

Volunteer Emergency Communications Plan

for Monroe County, Indiana



Monroe County ARES – RACES Group
Amateur Radio Emergency Service
Radio Amateur Civil Emergency Service

Serving our community through Amateur Radio

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Purpose

The purpose of this plan is to provide broad written guidelines with a minimum of information needed in an emergency and to define the roles and responsibilities of the licensed amateur radio operators volunteering for Emergency Communications service in Monroe County.

Monroe County ARES – RACES Group
Emergency Management Agency
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Dedication

Amateur radio involvement in Monroe County volunteer emergency communications and the initial connection with local emergency response agencies centered around Steven Settle (WD9EVK) and Millard Qualls (K9DIY). Settle served as communications officer for the Emergency Management Agency committee and was instrumental in selecting amateur radio equipment for the newly-constructed city-county Justice Building. Qualls succeeded Settle as the Amateur Radio Emergency Services [ARES] Emergency Coordinator and focused on the radio amateur's role in disaster recovery and welfare communications.



Millard Qualls (K9DIY)
[ARES Emergency Coordinator, Emeritus],
operating as Net Control Station
at Red Cross Shelter,
St. John's Catholic Church, Ellettsville,
during September 20-21, 2002, tornado recovery.

The growing role of VHF-UHF repeaters has been facilitated by the *Indiana University Amateur Radio Club [IUARC]* -- Daniel Miller (KQ9I) and Jay Sissom (KA9OKT), the *W9WIN* linked 440 system -- Mike Poe (KB9SGN), but especially by the *Monroe County Repeater Association* -- Brian Crouch (N9LKT), Richard Landgrebe (WB9HXP), Dwight Hazen (WB9TLH), and Russell Ryle (N9DHX), who served as net manager on the K9OK (now WB8TLH) repeater and as liaison with National Weather Service, Central Indiana Skywarn, and the Indiana Karst Conservancy Cave Search-Rescue Team for many years.

Emergency Management Director John Hooker and then-Bloomington-Monroe County American Red Cross Director of Disaster Services Ed Vande Sande suggested a formal cooperative arrangement following the startling events of September 11, 2001, that resulted in the formation of the **MONROE COUNTY ARES-RACES GROUP**, giving the county a seamless sequence of emergency response from individual radio amateurs, through radio support for non-governmental agencies, to formal Emergency Management Agency involvement – supported in no small way by the membership of *Bloomington Amateur Radio Club [BARC]*, which provides considerable meeting time and space (with *Bloomington Hospital*).

This plan is dedicated to those individuals, organizations and institutions by the

MONROE COUNTY ARES-RACES GROUP Emergency Committee

Monroe County

Monroe County, Indiana, is located at approximately 39° 9' N, 86° 25' W and covers nearly 412 square miles. It has 11 townships, one (1) city and eight (8) towns within its jurisdiction. According to the 2000 Census, Monroe County had a population of 120,563.

Monroe County has one (1) airport. There are approximately 300 public buildings and recreational facilities located in Monroe County. These are State, County, City, and Township offices and facilities, the Indiana University and the Ivy Tech State College campuses, United States Postal Service offices, and Richland-Bean Blossom Community School Corporation (RBB) and Monroe County Community School Corporation (MCCSC) facilities. Monroe County has 27 tornado sirens serving the county, with additional locations planned.



Law enforcement offices include the Indiana State Police, Monroe County Sheriff, Bloomington Police, Ellettsville and Stinesville town marshals, Indiana University Police, Indiana Conservation Office – South Region, and local office of the Federal Bureau of Investigation (FBI). The City of Bloomington has five (5) fire stations and an Operations Center, Ellettsville has two (2), and there are 11 fire stations located in seven (7) of the townships. There are cooperative response agreements among these departments which assure coverage of all townships. There is a Hazmat Team located at the Old SR 37 North station of the Bloomington Township Fire Department. Monroe County has one (1) general hospital, a university health center, and approximately 12 special purpose medical facilities and clinics.

There are state and national forests, three sizeable (3) lakes, and numerous local recreational facilities located in and around Monroe County. The western part of the county features karst regions with a vast network of mapped and unmapped caves and caverns. Monroe County is within range of both the Wabash Valley fault system and the New Madrid fault system.

There are approximately 500 licensed amateur radio operators in Monroe County. That pool increases with participation of transient residents licensed outside Monroe County. At least 50 operators, including many from surrounding counties, regularly volunteer their capabilities and/or equipment for Emergency Communications service, organized under the auspices of the Monroe County ARRL ARES-RACES Group: Amateur Radio Relay League Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES). These include members of the Bloomington Amateur Radio Club (BARC) and the Indiana University Amateur Radio Club (IUARC) as well as unaffiliated operators.

The Role of Amateur Radio

Volunteer public service communications have been a traditional responsibility of the Amateur Radio Service since 1913. Amateurs at the University of Michigan and Ohio State University, as well as individual amateurs in and around the region, stepped up to provide communications in an area isolated by a severe Midwest windstorm. In the early days, the functions of such disaster work were spontaneously organized to meet the needs and circumstances of the event.

Today, Amateur Radio disaster work is highly organized and practiced. Communications support is implemented principally through the National Traffic System (NTS), the Amateur Radio Emergency Service (ARES), the Radio Amateur Civil Emergency Service (RACES), as well as independent nets and other amateur public service groups -- all recognized as part of the Amateur Radio Relay League (ARRL) public service efforts.

Internet and telephone service, as well as inexpensive Family Radio Service (FRS), General Mobile Radio Service (GMRS), Multi-Use Radio Service (MURS) and Citizens' Band (CB) radio service have the potential to parallel or supplant amateur radio and ham operators providing communications support for public service and emergency events. However, none are as organized or as practiced as amateur radio.

While Internet connectivity is becoming more common and easy to use. It still requires comparatively expensive equipment and reliable wired or wireless connections. Cellular and "plain old telephone service" (POTS) in addition to voice, can provide Internet connectivity. Internet messages can be either one-to/from-many or one-to-one. POTS and cell messages are one-to-one. Wired connections are not always conveniently or consistently available in all areas. Wireless connectivity is typically dependent upon transmit power, antenna gain, proximity to receivers or relay stations, and frequency or band characteristics. Many event leaders and participants use cell phones when possible.

Radio transmissions are one-to/from-many. FRS, GMRS, MURS and CB radio service may be used by any citizen for personal or business purposes. All are designed for short range communications by limiting either the frequency or transmit power. CB no longer requires a Federal Communications Commission (FCC) license, uses High Frequency (HF) channels on the 11-meter "shortwave" band, but is limited to 4 watts of power. FRS does not require an FCC license, is limited to less than 1/2 watt (500 milliwatts) of power and a non-detachable antenna, and uses UHF frequencies. GMRS radios require an FCC license because they generally transmit at higher power levels (1 to 5 watts is typical) and may have detachable antenna. Some radios are certified for use in both FRS and GMRS on the basis that some channels are authorized to both services, or a user of the radio may communicate with stations in the other service.



Introduction

Since May of 2003, Multi-Use Radio Service (MURS) has been FCC-authorized to use VHF channels on 151.820-154.600 MHz with up to 2 watts of power. MURS stations are prohibited from operating as a repeater station, as a signal booster and as store-and-forward packet operations. During a public service event, many participants use these services for personal communication.

The FCC not only permits but encourages licensed amateur radio operators to assist in emergencies and "provide essential communications in connection with the immediate safety of human life and the immediate protection of property when normal communications systems are not available." If POTS, cell, or Internet connectivity is lost, radio transmissions can provide communications links.

While unlicensed radio is restricted, licensed amateurs have up to 1500 watts of "peak envelope power" (PEP) available for transmissions and may use both repeater stations and packet operations. Tactical communications in first-response circumstances typically use 2-meter frequencies in the VHF band, either on repeater-supported net frequencies or on simplex frequencies. However, more extensive emergency situations can involve any or all of the amateur frequencies from low band 160 meters through the HF and VHF frequencies to Ultra High 1300 MHz, and a variety of modes, including CW, packet, RTTY and television, as well as phone (voice). Public service activities provide operating and training opportunities of amateur radio emergency service.

NTS operates daily to handle local and remote written traffic, in a standard ARRL message format, over nets at four levels, connected through liaisons that assure systematic point-to-point flow, in the shortest possible time consistent with organizational objectives and mass handlings. ARES consists of licensed amateurs who have registered the availability of themselves and their equipment and are trained for emergency operations in the public interest under the operational leadership of local and district Emergency Coordinators (EC).



RACES consists of licensed amateurs registered and trained through local emergency management agencies to serve government civil preparedness entities at local, state and federal levels under the leadership of licensed amateur leadership, appointed by the government agencies as RACES officers.

Individual Amateur Radio operators participate as members of other public service support groups as well as volunteer as communicators in support of those functions. At the organizational level, formal relationships on the local and national level between Amateur Radio and other public service groups provide structures that facilitate volunteer emergency communications support for a wide variety of events and circumstances. Part 97 of the Federal Communication Commission's (FCC) Rules and Regulations states, as the first principle under "Basis and Purpose," the following: "Recognition and enhancement of the value of the amateur service to the public as a voluntary, non-commercial communication service, particularly with respect to providing emergency communications."

Emergency Service and Training

Government and Relief Agencies

- Local, State, and Federal Emergency Management Association
- National Weather Service
- Central Indiana Skywarn
- American Red Cross
- Salvation Army

Public Service Events

- Message Centers
- Parades
- Sports Events

Natural Disasters and Catastrophes

- Precipitation Reports
- Severe Weather Spotting and Reporting
- Weather Warnings
- Hurricanes
- Tornadoes
- Floods, Mudslides, Tidal Waves
- Winter Storms
- Brush and Forest Fires
- Earthquakes and Volcanic Eruptions

- Shelter Operations
- Health and Welfare Traffic
- Property Damage Surveys

- Accidents and Hazards
- Vehicle Accidents



Assistant ARES EC/ RACES Officer, [Simplex Manager] Maynard Raggio (N9PTG), operates at Field Day.



Tom Busch (WB8WOR) aligns antenna for satellite operations at Field Day, 2004

Emergency Condition Alerts

The various Monroe County emergency communications groups will be notified of an emergency by their own activation methods and advised of the status with the following condition alerts:

Condition 1: Standby [Mitigation]

A potential emergency exists and there is the possibility of a tornado, flooding, wildfire, or other natural or man-made emergency.

Receive notification by telephone tree plan and/or radio net.

Secure home. And family

Monitor designated frequencies for information and liaison assignments.

Charge batteries

Assemble radio and personal equipment for deployment

Have a full tank of gas in vehicle.

Be ready to respond.

Condition 2: Primary Mobilization [Preparedness]

Threat is imminent - shelters opening, evacuation begins.

Designated agency members report to agency centers/headquarters.

ARES-RACES members and volunteers respond to NCS. For a RACES event, only RACES members should respond.

Designated ARES-RACES members and volunteers report to liaison locations— local shelters, area hospitals, law enforcement stations, etc

Remainder of ARES-RACES volunteers standby for relief at primary locations or assignment to secondary locations as they are opened.

Limited or local emergency - tornado, explosion, fire, plane crash, chemical spill, etc.

Designated ARES-RACES volunteers report to assignments as directed.

Condition 3: Full Emergency [Response]

Event or serious emergency is in progress.

All ARES-RACES volunteers assigned are on standby status, depending on the severity and duration of the emergency.

Emergency traffic only; repeaters and simplex frequency are closed to all but necessary emergency traffic.

The simplex frequencies will be assigned for tactical traffic as needed.

Condition 4: Aftermath [Recovery]

Assist as necessary with cleanup.

Assist government agencies as necessary to supplement their communications and/or substitute for inoperative equipment.

Assist with damage assessment.

Deliver messages to and from outside areas

Emergency Response Resources

In addition to the law enforcement, fire safety, hazardous material, and health services resources which respond to Central Dispatch, Monroe County benefits from the following government and volunteer emergency response resources:

ARGUS K9 SAR trains and deploys ground search teams and specialty canine units. The team provides Monroe County and surrounding areas with experience in ground search, first aid, map and compass work, amateur radio communications, crime scene preservation, and incident command training.



Bloomington – Monroe County Chapter of the American Red Cross

Chartered by Congress in 1905, the Red Cross provides relief to victims displaced by disaster, from the onset of disaster conditions to the recovery phase. Local ARES Emergency Coordinators work closely with their counterparts in the chapter offices, on missions with Red Cross personnel and providing communications for shelter managers.

Red Cross Disaster Services -- This congressionally-mandated service not only applies to major national tragedies but also to single-family incidents, generally fire, flood or tornadoes. Typically, Red Cross responds by purchasing food, new clothing and providing shelter for families to help meet immediate emergency needs.



Together, we can save a life

Red Cross Armed Forces Emergency -- The congressional mandate of the Red Cross includes providing service to our armed forces, including emergency communication between soldiers and their families, emergency leave and referral services.

Amateur radio operators responding with the Red Cross may do so either as Red Cross volunteers or as ham communicators for agency personnel. [\[National Statement of Understanding\]](#)

Central Indiana Skywarn -- Amateur Radio is almost synonymous with the Skywarn program, the "eyes and ears" of the National Weather Service during severe weather emergencies. Hams comprise the majority of Skywarn volunteers, who report "ground truths" to



local NWS offices, supplementing their sophisticated weather monitoring equipment. Radio operators provide a vital communications link from the 39 counties in the Indianapolis National Weather Service area-of-responsibility in cases of severe weather. It supports the NWS with communications, educational



and technical resources, utilizing the services of trained professional volunteers through continuous improvement in the promotion and advancement of the Skywarn program, thereby lessening the burden of government and promoting the social welfare of the citizens of the State of Indiana. The Skywarn program is one of the finest examples of hams providing public service. [\[National Memorandum of Understanding\]](#)

Mitigation

Citizens Corps – The ARRL is an affiliate under the four charter Citizen Corps programs-- Neighborhood Watch, Volunteers in Police Service, Community Emergency Response Teams and Medical Reserve Corps. Citizen Corps is an initiative within the Department of Homeland Security to enhance public preparedness and safety. The relationship calls on DHS and ARRL to raise public awareness of Amateur Radio as a safety resource, to cooperate in providing training and accreditation for Amateur Radio emergency communications and to work



together to promote the formation of local Citizen Corps councils and assist them with education, training and volunteer service opportunities that support first responders, disaster relief organizations and community safety efforts. [\[National Memorandum of Understanding\]](#)

Civil Air Patrol -- The Indiana Wing of CAP is a civilian auxiliary of the US Air Force. CAP is made up of volunteers and among their missions is Emergency Services. These services include air and ground search and rescue operations, disaster relief operations due to tornadoes, floods, or earthquakes, environmental protection operations, State and Regional disaster airlift operations, organ and tissue transportation operations, aerial reconnaissance, transportation of emergency equipment and supplies, and transportation of State Officials and other non-CAP members. The Monroe County Squadron's communications group is at Monroe County Airport and has ARS operators as members.



Military Affiliate Radio System -- The MARS mission is to provide the Department of Defense sponsored emergency communications on a local, national, and international basis as an adjunct to normal communications. It also provides as an auxiliary communications for military, civil, and/or disaster officials during periods of emergency. MARS is to assist in effecting normal communications under emergency conditions. In central Indiana, there are representatives for Army, Air Force, and Navy / Marine Corps MARS.



NOAA Weather Radio --The National Weather Service operates more than 670 National Oceanographic and Atmospheric Administration (NOAA) Weather Radio transmission stations across the country. NOAA uses seven frequencies -- 162.400, 162.425, 162.450, 162.475, 162.500, 162.525, and 162.550 MHz to provide overlapping coverage across geographical areas

Indiana Army National Guard – Deployment of the Indiana Army National Guard for general state or local emergency is under the authority of the Governor of the State of Indiana, usually at the request of local authorities under SEMA priorities. Should a large-scale emergency involve Bloomington and Monroe County, it is possible, that units including the local battalion could be assigned to this area. If the President of the United States declares an emergency and with the approval of Congress calls reserve units to active duty, a Guard unit could leave the community for up to a year.

The tactical radio of choice for the Indiana Army National Guard battalion located in Bloomington is SINCGARS, the single channel ground air radio system. It is capable of transmitting between 5 and 10 miles without a retransmission station and also capable of cryptographic encoding for secure communications as well as frequency hopping, allowing communication without being monitored. SINCGARS is thus not available to civilian personnel and organizations. However, in a situation where local authorities and military personnel are co-deployed, the radio is also capable of single channel unencoded operations which can be monitored by anyone who has a scanner tuned to military frequencies.

The unit headquarters for a Mobile Subscriber Equipment (MSE) Signal Battalion, also under control of the Governor, is located in Anderson, IN. The MSE system is analogous to the civilian cell phone system except that it is not capable of long distance communications, is not compatible with civilian cell phones, and is high on overhead requirements of a signal battalion. There is a limited amount of equipment available with the Bloomington Guard unit and it is rarely used.

Indiana Karst Conservancy Cave Search-Rescue – The Cave Rescue Team of the Indiana Karst Conservancy is affiliated with the National Cave Rescue Commission. The Central Region Coordinator for NCRC and member of the IKC Cave Rescue Team is an amateur radio operator and headquartered in Bloomington. NCRC coordinates cave rescue training, including rescuer preparedness and safety, cave travel skills, understanding the cave environment, patient care and stabilization, evacuation techniques applicable to cave passage, single rope techniques for personal movement, rope rescue techniques, medical considerations, underground communications, and incident management. The IKC Cave Rescue Team performs the search and rescue operations using both underground telephony and amateur frequencies.



Indiana State Emergency Management Agency -- The Indianapolis SEMA Ham Team provides Amateur Radio communications between the Indiana Government Center SEMA EOC facility and the Indiana SEMA Mobile Command Center (MCC) vehicle, other Indiana County Emergency Operations Centers (EOC) and EMAs and/or other organizations as required to meet the last resort / backup or overflow disaster communications needs of the Indiana SEMA organization <http://www.ai.org/sema/>. *[National Memorandum of Understanding]*



Monroe County Amateur Radio Emergency Services

[ARES] operates in accordance with national Memoranda of Understanding between the Amateur Radio Relay League and a number of served agencies. ARES usually cooperates with non-governmental agencies like the American Red Cross and the Salvation Army. Locally, ARES cooperates with the Monroe County Director of Emergency Management. In addition, Monroe County ARES is a member of the National Weather Service (NWS) *Skywarn Net* and cooperates



Mitigation

with contiguous counties in an Amateur Radio Emergency Services Mutual Assistance Team [ARESMAT].

Monroe County ARES-RACES Group is the operational umbrella comprising of ARES, under the direction of the ARRL-appointed Emergency Coordinator, and RACES, directed by the EMA-appointed RACES Officer, which provides Monroe County with a seamless source of volunteer radio amateur communicators ranging from individual, independent operators, through cooperative exercises with non-governmental agencies, to local, state or federal government events and responses.

Monroe County Emergency Management Advisory Council [EMAC] consists of representatives (or appointees) of the president of the county executive, the president of the county fiscal body, the mayor of each city in the county, an individual representing the legislative bodies of towns in the county, representatives private and public agencies or organizations that can assist emergency management as determined by the advisory council, one commander of a local civil air patrol unit.

Monroe County Emergency Management Agency [EMA] prepares for and coordinates all emergency functions other than functions for which military forces or other federal agencies are primarily responsible, to prevent, minimize and repair injury and damage resulting from, disasters. EMA promotes the mitigation of, preparation for, the response to, and the recovery from emergencies and disasters impacting the public, government, and business of the communities in Monroe County. Monroe County has established a non-reverting, Emergency Management Fund for the purpose of receiving donations for emergency management and disaster relief in Monroe County. [\[National Memorandum of Understanding\]](#)



[\[Local and National Memoranda of Understanding\]](#)

Monroe County Radio Amateur Civil Emergency Services [RACES] operates under the auspices of Monroe County Emergency Management and is authorized by Part 97, Subpart E of the FCC Rules and Regulations. RACES activities are activated by the Monroe County Director of Emergency Management in response to a need for communications support. [\[Local and National Memoranda of](#)



Salvation Army, Bloomington, IN., Corps – The Salvation Army Team Emergency Radio Network **[SATERN]** is a component of the Salvation Army's emergency disaster response; locally, nationally, and internationally. SATERN provides radio communications between command and remote facilities supporting disaster workers and victims. The Salvation Army is particularly active in the recovery stage of disasters, and has communications needs, often filled by ARRL volunteers. [\[National Memorandum of Understanding\]](#)

Amateur Radio Repeaters

in and contiguous to

Monroe County -- Bloomington, IN

WB9TLH 146.640 MHz (-600 kHz) [o,a,e,z,wx, 136.5]
former Monroe County Repeater Association
K9OK Auto-dial to Bloomington Post ISP, Monroe Co. Sheriff and Bloomington Police.

Monroe County ARES-RACES, Central Indiana Skywarn, NWS.

K9IU 146.940 MHz (-600 kHz) [o,e 136.5]
Indiana University Amateur Radio Club
<http://www.indiana.edu/~k9iu/k9iu_repeater.html>
Indiana University, IMU 677, Bloomington, IN 47405

WB9HZX 147.180 MHz (+600 kHz) [o, 136.5].

KB9SGN 443.755 MHz (+5 MHz) [o,e,x, ARES, 136.5]
Skywarn Network and linked to **145.390** [118.8] (net only) and **145.470** (Greene Co.), **442.250** (Lawrence Co.), **442.425** (Greene Co.), **443.275** (Brown Co.), **444.325** (Marion Co.), and **444.475** (Putnam Co.)[all 136.5].
as the W9WIN.org <<http://w9win.org/>>.

W9EAR 442.925 MHz (+5 MHz) [no CTCSS]
EAR Wide Area Network linked to
145.100 [107.2] (Evansville, Ft. Branch, Mt Vernon), **146.925** [107.2] (Vincennes, Paxton, Farmersburg), and **443.925** [no CTCSS] (Vincennes)

East -- Brown County, Nashville, IN

KA9SWI 146.300 MHz (+600 kHz) [o,e,x,r,l,w, 88.5]

South Lawrence County, Bedford, IN

W9QYQ 146.730 MHz (-600 kHz) [o, 107.2]

Southwest -- Greene County, Bloomfield, IN

W9HD 147.240 MHz (+600 kHz) [o,e,z,RACES, 103.5]
ERP: 250w. EPS and auto-dial to ISP (Bloomington), Greene Co. Sheriff and Emergency Management [RACES], affiliated with Indiana Skywarn.

West -- Owen County, Spencer, IN

KB9MZZ 146.985 MHz (-600 kHz) [o,e,wx,ARES, RACES 136.5]

Northwest -- Owen County, Gosport, IN

KB9SGN 146.895 MHz (-600 kHz) [o,e,wx, 136.5]

North -- Morgan County, Martinsville, IN

N9AJS 146.060 (+600 kHz) [o,a,e,z]

Indiana Repeater Council <<http://www.ircinc.org/repeaters.htm>>

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 for 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.