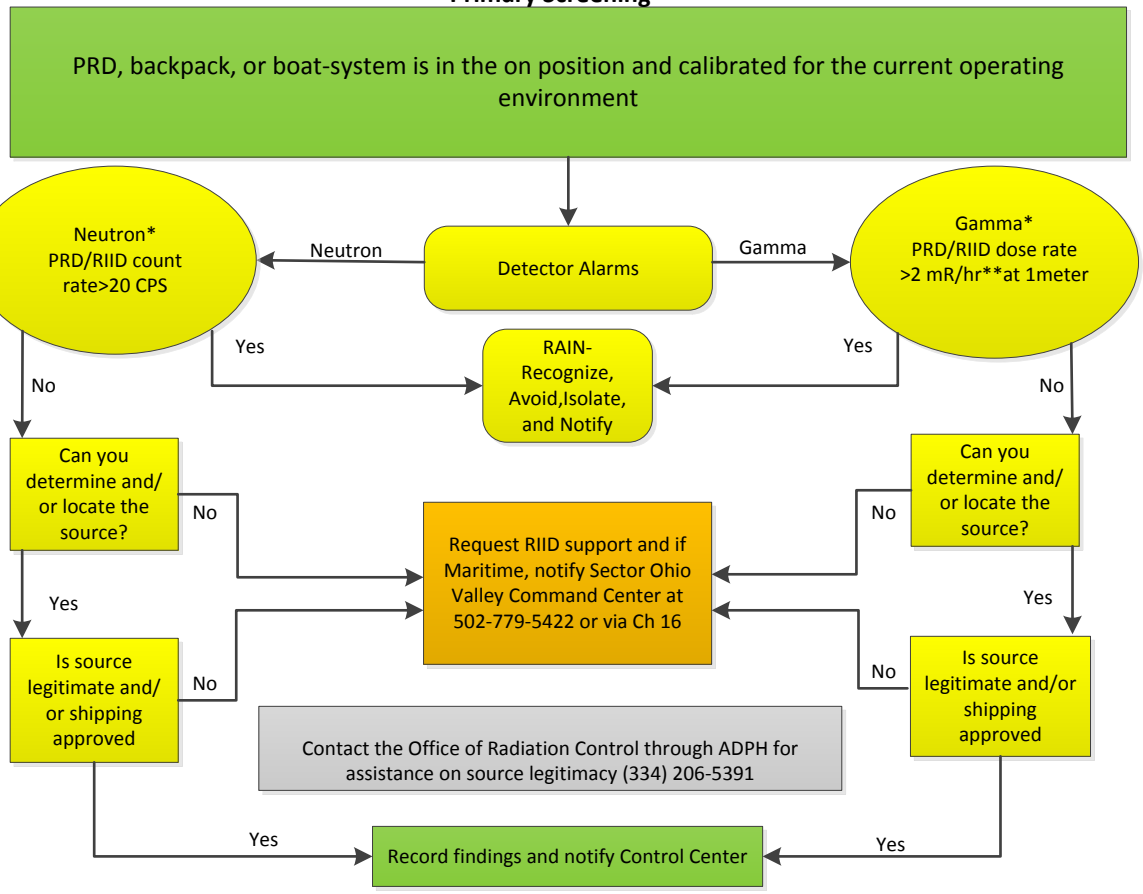
EM	Emergency Management
EOC	Emergency Operations Center
EOD	Explosive Ordnance Disposal
ERO	Emergency Response Officer
ERS	Emergency Response Section
FBI	Federal Bureau of Investigation
FC	Federal Coordinator
FEMA	Federal Emergency Management Agency
GNDA	Global Nuclear Detection Architecture
HERT	Hazardous Explosives Response Team
HPAC	Hazard Prediction and Assessment Capability
HSAS	Homeland Security Advisory System
HSEEP	Homeland Security Exercise and Evaluation Program
HSPD	Homeland Security Presidential Directive
IC	Incident Commander
ICS	Incident Command System
IED	Improvised Explosive Device
IFSP	Integrated Federal Support Plan
IND	Improvised Nuclear Device

JAC	Joint Analysis Center
JACCIS	Joint Analysis Center Collaborative Information System
JHERT	Joint Hazardous Explosives Response Team
JOC	Joint Operations Center
JTTF	Joint Terrorism Task Force
LE	Law Enforcement
MDDP	MobileDetection Deployment Program
MDDU	Mobile Detection Deployment Unit
NGA	Non-government Agencies
NII	Non-intrusive Inspection
NIMS	National Incident Management System
NNSA	National Nuclear Security Administration
NOC	National Operations Center
NORM	Naturally Occurring Radioactive Material
NRC	National Response Center
NSSE	National Special Security Event
OEPR	Office of Emergency Preparedness and Response
OGA	Other Government Agencies
OLE	Office of Law Enforcement
OLQ	Office of Land Quality

ORC	Office of Radiation Control
OSD	Operations Support Directorate
PAG	Program Advisory Group
PPE	Personal Protective Equipment
PRD	Personal Radiation Detector
RAP	Radiological Assistance Program
RND	Preventative Radiological/Nuclear Detection
R	Roentgen
R/h	Roentgen per hour
RAP	Radiological Assistance Program
RDD	Radiological Dispersal Device
RED	Radiation Exposure Device
RFI	Requests for Information
RIID	Radiological Isotope Identification Device
R/N,	Radiological/Nuclear
RNSO	Radiological/Nuclear Search Operations
RS	Reachback Spectroscopy
RTD	Regional Transportation District
SABT	Special Agent Bomb Technicians
SDO	Staff Duty Officer

SEAR	Special Event Assessment Rating
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
STTL	State, Territorial, Tribal, and local
SWAT	Special Weapons and Tactics Team
TEDE	Total Effective Dose Equivalent
TEP	Training and Exercise Plan
TLO	Terrorism Liaison Officers
TRACEM	Thermal Radiological Asphyxiation Chemical Etiological Mechanical
TSA	Transportation Security Administration
TSI	Transportation Security Inspectors
TSSE	Transportation Security Specialists – Explosives
TTP	Tactics, Techniques, and Procedures
TTX	Tabletop Exercise
UASI	Urban Area Security Initiative
USCG	United States Coast Guard
USDOT	United States Department of Transportation
VIPR	Visible Intermodal Prevention and Response
WMD	Weapon of Mass Destruction

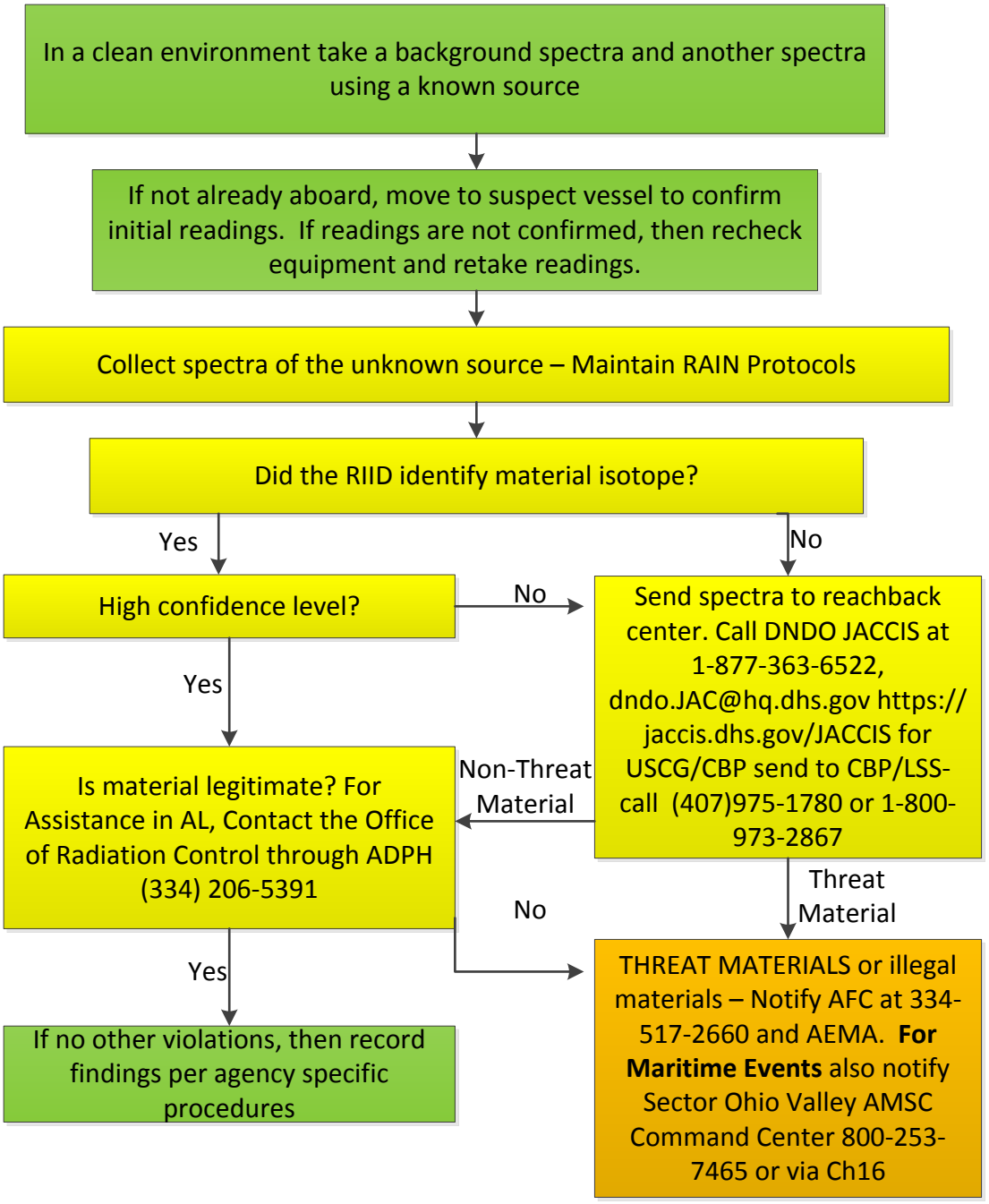
Maritime Radiation Detection Decision Logic
Primary Screening



* For some PRDs use Max Gamma or Neutron Readings

**follow agency specific procedures. USCG uses >4.5mR/hr

Maritime Radiation Identification Decision Logic
Secondary Screening



NOTE: For USCG Level 2 Team using an HCP – after notifying LSS at the number above, use 571-468-1889 for sending spectra for analysis.

Florence PoliceRadiation Contact Sheet

Date:_____ Time of Contact: _____ Weather: _____ Operations notified ☐

Reason for stop or contact: _____Location of contact:_____

Team:___Team Leader: _____ Background: _____µR/hr

Person Contact

Name:_____ Sex: Male☐Female☐

Identification: _____ Agree to talk to LEO concerning radiation? Yes/No

Vehicle Contact

Year:_____ Make:_____ License Plate_____ Type of Vehicle:_____

Description of material present:_____ Match shipping papers? Yes/No

Package Contact

Description of material present:_____ Any labels present? Yes/No

Briefly describe the label_____

Radioactive White I-Expect up to 0.5mR/hr at package surface

Radioactive Yellow II-Expect >0.5 mR/hr up to 50 mR/hr at package surface. Max Transport Index is 1 or 1mR/hr at 3.3 feet

Radioactive Yellow III-Expect >50mR/hr up to 200mR/hr at package surface Max Transport Index is 10 or 10mR/hr at 3.3 feet

Fissile-See shipping papers

Alarm Information

Primary screening Meter type:_____ Serial number:_____

Type of radiation: Gamma☐Neutron☐ Both ☐

Highest radiation reading(s) near surface: _____ µR/hr, mR/hr, R/hr (circle one)

Approximately 3 feet from highest surface reading:_____µR/hr, mR/hr, R/hr (circle one)

Location(s) of readings:_____

Secondary screening done? Yes/No If yes, RIID used: _____ Conducted by:_____

Did RIID classify isotope? NORM☐ Industrial ☐SNM☐Medical☐Unknown☐

Did RIID identify isotope? Yes/No List Isotope(s) and confidence level: _____/_____,

_____/_____, _____/_____, _____/_____

Are the readings consistent with the material and information provided? Yes/No

Was DNDO JAC (877-363-6522) notified for technical reachback? Yes/No If yes, time: _____

Notes/Clarifying Information

_____

_____

_____

_____

Time released:_____ Within notes, capture circumstances surrounding the alert as well as teams that respond.

Radiological/Nuclear Isotopes of Concern

A. Isotopes of Major Concern (Nuclear Weapons or Special Nuclear Material (SNM))

Plutonium-239 (Pu-239): SNM, used in nuclear weapons, accompanied by neutron emissions; byproduct of nuclear reactor operations. May be identified as WGPu or "weapons grade Pu."

Plutonium-240 (Pu-240): SNM, byproduct of nuclear reactor operations. Typically not seen without Pu-239 also being present. Will be accompanied by neutron radiation. Most RIIDs will identify as "Reactor Grade Pu" or "RGPu"

Uranium-235 (U-235): SNM, fissile material in nuclear weapons. It is accompanied by neutron emissions, although does not emit neutrons itself. Sources include naval propulsion systems (reactors in ships and submarines). Highly enriched uranium (HEU) is >20% U-235, low enriched uranium (LEU) is <20%; may be identified by RIIDs as "HEU" and "LEU," respectively.

Uranium-233 (U-233): SNM, used in nuclear power production and can be used in nuclear weapons. It is accompanied by neutron emissions, although it does not emit neutrons itself.

Neptunium-237 (Np-237): Considered SNM due to its fissionable properties, a byproduct of plutonium production activities and results from the capture of neutrons by uranium isotopes, usually in a nuclear reactor; used as component in neutron detection instruments.

B. Isotopes of Concern Based on Quantity

"Quantities of Concern" refers to the 16 radioactive materials that could pose a serious threat to people and the environment in the wrong hands. Use, storage, and transport of these 16 radioactive materials require additional levels of security well beyond the security required for licensed radioactive materials. Identification of these 16 radioactive materials was led by the International AtomicEnergy Agency (IAEA) with active participation by the U.S. Nuclear Regulatory Commission (NRC). As part of this process, the NRC reviewed the chemical, physical, and radiological characteristics of each radioactive material for its attractiveness to a terrorist. The following Table provides established threshold limits by category.

Radioactive Material in Quantities of Concern (RAMQC) Threshold Limits				
Radioactive Material	**Category 1**		**Category 2**	
	Terabequerels[1] (TBq)	**Curies (Ci)**	**Terabequerels (TBq)**	**Curies (Ci)**
Americium-241	60	1,600	0.6	16
Americium-241/Beryllium	60	1,600	0.6	16
Californium-252	20	540	0.2	5.4
Curium-244	50	1,400	0.5	14
Cobalt-60	30	810	0.3	8.1
Cesium-137	100	2,700	1.0	27
Gadolinium-153	1000	27,000	10.0	270
Iridium-192	80	2,200	0.8	22
Plutonium-238	60	1,600	0.6	16
Plutonium-239/Beryllium	60	1,600	0.6	16
Promethium-147	40,000	1,100,000	400	11,000
Radium-226	40	1,100	0.4	11
Selenium-75	200	5,400	2.0	54
Strontium-90 (Yttrium-90)	1,000	27,000	10.0	270
Thulium-170	20,000	540,000	200	5,400
Ytterbium-169	300	8,100	3.0	81

[1]*Terabequerel is the official value to be used for determination whether a material is a Category 1 or Category 2 quantity. Curie (Ci) values are provided for practical usefulness only and are rounded after conversion.*

http://www.nrc.gov/security/byproduct/public-meeting.html#footnote1

STE PAGER Personal Radiation Detector (PRD) Operations Pocket Guide

Pager Operations

- Move switch to either SPK or VIB, unit ON
- LED flashes yellow during self-test, then green for OK, unit is ready for operation
- Press black button to silence alarm. If not alarming, pressing black button will check unit is operating. Maximum Gamma Range (9) is >3.8 mR/hr
- Move switch to OFF, unit is off

Screening Process Steps

- **Detect** presence of radiation
- **Verify** alert
- **Locate** rad levels
- **Measure** rad levels
- **Identify** rad material(s), if necessary
- **Assess** and adjudicate as threat or non-threat

Isotopes/Conditions of Special Concern

- Plutonium (Pu-239)
- Uranium (U-233, 232)
- Enriched Uranium (U-235)
- Neptunium (Np-237)
- Any repeatable Neutron alert

Common alarms not a threat

- NORM (Ra-226, K-40)
- Exempt consumer products (Fiesta ware)
- Medical treatments (I-131, Tc-99m)
- Legal transportation of materials

Request Secondary Screening when:

- Source of alarm not revealed
- Radiation levels not consistent with interview response/shipping documents
- Threat materials/conditions suspected/encountered
- Repeatable neutron detection not associated with a legal shipment

SMAC Principle

When unexplainable elevated readings are encountered:

- **Stop**
- **Move** away until a safe reading (number 8 appears) is achieved
- **Alert** others
- **Close** off the area

Applicable Laws and Regulations

18 U.S.C. § 831: Prohibited transactions involving nuclear materials (Felony).

18 U.S.C. § 2332a: Use of weapons of mass destruction.

18 U.S.C. § 2332h: Radiological dispersal devices.

AL STATE CODE(s):

Code of Alabama, § Title 31, Chapter 9, Sections 4 – 6, 23; Chapter 9A Sections 4 – 11
Code of Alabama, § Title 22; Title 1 Chapter 14, Radiation, Sections 2 – 4, 7, and 10

AL AEMA 24 hr hotline	(800) 843-0699
AL Office of Radiation Control	(334) 206-5391
AL 46st CST 24/7	(334) 954-3400
DOE Rap Region 3 (24/7 hotline)	(803) 725-3333
AL Fusion Center	(334) 517-2660
USCG Command Center	(502) 779-5422; (800) 253-7465

Report suspect threat conditions to

FBI WMD Coordinator/Joint Terrorism Task Force (WMD/JTTF): (502) 263-6000, request JTTF Supervisor

IDENTIFINDER 1 OPERATOR JOB AID

Instructions for adjusting system settings, isotope information, and contact numbers are provided on page 2.

OPERATION

PRE-START

- Install batteries/ensure rechargeable batteries charged
- There will be three soft buttons on the screen controlled by three hard buttons below the screen (L, M, R)

START UP

- Press the start button – Hold power button for 3 seconds
- Observe the gamma and neutron LED's flash
- Observe the 90 second startup routine. Unit auto-calibrates upon start up
- Observe the unit going into the "dose rate" mode when the startup routine complete

SEARCH AND LOCALIZE

Dose Rate Mode

- Dose rate mode is the default screen
- Walk with the front of the IdentiFINDER facing forward
- Monitor displayed values for the dose rate
- Move the IdentiFINDER to maximize rate to localize the source

Finder Mode

- Select "Finder Mode" ("L" button)
- Walk with the front of the IdentiFINDER facing forward
- Monitor the strip chart for the total gamma counts
- Move the IdentiFINDER to maximize rate to localize the source

COLLECTING SPECTRA

- Select "Ident" ("M" button) while in either the dose rate or Finder modes
- Follow the instrument directions- it will tell you to either move closer, further away or OK. This will position the indicator bar between the two arrows on the screen. This positions the detector for optimal data collection.
- The IdentiFINDER will count for the established time
- Record any location information that would help identify any shielding materials(material the item is in), distance from the object, any markings or labels on the object and any other information pertinent to the incident you are investigating (people, location, time)
- The IdentiFINDER will automatically begin analyzing the data at the completion of the data collection
- After the IdentiFINDER displays the analysis result(s), the data should be saved for downloading
- Select "Spectrum" ("M" button)
- Select "Save" ("M" button)
- Select "Save" ("L" button) to save the spectrum file
- Note and record the spectrum number
- Select "Exit" ("R" button) twice to return to the dose rate screen

DOWNLOADING IDENTIFINDER SPECTRUM DATA

- CONNECT the mini USB to mini USB cable to the interface box and the IdentiFINDER
- CONNECT the USB to USB cable to a USB port of the computer (with the IdentiFINDER software downloaded on it) and the interface box
- TURN on the IdentiFINDER and let calibrate (if not already on) – enter the dose rate mode
- TURN on the computer and CREATE a folder on the desktop
- CLICK IdentiFINDER transfer icon on desktop
- SELECT the desktop folder as the destination by clicking the browse icon.
- CLICK on spectra in the stored files window to be transferred and Click the right arrow icon/button to transfer them to the desired folder
- SELECT "Quit" to exit
- DISCONNECT the IdentiFINDER USB cables from the computer and IdentiFINDER.

NOTE: For technical reachback/triage and potential evidence collection purposes, collect and save the following spectra files:

- **Background** spectrum – collect in a low background area near the area that the unknown is located. The background spectrum should be collected for the same amount of time as the unknown spectrum
- **Known** source spectrum – take a spectrum on a known source, usually a button calibration source. This spectrum should be collected for the same amount of time as the unknown spectrum
- **Unknown** item – take a spectrum of the unknown source/item of interest

TURNING OFF

- Press and hold the power button for 3 seconds

** Each IdentiFinder may have a slightly different menu based on firmware version. Menu choices may be in a different order.*

IDENTIFINDER 1 OPERATOR JOB AID

SYSTEM SETTING CHANGES

SET SYSTEM DATE AND TIME

- Select the "OPTIONS" ("R" button)
- Select "More Options" ("M" button)
- Use DOWN ("L" button) to scroll to "Advanced Options" and select the" Advanced Options" ("M" button)
- Select "Setup Disp./Time" ("M" button)
- Use DOWN ("L" button) to scroll to "Change Date/Time" and select "Change Date/Time ("M" button)
- Use "Skip" ("L" button) to move through date and time fields
- Use "+" ("M" button) to change numbers in the fields
- Use "Exit" ("R" button) to exit when date and time are set correctly
- Use "Back" ("R" button) as needed to exit the menus

CHANGE THE ALARM SETTINGS

- Select the "OPTIONS" ("R" button)
- Use DOWN ("L" button) to scroll to "Alarm Options" and select "alarm Options" ("M" button)
- Select "Alarm Indications" ("M" button)
- Use DOWN ("L" button) to scroll to "Sound" , "Vibrate", or "Light" and select your option by pressing "Select" ("M" button). The setting will toggle between "On" and "Off"
- Use "Back" ("R" button) as needed to exit the menus

SET THE SPECTRA COUNT TIME

- Select the "OPTIONS" ("R" button)
- Select "More Options" ("M" button)
- Use DOWN ("L" button) to scroll to "Identify Options" and select "Identify Options" ("M" button)
- Select "Identify Options" ("M" button)
- Select "Time" ("M" button) Normally set for **300 seconds**
- Use "+" ("M" button) to add/increase time in seconds
- Use "-" ("R" button) to reduce/decrease time in seconds
- Use "Accept" ("M" button) to accept the value and exit
- Use "Back" ("R" button) as needed to exit the menus

CLEAR ALL SPECTRA

- Select the "OPTIONS" ("R" button)
- Select "More Options" ("M" button)
- Use DOWN ("L" button) to scroll to "Advanced Options" and select the" Advanced Options" ("M" button)
- Use DOWN ("L" button) to scroll to "Maintenance" and select "Maintenance" ("M" button)
- Use DOWN ("L" button) to scroll to "Erase all Spectra" and select "Erase all Spectra" ("M" button)
- Select "YES" to "Erase all stored Spectra" ("M" button)
- Use "Back" ("R" button) as needed to exit the menu

ISOTOPE INFORMATION

Isotopes of Special Concern

- Plutonium (Pu-239)
- Uranium (U-233)
- Enriched Uranium (U-235)
- Neptunium (Np-237)
- Any repeatable Neutron alert

Common Alarms Not a Threat

- NORM (Ra-226, K-40)
- Exempt consumer products (Fiesta ware)
- Medical treatments (I-131, Tc-99m)
- Legal transportation of materials

REACHBACK CONTACT INFORMATION

Alabama Emergency Management Agency (AEMA)
1-800-843-0699
DNDO Joint Analysis Center
877-363-6522 / 877-DNDO-JAC
dndo.jac@hq.dhs.gov

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Alabama PRND Contact List

Agency	Contact Information	Number/Email
ADPH – CEP	**Alabama Department of Public Health – Center of Preparedness**	1-866-264-4073
ADPH – ORC	**Alabama Department of Public Health – Office of Radiation Control**	(334) 206-5391
Alabama Emergency Management Agency (AEMA)	**Radiological Services 24-hour Hotline**	Emergency: 1-800-843-0699 Routine: (205) 280-2200
Alabama Fusion Center (AFC)	**Communications Center**	(334) 517-2660
Alabama Highway Patrol (AHP)	**Montgomery** Dothan Mobile Decatur	(334) 874-8234 (334) 983-4587 (251) 660-2300 (256) 353-0631
Alabama Law Enforcement Agency (ALEA)		(334) 517-2800
Alabama Marine Patrol Enforcement		(334) 517-2950 or (800) 272-7930
CST (Civil Support Team)	**46th Civil Support Team Support Request** 24/7Operations Officer in Charge	(334) 954-3400
DHS/MDDU	**Domestic Nuclear Detection Office Mobile Detection Deployment Unit Request** **DOE Emergency Operations Center** 24/7 Hotline	*Advanced Planning contact:*DNDO_MDDU_Request@hq.dhs.gov ***Emergency Deployment:*** (202) 586–8100, ask for ERO
Federal Bureau of Investigation (FBI)	**JTTF** **WMD Coordinator**	Mobile: (251) 438–3674 Birmingham: (205) 326–6166
JAC **JACCIS**	**Joint Analysis Center (JAC)** **Joint Analysis Center Collaborative Information System (JACCIS)**	**(877)363-6522** (Immediate response) (866)789-8304 (non-emergency info) Email: DNDO.JAC@HQ.DHS.GOVhttps://jaccis.dhs.gov/JACCIS
Radiological Assistance Program (RAP)	**RAP Region 3: 24/7-hour hotline** Savannah River Special Operations Center	(803) 725-3333
Railroad Emergency Contacts	**Norfolk Southern**	(800) 453-2530
Railroad Emergency Contacts **Univ. of Alabama, Tuscaloosa – EHS**	**CSX Transportation** Environmental Health & Safety	(800) 232-0144 Emergency: (205) 348-5454 Routine: (205) 348-5905
Univ. of Alabama, Birmingham – OHS	Occupational Health and Safety	Emergency: (205) 934-3535 Routine: (205) 934-2487
USCG: Sector Mobile	Command Center	Emergency: (251) 441-6211 Routine: (251) 441-5720
USCG: National Response Center (NRC)	24/7 Hotline; any radiological release	(800)424-8802