

Emergency Preparation and Training

Amateur Radio

- ARES Field Resources Manual <http://www.arrl.org/FandES/field/aresman.pdf>
- ARRL Certification Training Level I (Introduction to Emergency Communications Course)
During 2005, approximately 1,700 FCC licensed Amateur Radio operators will have the chance to register for free to take ARRL's online Emergency Communications Level I Course. Several factors will determine if ARRL will receive the requested federal money to expand this national program for two additional years.
- Certification Training Level II (Intermediate Emergency Communications Course)
- Certification Training Level III (Advanced Emergency Communications Course)
- Operating Manual, "Emergency Communications," and "Traffic Handling Procedures"
Public Service Communications Manual
<http://www.arrl.org/FandES/field/pscm/index.html>

ARRL Field Day. The fourth full weekend in June each year is designated by the ARRL as Field Day. Open to all amateurs, in Monroe County, BARC and IUARC jointly sponsor and participate in Field Day activities.

The object is to work as many stations as possible on any amateur band (excluding 60, 30, 17 and 12 meters and any repeaters) and to learn to operate in "less than optimal conditions." It is an opportunity to learn new operating modes and practice NTS message handling.



Dan Miller (KQ9I), Chuck Hagan (N9NI), Matt Pierce (N9VKU) and Bob Poortinga (K9SQL) at BARC-IUARC Field Day.

A premium is placed on developing skills to meet the challenges of emergency preparedness as well as to acquaint the general public with Amateur Radio. To that end, one of the stations may be a GOTA – Get On The Air – location for non-hams or amateurs trying new bands. Points are earned for publicity as well as hosting an elected or appointed government official.

Participation may be as a group of three or more operators, one- or two-persons on battery or portable, individuals operating mobile from cars, trucks, maritime or aeronautical, at home on emergency power or battery, or at an EOC, such as the Red Cross Chapter House. Monroe County Field Day most recently takes place at Karst Farm Park.

Participants may make contacts using digital modes, CW, or phone. A premium is placed on operating with low power, off a generator, and/or using untraditional methods of recharging or powering the radio gear. Additional credit is earned by making specific contacts.

Monroe County ARES nets are held under auspices of the ARRL. ARES nets are widely used in Public Service events as *Informal Directed* nets for emergency practice and as *Formal Directed* nets in emergencies. The level of formality is set by the NCS.

Monroe County ARES emergency net practice is held at 0030 UTC (7:30 PM local EST) on the WB8TLH 2-meter repeater at 146.640 MHz (-) with no PL tone.

A Simplex net is conducted on 146.580 MHz at 0100 UTC (8:00 PM local EST) or immediately following the Monday repeater net. All amateur radio operators are invited and welcome to participate in either or both.

Monroe County ARES Public Service Nets have included communications support for the

- Hilly Hundred Weekend (Bicycle Tour)
- Red Cross Golf Outing
- Indiana State Science Olympiad
- July 4th Fireworks
- Hoosier Hills Bike Tour
- Hoosier 200 Relay Run

These practice/public service activities may be on WB9TLH (146.640 MHz (-)), K9IU (146.940 MHz (-)) or other repeater frequencies made available for the events by the repeater association(s), owners, and/or control operators or on Simplex frequencies as needed.

ARES net reports to ARRL (through the EC) should include

- category of the net:
 - CE** (communications exercise) **A** (alert), **SE** (special exercise), **TD** (test or drill)
- callsign(s) of NCS, auxiliary NCS and critical participants
- starting and ending time
- number of NTS format messages (not local traffic or announcements)
- repeater call and frequency or simplex frequency.

ARES conducts an Indiana Section ARES Emergency Net every the 4th Sunday of every month at 1300 UTC (8:00 AM local EST) on 3.910 MHz just prior to the 1330 session of the Indiana Traffic Net (ITN). The purpose of this monthly net is to disseminate timely information for all stations interested in emergency communications and provide a forum for discussion of emergency communications activities.

Monroe County RACES operational nets may only be requested by local, state or federal EMA. RACES will schedule a practice NET to be held at regular times to be communicated to all members. The nets will be on the Monroe County Repeater Association WB9TLH frequency of 146.640, the secondary, Indiana University ARC K9IU frequency of 146.94, or the secondary, W9WIN Repeater system frequency of 443.775. There will be one (1) emergency exercise per calendar year. All RACES members are encouraged to participate.

The **Central Indiana Skywarn System** has a Test Net which is conducted every first Monday of every month at 0100 UTC (8:00 PM local EST) on the 146.970 MHz repeater, which is linked with the 442.650 MHz repeater. This net meets for instruction and training in emergency preparedness and the handling of traffic. Representatives from all 39 NWS counties test access capability to this repeater system with check-in to the net.

Military Affiliate Radio Service [MARS] operates periodically in various types of scheduled networks on military frequencies outside of amateur bands: administrative networks (day-to-day management), traffic networks (third party traffic); emergency networks, technical nets and training nets. MARS nets operate in different modes: high frequency (HF) single sideband (SSB) voice, RATT, VHF, PACKET, PACTOR, GTOR, CLOVER and Slow Scan TV on US Army MARS frequencies -- 3.348.5, 6.997.5, 14.403.5, 40.95, and 143.99, MHz. Navy/Marine frequencies are not usually public.

The **Bloomington Amateur Radio Club [BARC]** <<http://www.barcradio.org>> offers radio communications support to community, educational, and non-profit charitable events: Using amateur radio provides our operators the opportunity to use the skills and tactics that are often part of unexpected events requiring community-service communications networks.

The **Indiana University K9IU Amateur Radio Club [IUARC]** <<http://www.indiana.edu/~k9iu/>> provides a service to the university and Bloomington community with communication for events on the IU campus and Bloomington area. During times of emergency when normal communication methods have been disrupted, IUARC amateur radio operators provide support and collaboration with BARC.



Murl McRae (WA9CWT) and
Assistant EC/RACES Officer
Maynard Raggio (N9PTG)
operate HF at Field Day.

Federal Emergency Management Agency [FEMA]

IS-1 Emergency Program Manager
IS-5 Hazardous Material: A Citizen's Orientation
IS-7 A Citizen's Guide to Disaster Assistance
IS-100 Introduction to Incident Command System
and IS-195 Basic Incident Command System
IS-120 An Orientation to Community Disaster Exercises
IS-271 Anticipating Hazardous Weather & Community Risk
IS-275 The Role of the EOC in Community Preparedness, Response and Recovery
IS-288 The Role of Voluntary Agencies in Emergency Management
Q-534 Emergency Response to Terrorism

These are a sample. FEMA offers course at the Emergency Management Institute and through The Independent Study Program. Most of the ISP coursework is downloadable from <http://www.training.fema.gov/EMIWeb/IS/> | Courses.

Monroe County EMA

Certification Basic Training Class
Monroe County EMA National Incident Management System [NIMS]
Monroe County EMA Resource Management
Monroe County EMA Emergency Debris Management

Monroe County Red Cross

Health and Safety Classes <<http://www.bloomington.in.us/~redcross/hast.html>>

Disaster Services Training	First Aid Instructor Training
Adult CPR Training	Basic Aid Training
Infant and Child CPR	First Aid for Children
Community CPR	First Aid Basics
Adult CPR with AED Training	Standard First Aid
AED Instructor Bridge	CPR and First Aid Challenges
CPR for Professional Rescuer	CPR/ProRescuer Bridge
Disaster Resistant Neighborhood Project	http://www.bloomington.in.us/~redcross/drm.html

Publications

<i>Are You Ready for a Tornado?</i>	<i>Flash Floods and Floods</i>
<i>Are You Ready for a Thunderstorm?</i>	<i>NOAA Weather Radio</i>
<i>Emergency Preparedness Checklist</i>	<i>Thunderstorms, Tornadoes, Lightning</i>

National Cave Rescue Commission-sponsored cave search and rescue classes.

National Weather Service-sponsored Weather Spotter Training

SET – Simulated Emergency Training

At any time between September 1 and November 30, ARES groups conduct a state and national simulated emergency response based upon a scenario which ideally involves Amateur Radio, public and private response agencies, and NTS. The state and national exercise is on a specified date.

Severe Weather Safety

Indiana continues to rank in the top ten nationally in tornado occurrences, tornado-related fatalities and tornado damage costs. Indiana also experiences significant severe thunderstorm damage. It is important to be familiar with severe weather terms and safety rules before the weather gets bad.

A WEATHER WATCH is issued when conditions are right for a tornado to develop. Keep alert to changing weather conditions and tune into a radio or television for developments. A WARNING is issued when a tornado has been sighted or is indicated by radar. Go immediately to a safe place.

Severe Weather Definitions

Tornado -- A violently rotating column of air, usually forming a pendent from a cumulus cloud, where circulation reaches the ground. A tornado usually starts as a funnel cloud and may be accompanied by a loud roaring noise. Tornadoes can move at speeds up to 60 mph, with winds speeds up to 300 mph and sizes over a mile in diameter.

Funnel Cloud -- A violently rotating column of air that does not reach the ground. If the funnel cloud reaches the ground, it becomes a tornado.

Severe Thunderstorms -- A thunderstorm accompanied by winds (sustained or gusts) of 58 mph (50 knots) or more and hail 3/4 inch in diameter or larger.

Flash Flood -- A flood which happens within a few hours after a heavy or excessive rainfall.

Tornado Safety

In Homes -- Get away from windows, doors and outside walls. Go to the basement. If you do not have a basement, take shelter in a first-floor bathroom or closet located near the center of the house. If possible, get under heavy furniture or cover your head with blankets or pillows.

In Schools -- Go to the lowest floor or basement. Go to small interior rooms or hallways. Stay away from windows. Avoid auditoriums and gymnasiums or structures with wide, free-span roofs, which often collapse if struck by tornado-force winds.

In Public Buildings -- Go immediately to a designated shelter area or to an interior hallway or small room on the lowest floor. Stay away from windows. Do not use elevators. Do not go to your parked car.

Outside -- Move away from the approaching tornado at right angles, if possible. If there is not time to move or find suitable shelter, leave your car and crouch down in a ditch or depression. Avoid large trees, metal poles and other electric conductors.

In Mobile Homes -- Mobile homes should be abandoned immediately. If there are no reinforced buildings or underground shelters nearby, take cover in a ditch or depression. Be sure to cover your head with your arms or hands.

Tornado Facts

- Tornadoes can occur at any time of the year.
- Tornadoes are most likely to occur between 3 PM and 9 PM, but can occur at all hours of the day and night.
- The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction.
- The average forward speed is 30 mph, but may vary from nearly stationary to 70 mph.
- Indiana averages 20 tornadoes and 4 tornado fatalities each year.
- Indiana's biggest outbreak of tornadoes was on June 2 and 3, 1990, with 37 tornadoes.
- The Super Outbreak of 21 tornadoes in Indiana on April 3, 1974, killed 48 Hoosiers.

Tornado Classifications

Weak Tornadoes (F0, F1): Eighty-eight (88) percent of all tornadoes are these weak tornadoes. They generally only last 1-10 minutes and their winds are slower than 100 mph.

Strong Tornadoes (F2, F3): Eleven (11) percent of all tornadoes last 20 minutes or longer and cause 30% of all tornado-related deaths. Their winds reach 110-205 mph.

Violent Tornadoes (F4, F5): Only 1% of all tornadoes are this violent. They cause 70% of all tornado-related deaths with winds greater than 205 mph and lasting over an hour.

Floods and Flash Floods Safety

Floods and flash floods are the number one cause of deaths associated with thunderstorms with an average of 110 fatalities nationwide each year. A water depth of two feet will cause most vehicles to float and only six inches of fast-moving water can knock you off your feet. If flooding occurs, get to higher ground and away from areas subject to flooding. Avoid areas already flooded and do not attempt to cross flowing streams. Never drive through flooded roadways as road beds may be washed out under flood waters. If your vehicle is suddenly caught in rising water, leave it immediately and seek higher ground. Be especially cautious at night when it is harder to recognize flood dangers.

Lightning Safety

Lightning kills 73 Americans and causes several hundred million dollars in property damage each year. To avoid danger, watch for signs of approaching storms. If you can hear thunder, seek shelter in a building or car immediately. Count the number of seconds between a flash of lightning and the next clap of thunder and divide that number by 5 to determine the distance in miles to the lightning. When lightning is present, get out of boats and away from water. Avoid using the telephone or other electrical appliances. If caught outside, find a low spot away from trees, fences, and poles. If you feel your skin tingle or your hair stands on end, squat low to the ground on the balls of your feet.

Hazardous Material Incidents

Hazardous materials [HAZMAT] refers to any substances or materials which if released in an uncontrolled manner (spilled) can be harmful to people, animals, crops, water systems or other elements of the environment. The list is long and includes explosives, gases, flammable and combustible liquids, flammable solids or substances, poisonous and infectious substances, radioactive materials, and corrosives.

One of the major problems is to determine what chemicals are where and in what quantities. The US Department of Transportation [DOT] has established definitions of various classes of hazardous materials, established placarding and marking requirements for containers and packages, and adopted an international cargo commodity numbering system.

DOT requires that all freight containers, trucks and rail cars transporting these materials display placards identifying the hazard class or classes of the materials they are carrying. The placards are diamond shaped, 10-inches on a side, color-coded and show an icon or graphic symbol depicting the hazard class. They are displayed on the ends and sides of transport vehicles. A four-digit number may be displayed on the placard or on an adjacent rectangular orange panel. Two of the more common include **1993** (chemicals, including road tar, cosmetics, diesel fuel and home heating oil) and **1203** (gasoline).

In addition to the placards, warning labels must be displayed on most packages containing hazardous materials -- smaller versions of the placards (4-inches on a side). In some cases, more than one label must be displayed, placed next to each other. In addition to labels for each of the DOT hazard classes, other labels with specific warning messages may be required. Individual containers also have to be accompanied by shipping papers which contain the proper shipping name, the four-digit ID number and other information about the hazards of the materials.

HAZMAT Guidelines

- Approach the scene cautiously – from uphill and downwind. If you have binoculars, use them
- Attempt to identify
 - the 4-digit number on the placard or orange panel
 - the 4-digit number (preceded by “UN/NA” on shipping paper or package
 - the “name” of the material on shipping paper, placard or package
- Call for help immediately and let the experts handle the situation. Do not attempt to take any action beyond your level of training. Know what you are capable of doing.

The Ready Kit

Basic Deployment Equipment

When responding to an emergency event, or even a training exercise, there is a minimum set of equipment and personal gear that should be taken along to get the job done:

- 2m HT (Multi-band HTs should have 70cm TxRx and wide-band receive capability)
- Appropriate portable/mobile gain antenna, connections and adapters
- Earphone and/or speaker mic
- Extra batteries and auxiliary power adapters
- Pencil (or pen) and paper (including logging sheets)
- An appropriate map of the locale
- Identification:
 - Laminated wallet-size copy of the FCC amateur operator/station license
 - ARES and/or RACES photo ID card
 - Participating agency (or Emergency Management) ID card(s) -- if member
 - Communications and/or EMA Emergency vehicles sign(s)
- Appropriate clothing, sunscreen, insect repellent, camp stool or folding chair, food and water.

The majority of these items should be kept in a *Ready Kit*, stored to be picked up on the way out the door for deployment. Consider items from the following list for inclusion in the Ready-Kit, designed to allow field deployment for up to 72-hours.

Power – The 72-hour kit should have several sources of power with extra charged battery packs and an alkaline dry cell pack for HTs. Larger ampere batteries are required for mobile VHF/UHF radios. Gel cell or deep-cycle marine batteries are good sources of battery power, and must be kept charged and ready to go. Have alternate means available to charge batteries during the emergency. Smaller batteries can be charged from other larger batteries. Consider a solar charging device. Operators might have access to a power generator that can be in place of the normal electrical lines. Have more battery capacity than normally needed. Be able to connect radios to different power sources with appropriate adapters.

Antennas and Feedline – Operators should expect to need a gain antenna for each HT, as well as additional gain antenna that can be used on either an HT or a mobile rig. The extra antenna might be needed by another operator, or the first antenna might break. For VHF/UHF, a TV twin lead J-pole is an inexpensive and very compact antenna. Have several lengths of coax, totaling at least 50 feet and with barrel connectors to extend length.

Personal - Include staples: water, or a reliable water filtration and purification system, enough food for three days, eating utensils, a drinking cup and, if needed, a way to cook the food. Sunscreen (lotions, lip balm), insect repellent, and a folding stool or chair could be important for even the shortest call-out. Shelter is also important. An RV or pickup conversion is more comfortable than car seats or a tent, but resources and the disaster conditions may determine what is possible. Have several different plans for shelter. Light is psychologically important during an emergency. Have several light sources available. Consider battery-powered and/or propane/gasoline-fueled lanterns in addition to flashlights.

Deployment Checklists

Basic Deployment Equipment Checklist

Forms of identification

- ARES – RACES photo ID
- FCC station/operator license
- driver's license

Radio gear

- VHF
- mic
- headphones
- power supply (extra batteries)
- antennas w/ mounts
- fuses
- patch cords / adaptors
- SWR meters
- extra coax

Writing gear

- pen / pencil / eraser
- clipboard
- message forms
- logbook
- note paper
- ARRL message forms

Personal gear

- snacks / liquids
- throat lozenges
- personal prescriptions/meds
- sweater / jacket
- sunscreen / lip balm / lotion
- insecticide [DEET]

Extended (72-hour) Deployment Equipment Checklist

Toolbox

- screw drivers
- pliers
- socket wrenches
- electrical tape
- 12/120v soldering iron w/ solder
- volt/ohm meter

Other

- HF TxRx
- hatchet / ax / saw / pick
- gloves
- siphon
- jumper cables
- generator (spark plugs / oil)
- camp lantern w/ kerosene
- 3/8" hemp rope
- highway flares
- extra gasoline / oil

Personal gear

- foul weather gear
- 3-day supply drinking water
- cooler w/ 3-days food
- messkit w/ cleaning supplies
- first aid kit
- personal prescription / meds
- aspirin
- throat lozenges
- shelter / tent /sleeping bag
- toilet articles
- mechanical / battery alarm clock
- flashlight w/batteries / lantern
- candles / waterproof matches
- extra prescription glasses

WARNING: fueled lanterns and generators should only be used in well-ventilated areas. They should never be used indoors, in a vehicle or in a tent.