Amateur Radio Emergency Services

ARES Field Resources Manual

A Quick Trainer and Field Resource Guide for the Emergency Communicator

What We Will Cover Tonight

First Things First

Equipment and Personal Checklists

Basic Emergency Program Information

- Amateur Radio Emergency Service (ARES)
- National Traffic System (NTS)
- Radio Amateur Civil Emergency Service (RACES)
- Incident Command System (ICS)
- National Incident Management System (NIMS)

What We Will Cover Next Time

Hazardous Material Incident

Deployments Basic Operating Principles

Message Formats

Local Net/Contact Information

Section ARES Map

Section Emergency Plan

Operating Aids

Hurricane Information

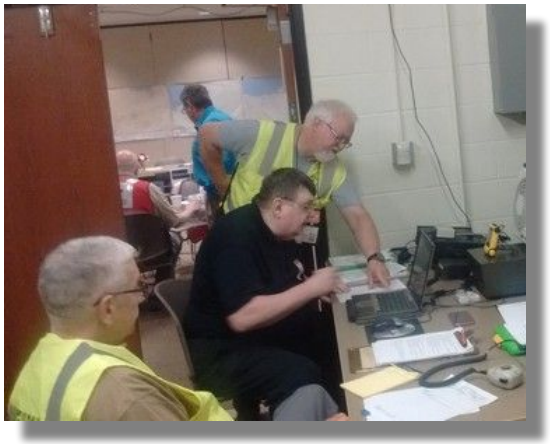
First Things First

What to Do First in Case of an Emergency

1. Check that you and your family are safe and secure before you respond as an ARES volunteer.
2. Check that your property is safe and secure before you respond as an ARES volunteer.
3. Monitor the N8IG repeater frequency (145.350 MHz with a Tone of 127.3 Hz).
4. Follow the instructions you receive from the ARES officials in charge on the above frequency.
5. Contact your local Emergency Coordinator, Ed Liddle (KE8ANU), or his designee, for further instructions.

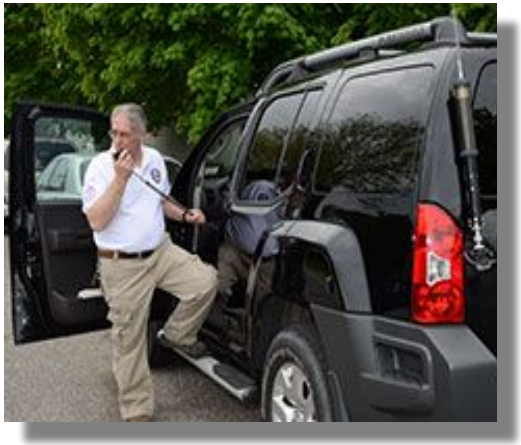
Initial Action Checklist

The net control station and/or ARES officials on the designated emergency net will provide additional instructions, including information on frequencies used for other resource and tactical nets. Normally, a resource net will enroll volunteers and provide information on how you can assist.



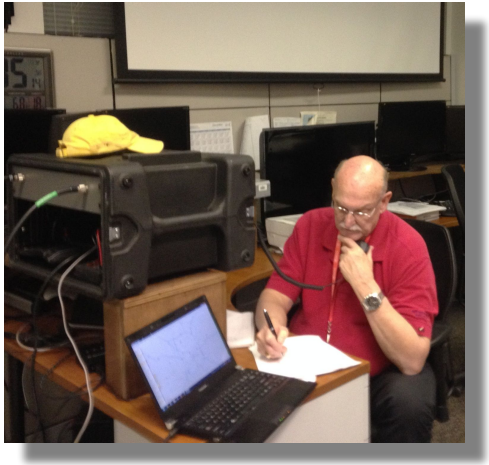
Initial Action Checklist (cont.)

- Be prepared to operate. Check all equipment and connections.
- Check in with your assigned contact. Deploy to assignment with “Ready kit.”
- Obtain tactical call sign for your location/assignment.
- Initiate personal event log (use form at end of this booklet).
- Enter assigned frequency(s) on log sheet and on emergency/frequency plan.



Initial Action Checklist (cont.)

- Use log form to record messages handled.
- Use a formal message form when a precise record is required.
- Use tactical call sign for your location, and observe FCC's 10-minute ID rule.
- Monitor your assigned frequency at all times. Notify the Net Control Station (NCS) if you have to leave.



Equipment and Personal Checklist

Basic Deployment Equipment Checklist

When responding to an emergency event, or even a training exercise, there is a minimum set of equipment and personal gear you should bring with you to get the job done. Basic items include:

- 2-meter hand-held
- 2-meter mag-mount antenna and coax
- Earphone
- Paper and pencil
- ARES ID card
- Extra batteries
- Appropriate clothing
- Food and water

The majority of these items should be kept in a “Ready Kit.” Just pick it up on your way out the door for deployment. You might also consider the items on the following list for inclusion in this ready kit, designed to allow you to stay in the field for up to 72 hours.

Extended Deployment (72 hour) Equipment Checklist

- 3 day change of clothes
- Foul weather gear
- Toilet articles
- Shelter (tent and sleeping bag)
- Portable stove; mess kit with cleaning kit
- Waterproof matches
- Flashlight
- Candles
- Alarm clock 3 day supply of water and food
- Snacks
- Liquid refreshments
- First aid kit
- Throat lozenges
- Prescriptions
- Aspirin or other pain reliever
- Additional radios, packet gear
- Power supplies, chargers
- Microphones
- Headphones
- Patch cords
- Antennas with mounts
- SWR bridge (VHF and HF)
- Extra coax
- RF connectors and adapters
- Power, audio and other connectors and adapters
- Batteries
- Toolbox
- Soldering iron and solder
- VOM
- Electrical and duct tape
- Safety glasses
- Log books
- Message forms

About Your “Ready Kit”

Power—Your 72-hour kit should have several sources of power in it, with extra battery packs and an alkaline battery pack for your handheld. For mobile VHF and UHF radios, larger batteries are needed. Gel-cell or deep-cycle marine batteries are good sources of battery power, and you must keep them charged and ready go. It is also wise to have alternate means available to charge your batteries during the emergency. You can charge smaller batteries from other larger batteries. You can build a solar charging device. If you’re lucky, you may have access to a power generator that can be used in place of the normal electrical lines. Have more battery capacity than you think you might need. Have several methods available to connect your radios different power sources.

About Your “Ready Kit”

Gain Antennas—You can expect to need some kind of gain antenna for your handheld, as well as an additional gain antenna that can be used on either your handheld or your mobile rig. The extra antenna might be needed by someone else, or your first antenna might break. For VHF and UHF, you can build a J-pole from TV twinlead for an inexpensive and very compact antenna. Have several lengths of coax in your kit, totaling at least 50 feet, and barrel connectors to connect them together.

About Your “Ready Kit”

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 means of cooking your food. Shelter is also important. Here, you are only limited by the size of your kit and the thickness of your wallet. Some hams plan to use their RVs as shelter, conditions permitting. Other disaster conditions may make the use of an RV impossible, so you should have several different plans for shelter. Light is important psychologically during an emergency. Make sure that you have several light sources available. Various battery-powered lights are available, and lanterns that use propane or other fuel are also good possibilities.

Basic Emergency Program Information

Amateur Radio Emergency Services (ARES)

ARES - What Is It?

The ARRL Amateur Radio Emergency Service (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment for communications duty in the public interest when disaster strikes. **Membership in ARRL or any other local or national organization is not required to join ARES or participate in ARES activities**. *ARRL membership is, however, required for the leadership appointments described here.* Because ARES is an Amateur Radio service, only licensed amateurs are eligible for membership.

ARES Organization

There are three levels of ARES organization—**section**, **district** and **local**. At the section level, the Section Emergency Coordinator (SEC) is appointed by the Section Manager (SM) and works under his supervision. (The SM is elected by the ARRL members in the section.) In most sections, the SM delegates to the SEC the administration of the section emergency plan and the authority to appoint District Emergency Coordinators (DECs) and local Emergency Coordinators (ECs) to help him run the ARES program in the section.

Section Manager - State of Ohio

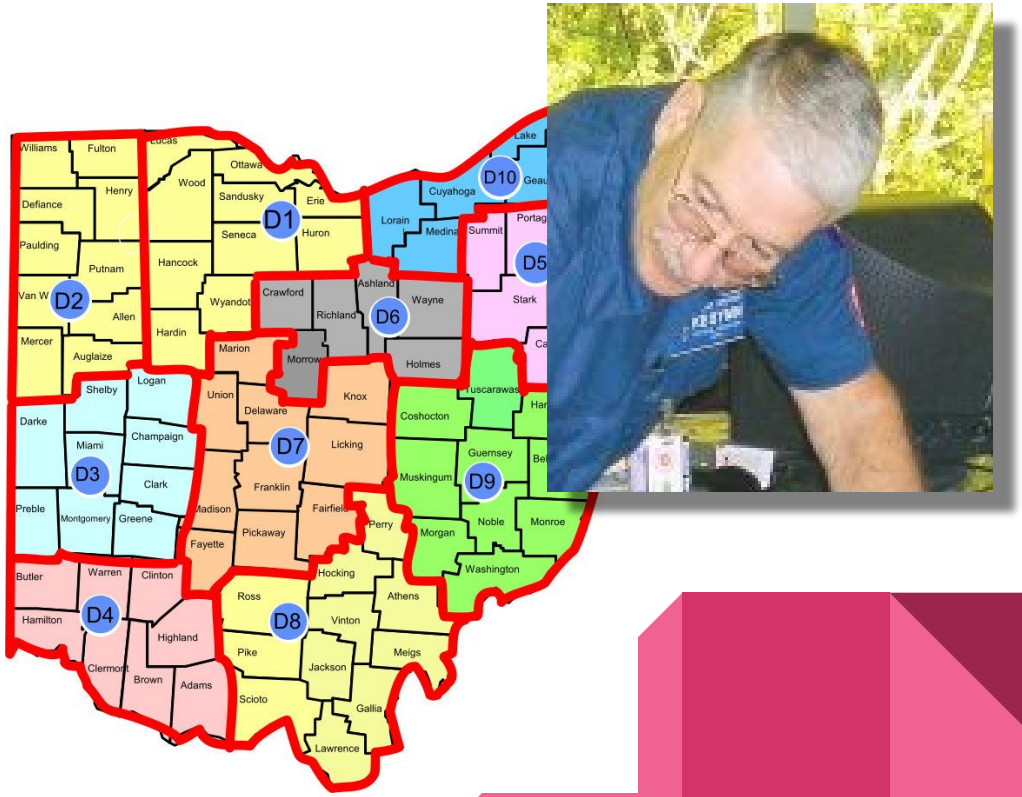
Scott Yonally, N8SY
258 Valley Hi Drive
Lexington, OH 44904
Phone: (419) 512-4445
Email: n8sy@n8sy.com
http://arrl-ohio.org/sm/cabinet.html

Section Emergency Coordinator - State of Ohio

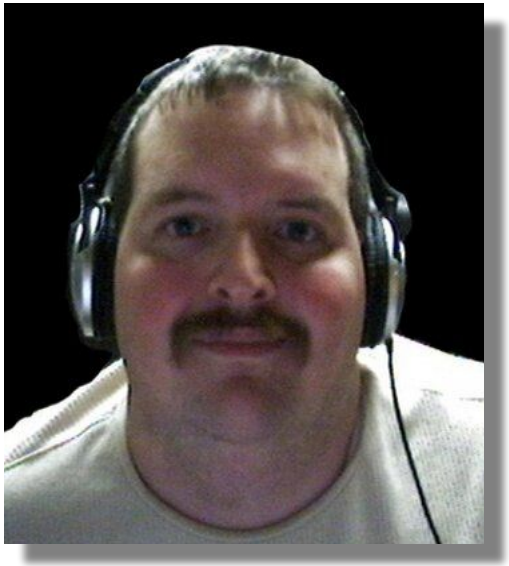
Stan Broadway, N8BHL
3677 Peel Road
Radnor, OH 43066
Phone: (614) 562-3130
E-mail: broadways@standi.com
http://arrl-ohio.org/SEC/

District Emergency Coordinator - District 7

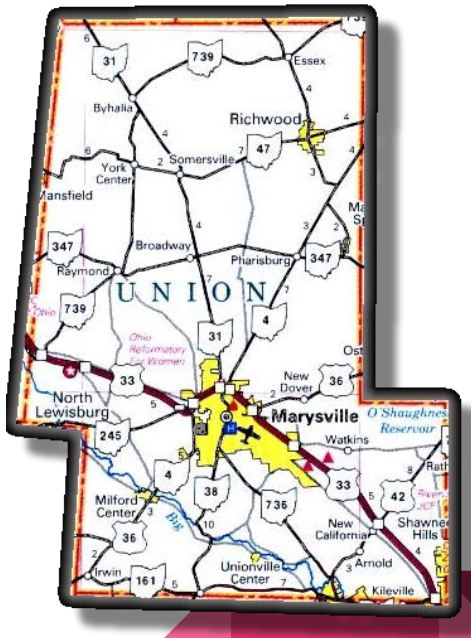
Mark M. Griggs, KB8YMN
2160 Autumn Place
Columbus, OH 43223
Phone: (614) 395-8654
Email: kb8ymn@sbcglobal.net



Local Emergency Coordinator - Union County



Ed Liddle, KE8ENU
14449 Watkins Road
Marysville, OH 43040
Phone: (614) 804-6569
Email: ed.liddle@gmail.com
http://someplaceinohio.net/



National Traffic System (NTS)

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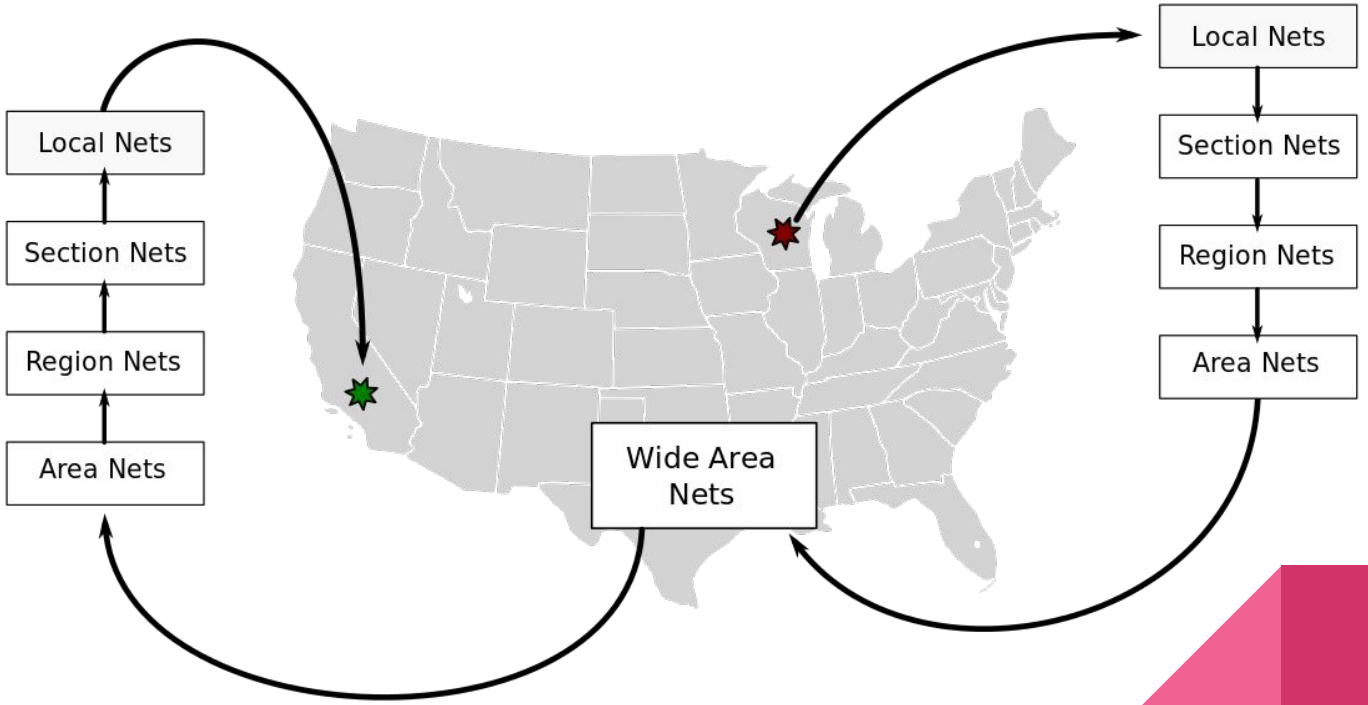
The National Traffic System (NTS) is designed to meet two principal objectives: 1) rapid movement of traffic from origin to destination, and 2) training amateur operators to handle written traffic and participate in directed nets.

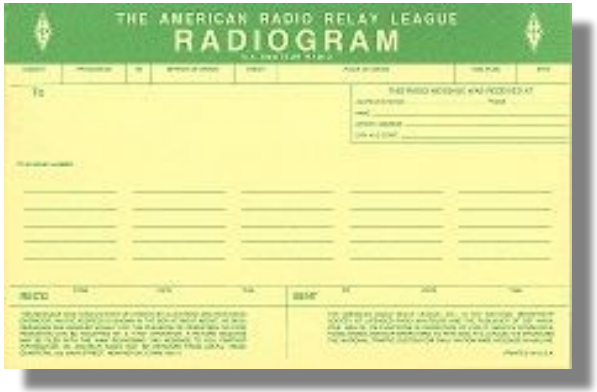
NTS operates daily and consists of four different net levels—Area, Region, Section, and Local. The four levels operate in an orderly time sequence to make a definite flow pattern for traffic from origin to destination.

National Traffic System (NTS)



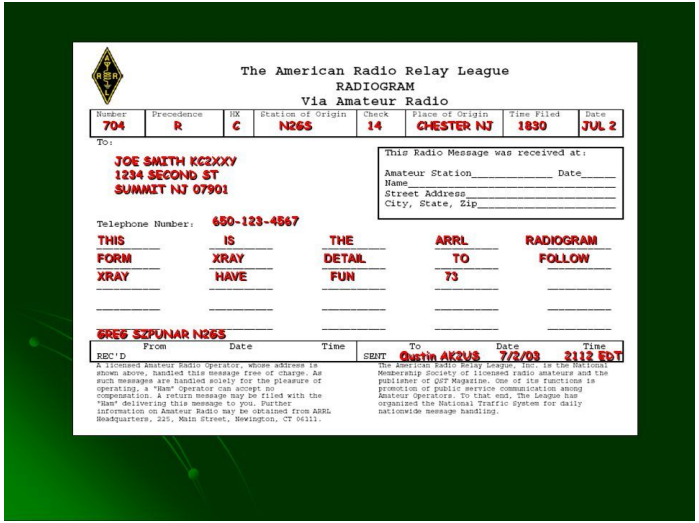
National Traffic System (NTS) - Local Nets

Local nets are those covering small areas such as a community, city, county or metropolitan area, not a complete ARRL section. They usually operate at VHF (typically 2-meter FM) at times and on days most convenient to their members. Some are designated as emergency (ARES) nets that do not specialize in traffic handling. Local nets are intended mainly for local delivery of traffic. Some NTS local nets operate on a daily basis, just as do other nets of the system, to provide outlets for locally originated traffic.



National Traffic System (NTS) - Local Nets

They also route the incoming traffic as closely as possible to its actual destination before delivery—a matter of practice in a procedure that might be required in an emergency. Most local nets and even some section nets in smaller sections are using repeaters to excellent effect. Average coverage on VHF can be extended tenfold or more using a strategically located repeater, and this can achieve a local coverage area wide enough to encompass many of the smaller sections.



The American Radio Relay League
RADIOGRAM
Via Amateur Radio

Number	Precedence	HX	Station of Origin	Check	Place of Origin	Time Filed	Date
704	R	C	N2GS	14	CHESTER NJ	1830	JUL 2

TO:
JOE SMITH KC2XXY
1234 SECOND ST
SUMMIT NJ 07901

This Radio Message was received at:
Amateur Station_____ Date_____
Name_____
Street Address_____
City, State, Zip_____

Telephone Number: 650-123-4567

THIS	IS	THE	ARRL	RADIOGRAM
FORM	XRAY	DETAIL	TO	FOLLOW
XRAY	HAVE	FUN	73	

GREG SZPUNAR N2GS

	From	Date	Time		To	Date	Time
REC'D				SENT	Dustin AK2US	7/2/03	2112 EDT

A licensed Amateur Radio Operator, whose address is shown above, handled this message free of charge. As such messages are handled solely for the pleasure of operating, a "Ham" Operator can accept no compensation. A return message may be filed with the "Ham" delivering this message to you. Further information on Amateur Radio may be obtained from ARRL Headquarters, 225, Main Street, Newington, CT 06111.

The American Radio Relay League, Inc. is the National Membership Society of licensed radio amateurs and the publisher of QST Magazine. One of its functions is promotion of public service communication among Amateur Operators. To that end, The League has organized the National Traffic System for daily nationwide message handling.

National Traffic System (NTS) - Section Nets

Coverage of the section may be accomplished by individual stations reporting in, by representatives of NTS local nets, or both. The section may have more than one net (a CW net, a VHF net and an SSB net, for example). Section nets are administered by an appointed Section Traffic Manager (STM) or designated Net Managers (NMs).

The purpose of the section net is to handle traffic within the section and distribute traffic coming to the section from higher NTS levels. The section net also puts traffic bound for destinations outside the section in the hands of the person who is designated to report into the next-higher NTS level (the region level).

NTS - Operating During Disasters

When a disaster situation arises, NTS is capable of expanding its cyclic operation into complete or partial operation as needed. ECs in disaster areas determine the communications needs and make decisions regarding the disposition of local communications facilities, in coordination with agencies to be served. The SEC, after conferring with the affected DECs and ECs, makes his recommendations to the Section Traffic Manager and/or NTS net managers at section and/or region levels.

NTS - Operating During Disasters

The decision and resulting action to alert the NTS region management may be performed by any combination of these officials, depending upon the urgency of the situation. While the EC is, in effect, the manager of ARES nets operating at local levels, and therefore makes decisions regarding their activation, managers of NTS nets at local, section, region and area levels are directly responsible for activation of their nets in a disaster situation. They activate their nets at the behest of and on the recommendation of ARES or NTS officials at lower levels.

Types of Emergency Nets - Tactical Net

The Tactical Net is the front line net **employed during an incident, usually used by a single government agency to coordinate with Amateur Radio operations within their jurisdiction.** There may be several tactical nets in operation for a single incident depending on the volume of traffic and number of agencies involved. Communications include traffic handling and resource recruiting.

Types of Emergency Nets - Resource Net

For larger-scale incidents, **a Resource Net is used to recruit operators and equipment in support of operations on the Tactical Nets.** As an incident requires more operators or equipment, the Resource Net evolves as a check-in place for volunteers to register and receive assignments.

Types of Emergency Nets - Command Net

As the size of an incident increases and more jurisdictions become involved in the incident, a Command Net may become necessary. **This net allows the incident managers to communicate with each other to resolve inter- or intra-agency problems, particularly between cities or within larger jurisdictional areas.** It is conceivable that this net could become cluttered with a high volume of traffic. It may also be necessary to create multiple command nets to promote efficiency.

Types of Emergency Nets - Open & Closed Nets

A net may operate as an open or “free form” net, or as a closed net where a net control station (NCS) is used to control the flow of transmissions on the channel. Typically, when the amount of traffic is low or sporadic, a net control isn’t required and an open net is used. Stations merely listen before they transmit. When a net is declared a “closed” net, then all transmissions must be directed by the NCS.

Radio Amateur Civil Emergency Services (RACES)

Radio Amateur Civil Emergency Services (RACES)

RACES is a part of the Amateur Radio Service that provides radio communications for civil-preparedness purposes only, during periods of local, regional or national civil emergencies. These emergencies are not limited to war-related activities, but can include natural disasters such as fires, floods and earthquakes. RACES is administered by local/county/state emergency management agencies, with guidance from the Federal Emergency Management Agency (FEMA).

RACES Operating Procedure

Amateurs operating in a local RACES organization must be officially enrolled in the local civil preparedness group. RACES operation is conducted by amateurs using their own primary station licenses and by existing RACES stations. The FCC no longer issues new RACES (WC prefix) station call signs. Operator privileges in RACES are dependent upon, and identical to, those for the class of license held in the Amateur Radio Service. All of the authorized frequencies and emissions allocated to the Amateur Radio Service are also available to RACES on a shared basis.

RACES Operating Procedure

Although RACES was originally based on potential use for wartime, it has evolved over the years. This is also true of the meaning of civil defense (which is also called civil preparedness or emergency management), which now encompasses all types of emergencies.

While operating in a RACES capacity, RACES stations and amateurs registered in the local RACES organization may not communicate with amateurs not operating in a RACES capacity. Only civil preparedness/emergency management communications can be transmitted (as defined in the FCC Rules). Test and drills are permitted only for a maximum of one hour per week.

All test and drill messages must be clearly identified as such.

ARES and RACES

Although RACES and ARES are separate entities, the ARRL advocates dual membership and cooperative efforts between both groups whenever possible. An ARES group whose members are all enrolled in and certified by RACES may operate in an emergency with great flexibility. Using the same operators and the same frequencies, an ARES group also enrolled as RACES can “switch hats” from ARES to RACES and RACES to ARES to meet the requirements of the situation as it develops. For example, during a “non-declared emergency,” ARES can operate under ARES, but when an emergency or disaster is officially declared by government emergency management authority, the operation can become RACES with no change in personnel or frequencies.

Incident Command System (ICS)

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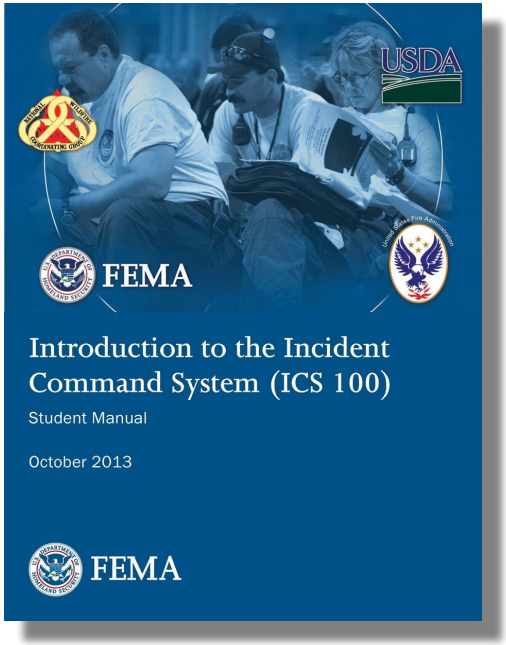
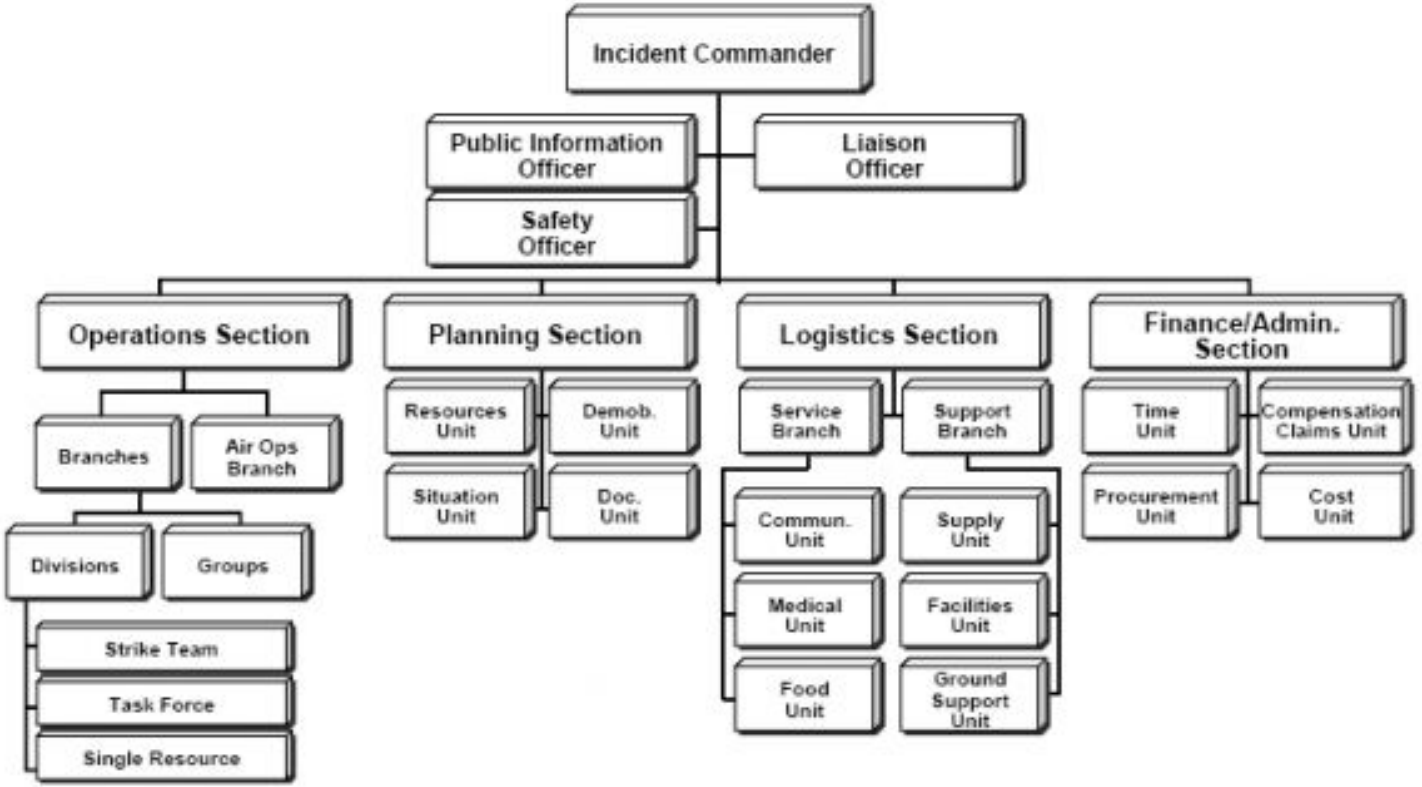
The **Incident Command System (ICS)** is a management tool that is being adopted by professional emergency responders throughout the country. ICS provides a coordinated system of command, communications, organization and accountability in managing emergency events. Amateur Radio operators should be familiar with the system, as well as how they will interface with agencies employing ICS.



Incident Command System (ICS)

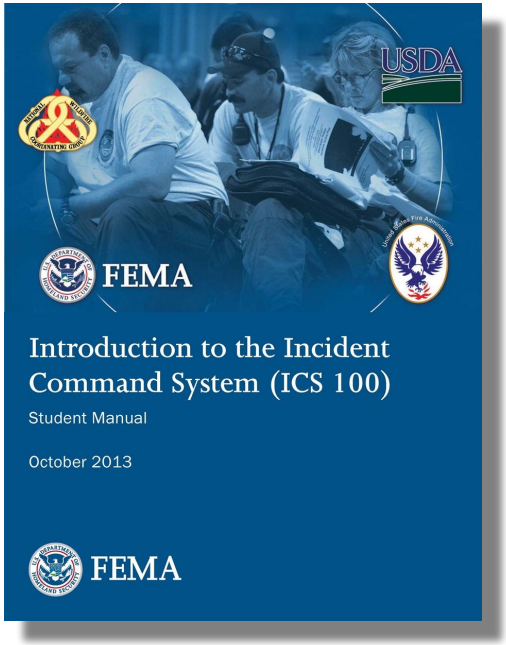
Integral to the ICS is the concept of Unified Command. There is only one boss, the Incident Commander, who is responsible for the overall operation. For any incident, a number of functions must be performed, ranging from planning and logistics to handling the press. The functional requirements of planning, logistics, operations and finance are always present despite the size of the incident. They may be handled by a single individual for a small incident or a “Command Staff” in a large incident. Another characteristic of ICS is “span of control.” In simple terms, any manager should only directly manage a small number of people. ICS uses the number of five for organizational purposes. The number five isn’t hard and fast, but it provides a useful organizational guideline.

Incident Command System (ICS)



Incident Command System (ICS)

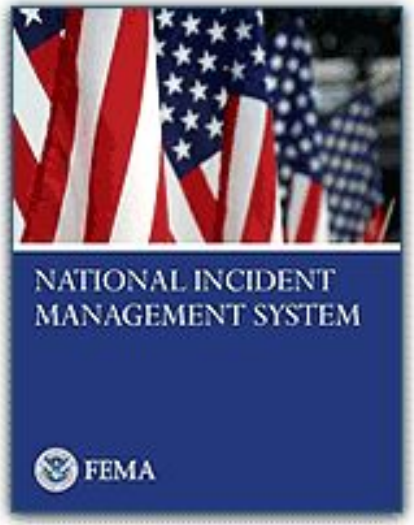
How does the Amateur Radio volunteer fit into the Incident Command System? We are expected to be communicators, and within the ICS, this would place us in the Logistics Section in the Service Branch as part of the Communications Unit. The Communications Unit provides all communications services for the operation. A training course, “IS-195—Basic Incident Command System,” is available as part of the FEMA Independent Study Program at training.fema.gov/EMIweb/IS/is195.asp



National Incident Management System (NIMS)

National Incident Management System (NIMS)

The **National Incident Management System (NIMS)** has been developed to help emergency managers and responders from different jurisdictions work together more effectively during emergencies and disasters. The NIMS provides a set of standardized organizational structures, such as the Incident Command System, and standardized processes and procedures. More information about NIMS is available from the FEMA Web site.



End of Part One

Questions?