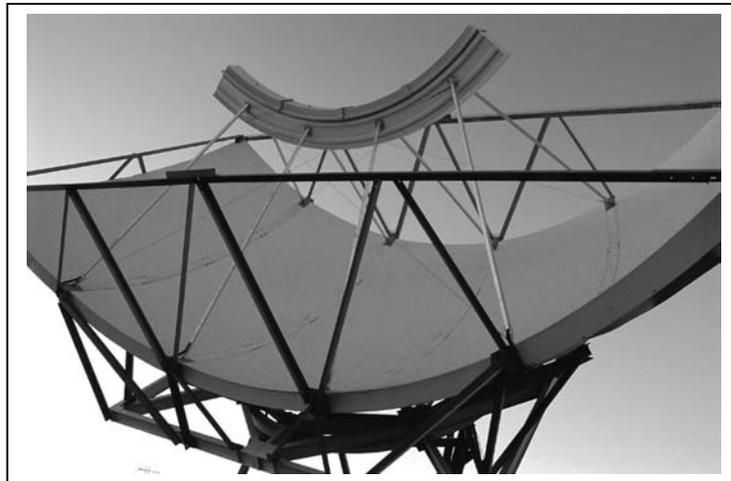


# Amateur Radio Emergency Communications Guidebook Part 1 - Procedures

Dr. John A. Allocca, WB2LUA



# Amateur Radio Emergency Communications Guidebook

## Part 1 - Procedures

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There are 3 Parts to this Course  
Part 1 – Procedures  
Part 2 – Technical  
Part 3 – Emergency Preparedness

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# Amateur Radio Emergency Communications in the Community

As you go about your every day business, amateur radio operators are preparing, practicing and training to provide communications during emergencies. Do not let the word "amateur" mislead you. These people are highly trained and motivated. The dictionary defines "amateur" as *a person who engages in a pursuit for pleasure and not as a profession*. Olympic athletes are "amateurs." You don't consider them to be less proficient. Amateur Radio Operators are trained, provide their own equipment and are well organized. Amateur Radio Operators must pass the FCC exam, which demonstrates their technical abilities, in order to receive a license to operate an Amateur Radio Station.

Amateur Radio Emergency Services, (ARES) is an organization under the auspices of the American Radio Relay League, (ARRL) servicing local government and civilian agencies. ARES and the ARRL provide emergency communications training courses and communications support for local events. Radio Amateur Civil Emergency Services (RACES) is an organization controlled by state government that uses Amateur Radio Operators and provides them with practice and training sessions. Amateur Radio Operators are a decentralized resource. That means that they are self-contained and self-sufficient. Amateurs from a remote area are often called in to help those in a disaster area.

Amateur Radio Operators serve many agencies including, The American Red Cross, National Weather Service, Federal Emergency Management Agency, Association of Public-Safety Communications Officials – International, National Communications System, Radio Emergency Associated Communications Teams, Salvation Army, Hospitals, and more. Amateur Radio Operators also provide communications for non-emergency events such as parades and athletic events.

Why use Amateur Radio? Amateur Radio equipment is independent of communications facilities such as the telephone. Amateur Radio is prepared to run on emergency power. Amateur Radio Operators are proficient in quickly using available resources to establish communications and maintenance of that link. Amateur Radio can use a wide range of radio bands, each one having its own strengths in overcoming the barriers inherent to radio communications. Regardless of the specific band and model of radio equipment, Amateur Radio Operators can use the same frequency band and mode to communicate with each other. Most official radio systems, such as police and fire departments use fixed band systems that may be limited in flexibility and interoperability.

Let us examine how Amateur Radio Operators provide communications. When the World Trade Center towers went down, so did many communications antennas. The adjacent telephone company building was damaged and this adversely affected telephone communications, including cell phones. Communications that did exist quickly overloaded with call volume. The American Red Cross, who provides food and shelter to victims and rescue workers needed communications between Red Cross Headquarters and all shelters and mobile units. The Red Cross called RACES and asked for help. RACES Amateur Radio Operators brought in their own equipment, set up and operated communications for the Red Cross. One of the section administrators of the Red Cross, referring to the WTC incident said, "in this day and age of modern technology, we still need to rely on Amateur Radio Operators. We would have been lost without them."

Most Amateur Radio Emergency Communications begins at the local level. In Suffolk County, there are 10 districts. The Town of Huntington is one of them. Within the Town of Huntington the Larkfield Amateur Radio Club supports ARES and RACES. The Larkfield club has the proven ability to setup and operate communications equipment, antennas, and emergency power. The Larkfield club also offers classes to help individuals study for their FCC exam.

# Amateur Radio Emergency Service (ARES)

The Amateur Radio Emergency Service (ARES) is a private volunteer organization of licensed amateur radio operators. It is not a part of any government organization. The only qualifications required are a valid FCC amateur radio license. ARES is organized as follows:

## National

- Advising all ARES officials.
- Setting and carrying out the League's policies.

## Section

- Section Manager appoints the Section Emergency Coordinator (SEC).
- Section Emergency Coordinator (SEC).
- The Section manager is elected by the ARRL members in the section.
- The Section manager delegates to the SEC the section emergency plan.
- The Emergency Coordinator has the authority to appoint District and local EC's.

## Local

- The local Emergency Coordinator (EC) is the key contact.
- Direct contact with the ARES volunteers and with officials of the agencies to be served.
- The EC is appointed by the SEC, usually on the recommendation of the DEC.

## District

- In large sections, SECs have the option of grouping their EC jurisdictions into "districts"
- SEC appoints a District EC to coordinate the activities of the local ECs in the district.

## Assistant EC's

- Assistant Emergency Coordinators (AEC) head up special interest groups or projects.
- AEC's are designated by the EC to supervise activities of groups or projects.
- AEC's provide relief for the EC.

## ARES Operation During Emergencies and Disasters

- Operation in an emergency net requires preparation and training.
- Handling of written messages (traffic handling).

## **The ARRL Simulated Emergency Test (SET)**

- Nationwide exercise in emergency communications, administered by ARRL Emergency
- Coordinators and Net Managers.
- ARES and the National Traffic System (NTS) are involved.
- SET provides the opportunity to discover the emergency communications capabilities.
- SET weekend is held in October, and is announced in QST.
- To find out the strengths and weaknesses of ARES and NTS, the Radio Amateur Civil Emergency Service (RACES) and other groups in providing emergency communications.
- To provide a public demonstration--to served agencies such as Red Cross, Civil Preparedness, and through the news media to the public.
- To help radio amateurs gain experience in emergency communications.

### **During the SET**

- The "emergency" situation is announced and the emergency net is activated.
- Stations are dispatched to their positions.
- Designated stations originate messages to test the system.
- Test messages may be sent simulating requests for supplies.
- Tactical communications for served agencies is emphasized.

### **After the SET**

- Critique session to discuss the test results and review good points and weaknesses.

## **ARES Mutual Assistance Team (ARES MAT)**

- ARES members in an affected area may not be able to respond to ARES operation because of their own personal situations.
- Communications support must come from ARES volunteers outside the affected areas.

# Radio Amateur Civil Emergency Service (RACES)

RACES is affiliated with local, county and state emergency management agencies, and supported by the Federal Emergency Management Agency (FEMA) of the United States government. Amateur Radio Service provides radio communications during periods of local, regional or national civil emergencies.

As defined in the FCC rules, RACES is a radio communication service, conducted by volunteer licensed amateurs, designed to provide emergency communications to local or state civil-preparedness agencies. RACES operation is authorized by emergency management officials only.

To become a member of RACES, a licensed amateur radio operator must be officially enrolled in the local civil-preparedness agency having jurisdiction. Operator privileges in RACES depend upon the class of license held. In the event that the President invokes his War Emergency Powers, amateurs involved with RACES might be limited to certain specific frequencies (while all other amateur operation could be silenced). Originally, RACES was designed for wartime. It has evolved over the years to include all types of emergencies.

RACES and ARES are separate entities. However, the ARRL advocates dual membership and cooperative efforts between both groups whenever possible.

## Dedicated RACES Operating Frequencies

1800-1825 kHz  
1975-2000 kHz  
3.50-3.55 MHz  
3.93-3.98 MHz  
3.984-4.000 MHz  
7.079-7.125 MHz  
7.245-7.255 MHz  
10.10-10.15 MHz  
14.047-14.053 MHz  
14.22-14.23 MHz  
14.331-14.350 MHz  
21.047-21.053 MHz  
21.228-21.267 MHz  
28.55-28.75 MHz  
29.237-29.273 MHz  
29.45-29.65 MHz  
50.35-50.75 MHz  
52-54 MHz  
144.50-145.71 MHz  
146-148 MHz  
222-225 MHz  
420-450 MHz  
1240-1300 MHz  
2390-2450 MHz

# Principles of Disaster Communication

## Principles of Disaster Communications

- Keep the non-critical communications level down.
- If you're not sure you should transmit, don't.
- Study the situation by listening.
- Don't transmit unless you are sure you can help by doing so.
- Don't ever break into a disaster net just to inform the control station you are there if needed.
- Monitor established disaster frequencies.
- On CW, SOS is universally recognized.
- On voice, "MAYDAY" or "EMERGENCY" is universally recognized.
- Avoid spreading rumors.
- Authenticate all messages.
- Strive for efficiency.
- Select the mode and band to suit the need.

## CW Mode

- Less non-critical communications in most amateur bands.
- Some secrecy of communications - less likely to be intercepted by the general public.
- Simpler transmitting equipment.
- Greater accuracy in record communications.
- Longer range for a given amount of power.

## Voice Mode

- More practical for portable and mobile work.
- More widespread availability of operators.
- Faster communication for tactical or "command" purposes.
- Official-to-official and phone-patch capability.

## Digital Modes

- Less non-critical communications in most amateur bands.
- Secrecy of communications - less likely to be intercepted by the general public with a scanner.
- Greater speed.
- Potential for message store-and-forward capability from within the disaster site to the "outside world."
- Provides the capability of "digipeating" messages from point A to point Z via numerous automatically-controlled middle points.

# Working with Public Safety Officials and Agencies

Volunteers must be accepted by public-officials. Once accepted, they can contribute in times of disaster. Acceptance is based on establishing a track record of competent performance in important activities. This may include parades, runs, and various other local events.

Police and fire officials tend to be very cautious and skeptical concerning those who are not members of the public-safety professions. This posture is based primarily on experiences where volunteers have complicated, and jeopardized, efforts in emergencies.

Volunteers need to demonstrate the reliability and clarity of amateur gear. Police and fire officials are very impressed to witness a roll call on a 2-meter repeater using a hand-held radio in the police or fire chief's office and having amateurs respond with full-quieting signals from locations where municipal radios are often ineffective.

As funding becomes less available, agencies are looking for volunteers. Relationships with served agencies are vitally important and valuable to radio amateurs. We provide them with communications. They provide us with the opportunity to contribute to the relief of suffering.

A detailed local operational plan should be developed with local agency managers. The plan should include the technical issues involving message format, security of message transmission, disaster welfare inquiry policies, etc.

The ARRL maintains several formal Memoranda of Understanding (MOUs) with disaster and emergency response agencies including the Federal Emergency Management Agency, National Weather Service, Red Cross, Salvation Army, National Communications System, and Associated Public Safety Communications Officers.

# National Traffic System (NTS)

The National Traffic System is a plan for handling amateur radio traffic. It is designed for rapid movement of traffic from origin to destination. It is also designed to train amateur operators to handle written traffic and participate in directed nets. The NTS consists of operators who participate for one or two periods a week, and some who are active daily.

Each net performs its function and only its function in the overall organization. To be an individual station in NTS, one must be issued certificates, and be appointed to the field organization's traffic handling position, entitled Official Relay Station.

Voice, CW, RTTY, AMTOR, packet or other digital mode is set up by the Net Manager or Managers concerned and the dictates of logic. There is only one National Traffic System, not separate systems for each mode.

Local nets are cover small areas such as a community, city, county or metropolitan area. They usually operate by 2-meter FM and use repeaters. A local net, or "node," may also be conducted on a local packet BBS.

## Region nets cover a wider area, such as a call area. Regional nets consist of:

- A net control station, designated by the region net manager.
- Representatives from each of the various sections in the region, designated by their section net managers.
- One or more stations designated by the region net manager to handle traffic going to points outside the region.
- One or more stations bringing traffic down from higher NTS echelons.
- Any other station with traffic.

## Area Nets are at the top level of NTS nets. Area nets consist of:

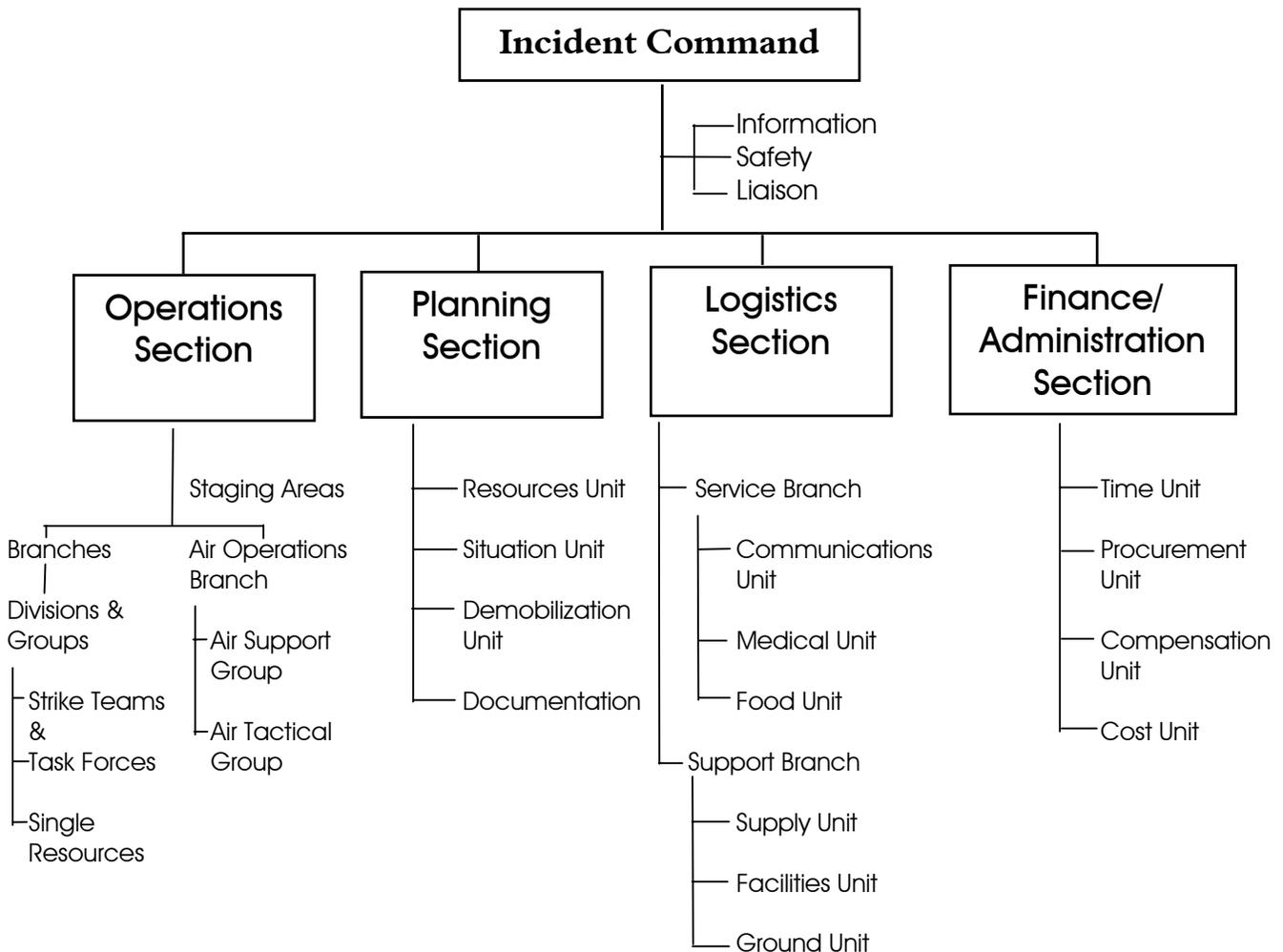
- A net control station, designated by the area net manager.
- One or more representatives from each region net in the area, designated by the region net managers.
- Stations designated to handle traffic going to other areas.
- Stations designated to bring traffic from other areas.
- Any station with traffic.

Digital Stations handle traffic among sections, regions and areas. These stations handle traffic by digital modes. They supplement the existing system, providing options, and flexibility in getting traffic moved expeditiously across the country, especially in overload conditions.

# Incident Command System (ICS)

Almost all emergency government agencies have adopted the incident command system. It is a management tool that provides a coordinated system of command structure. Amateur radio operators should familiarized themselves with the system and how they may interface with government agencies that use the ICS.

The basic concept of the ICS is having a unified command. There is one person in charge of the emergency, the incident commander, who is totally responsible for everything that occurs in that emergency operation.



**Command** – Set objectives and priorities. Has overall responsibility at the incident or event.

**Operations** – Conducts tactical operations to carry out the plan. Develops the tactical objectives, organization, and directs all resources.

**Planning** – Develops the action plan to accomplish the objectives. Collects and evaluates information. Maintains the resource status.

**Logistics** – Provides support to meet incident needs. Provides resources and all other services needed to support the service.

**Finance / Administration** – Monitors costs related to incident. Provides accounting, procurement, time recording and cost analysis.

**Incident Facilities:**

1. Incident Command Post (ICP) – The location from which the Incident Commander oversees all incident operations

2. Staging Areas – Locations at which the resources are kept while awaiting incident assignment. Large incidents may have several staging areas.

3. Base – The location at the incident at which primary service and support activities are performed.

4. Camps – Incident locations where resources may be kept to support incident operations. These resources may not be immediately available.

5. Helibase – A location in and around an incident area at which helicopters may be parked, maintained, fueled, and equipped for incident operations.

6. Helispots – Helispots are temporary locations where helicopters can land and load and off-load personnel, equipment, and supplies. Large incidents may have several helispots.

# Message Handling

1. Speak in plain language.
2. Speak slowly and clearly.
3. Remain calm at all times.
4. If you have an emergency message, state the word "emergency" followed by your call sign.
5. If you have a priority message, state the word "priority" followed by your call sign.

**Emergency** – any message having life and death urgency to any person or group of persons.

**Priority** – any important message that has a specific time limit.

**Welfare** – can be either an inquiry as to the health and welfare of an individual in the disaster area, or an advisory from the disaster area that indicates all is well.

**Routine** – Most traffic will be routine in nature. In a disaster situation, routine messages should be handled last.

# Hurricane Intensity Scale

Saffir-Simpson Hurricane Scale.

<u>Category</u>	<u>Wind Speed</u>	<u>Barometric Pressure</u>	<u>Storm Surge</u>	<u>Damage Potential</u>
1 (weak)	75 - 95 mph	28.94" +	4' - 5'	Minimal damage to vegetation
2 (moderate)	96 - 110 mph	28.50" - 28.93"	6' - 8'	Moderate damage to houses
3 (strong)	111 - 130 mph	27.91" - 28.49"	9' - 12'	Extensive damage to small buildings
4 (very strong)	131 - 155 mph	27.17" - 27.90"	13' - 18'	Extreme structural damage
5 (devastating)	155 mph +	less than 27.17"	18' +	Catastrophic building failures possible

The National Hurricane Center monitors 14.325 MHz and takes reports from Amateur Radio Operators during the storm. Hurricane season is June 1 to November 30.

NOAA Weather Radio:

162.400 mhz  
162.425 mhz  
162.450 mhz  
162.475 mhz  
162.500 mhz  
162.525 mhz  
162.550 mhz

# Estimating the Manpower Necessary to Service an Emergency Event

## One Person Per Shift

**Assuming the following:**

12 hour shifts

1 people per shift

A volunteer will only work one out of every three days.

**Therefore:**

2 people are needed to cover 1 day

4 people are needed to cover 2 days

6 people are needed to cover 3 days

**Conclusion:**

6 people are needed to cover one assignment location.

12 people are needed to cover two assignment locations, and so on.

## Two People Per Shift

**Assuming the following:**

12 hour shifts

2 people per shift

A volunteer will only work one out of every three days.

**Therefore:**

4 people are needed to cover 1 day

8 people are needed to cover 2 days

12 people are needed to cover 3 days

**Conclusion:**

12 people are needed to cover one assignment location.

24 people are needed to cover two assignment locations, and so on.

# The Emergency

Sometimes volunteers are called upon because emergency communications is needed immediately. Other times, volunteers are called upon to serve as back-up support in anticipation of losing total communications. Don't be discouraged if your services don't appear to have been useful. Having you there in place and ready to operate provides a very valuable service.

## First Step

Before volunteering for emergency communications, be sure of the following:

- Family are safe and secure.
- Family has enough provisions, etc.
- Property is safe
- Monitor the designated frequencies, radio, and t.v.
- Contact your Emergency Coordinator or designee for instructions.
- Check batteries.
- Check medications if applicable.

## Second Step

- Know and understand the volunteer handout.
- Do not take action until you are told to act.
- Be prepared to operate.
- Check all equipment and connections.
- Have pencil, paper, and radiograms ready.
- Obtain tactical frequencies.
- Check-in with your designated net or operations.
- Obtain tactical call sign if appropriate.
- Monitor all frequencies assigned to you.
- Notify net control operator if you have to leave.

## Field Operations

- **BE SURE TO ABSOLUTELY FOLLOW THE CHAIN OF COMMAND!**
- If you are operating in the field, always keep a safe distance from any hazards.
- Keep yourself well hydrated (drink plenty of water).
- Take breaks and get rest when you can.
- Do not overexert yourself. Be aware of your own limitations.
- Do not overreact, become hysterical, or try to provide more help than is needed.
- **DO NOT BECOME A VICTIM YOURSELF**

# Radiogram

Number \_\_\_\_\_

Precedence \_\_\_\_\_

Station of Origin \_\_\_\_\_

Place of Origin \_\_\_\_\_

Date Filed \_\_\_\_\_

Time Filed \_\_\_\_\_

To \_\_\_\_\_

\_\_\_\_\_

Telephone Number (        ) \_\_\_\_\_

Received at:

Station \_\_\_\_\_

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Text \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Received From \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

Sent to \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

# ITU Phonetic Alphabet

A - Alpha

B - Bravo

C - Charlie

D - Delta

E - Echo

F - Foxtrot

G - Golf

H - Hotel

I - India

J - Juliet

K - Kilo (pronounced keelo)

L - Lima (pronounced leema)

M - Mike

N - November

O - Oscar

P - Papa

Q - Quebec (pronounced kaybek)

R - Romeo

S - Sierra

T - Tango

U - Uniform

V - Victor

W - Whiskey

X - X-ray

Y - Yankee

Z - Zulu

# International Q Signals

QRA - What is your call sign?

QRG - Will you tell me my exact frequency (or the frequency of...)?

QRH - Does my frequency vary?

QRI - What is the tonal quality of my transmission?

QRJ - Are you receiving my transmissions poorly?

QRK - What is the intelligibility of my signals?

QRL - Are you/is the frequency busy? More!

QRM - Is there man-made interference to my transmissions? More!

QRN - Are you troubled by static or some other natural source of noise? (ok, cut the jokes :- ) More!

QRO - Shall I increase power? More!

QRP - Shall I decrease power? More!

QRQ - Shall I send faster? More!

QRS - Shall I send more slowly?

QRT - Shall I stop sending? More!

QRU - Do you have anything for me?

QRV - Are you ready? More!

QRX - When will you call me again?

QRY - What is my turn?

QRZ - Who is calling me?

QSA - What is the strength of my signals?

QSB - Are my signals getting weaker? More!

QSD - Is my keying defective?

QSG - Shall I send (number) messages at a time?

QSK - Can you hear me in between your signals and may I break in? More!

QSL - Can you acknowledge receipt? More!

QSLL - I will QSL on receipt of your QSL card. More!

QSM - Shall I repeat the last message I sent to you?

QSN - Did you hear my transmissions on (frequency)?

QSO - Can you communicate with me? More!

QSP - Will you relay to (station)?

QST - General call preceding a message addressed to all Amateurs. More!

QSU - Shall I send or reply on this frequency?

QSW - Will you send on this frequency?

QSX - Will you listen on (frequency)?

QSY - Shall I change transmission to another frequency?

QSZ - Shall I send each word or group more than once?

QTA - Shall I cancel message (number)?

QTB - Do you agree with my word count?

QTC - How many messages do you have to send?

QTH - What is your location?

QTR - What is the correct time?

# Emergency Response Checklist

Note: The necessity for the following items will vary from event to event. Check with your immediate supervisor before bringing any of the following.

## COMMUNICATIONS (Base Station)

- Dual band, 144/440 mhz, 50 watt, transceiver
- Switching power supply
- Magnet mount antenna
- Baking tray (use as ground plane)
- Microphone
- Battery clips
- Instruction manual
- TNC and Cables
- Notebook computer set up for packet

## COMMUNICATIONS (Portable)

- Dual band, 144/440 mhz, 5+ watt, handitalkie
- High gain antenna
- Microphone
- Headset if available
- Cigarette lighter adapter
- Battery Charger
- AA battery adapter
- AA batteries
- Waste pack to hold handitalkie and water
- Instruction manual

## COMMUNICATIONS (Listening)

- Scanner
- AC Adapter
- Extra batteries
- Instruction manual

## COMMUNICATIONS (Telephone)

- Cell phone
- Cell phone ac charger
- Cell phone cigarette lighter charger

## CABLES AND ACCESSORIES

- 2 RG58 cables (10' or more)
- 2 110v extension corders (10' or more)
- Outlet strip
- 3 prong to 2 prong ac adapter
- Soldering equipment and some basic tools
- Wire
- Electrical tape
- Extra UHF connectors (wireless)
- Female to female UHF connector
- Alligator clip leads
- First aid kit

- Bungee cords
- 1/8" nylon twine (25')
- Flashlight with extra bulb
- Extra flashlight batteries
- Pen
- Pencil
- Paper
- Playing cards or game
- Reading material
- Hand tools

## PERSONAL PROTECTION

- Organic vapor breathing mask
- Hard hat
- Surgical gloves
- Goggles/eye protection
- Tyvek suit
- Hiking boots

## PERSONAL IDENTIFICATION

- Personal name badge
- Luggage tags on all luggage and cases.
- FCC license
- Drivers license
- ARES/RACES cards
- ID Lanyard

## CLOTHING AND MISCELLANEOUS

- One complete change of clothing
- One week of underwear
- One week of socks
- One week of vitamins
- One week or more of personal medications
- Pajamas
- Hat
- Rain suit or waterproof clothing
- Gloves
- Handkerchief
- Extra shoe laces
- Toilet paper
- Tissues
- Water bottle
- Umbrella
- Insect repellent
- Wash 'n dri

## TOILETRIES

- Shampoo
- Conditioner
- Soap
- Comb
- Brush
- Razor
- Shaving cream
- Cologne
- Deodorant
- Powder
- Toothbrush
- Toothbrush holder
- Toothpaste
- Scissor
- Tweezers
- Nail clipper
- Nail file
- Cotton
- Q-Tips
- Hair dryer
- Dental floss
- Sunscreen
- Chap stick
- Tooth picks

## FIRST AID KIT

- Rubbing Alcohol
- Hydrogen peroxide
- Cotton
- Band-Aids
- First Aid Cream
- 4" gauze pads
- 1" adhesive tape
- 2" gauze bandage
- 4" ace bandage
- Triangular bandage
- Advil
- Tylenol
- Tweezers
- Scissor
- Snake bite kit
- Hydrocortisone cream
- Eyewash
- Rubber gloves
- CPR mask
- Flashlight

# Volunteer Handout

Thank you for volunteering your time for this disaster Incident. Your help is greatly appreciated by one and all. Sometimes volunteers are called upon because emergency communications is needed immediately. Other times, volunteers are called upon to serve as back-up support in anticipation of losing total communications. Don't be discouraged if your services don't appear to have been useful. Having you there in place and ready to operate provides a very valuable service.

Call Sign \_\_\_\_\_ Name \_\_\_\_\_

Assignment \_\_\_\_\_

Contact Person \_\_\_\_\_

Report to location \_\_\_\_\_

DEC Officer \_\_\_\_\_

EC/RO Officer \_\_\_\_\_

AEC/DRO Officer \_\_\_\_\_

Agency official in charge \_\_\_\_\_

Tactical Name \_\_\_\_\_ Frequency \_\_\_\_\_

Notes: \_\_\_\_\_

Notes: \_\_\_\_\_

Notes: \_\_\_\_\_

Notes: \_\_\_\_\_

Notes: \_\_\_\_\_

**Do's:**

- All communications are to be brief and concise as possible.
- Ask questions if you're not sure.
- Be accurate.
- Follow instructions.
- Take breaks when needed.
- Inform net if you will be unavailable.

**Don'ts:**

- Try to do more than you can.
- Change your instructions.

**The Incident Command System (ICS)**

The Incident Command System (ICS) is a management tool used to assist anyone who has the responsibility for the successful outcome of an incident. It is defined as any planned or unplanned occurrence or event, regardless of cause, which requires action by emergency service personnel to prevent or minimized loss of life or damage to property. The ICS is structured in two parts.

**Part I – Management by Objectives**

1. Understanding policy, procedures, and statutes.
2. Establish incident objectives
3. Select appropriate strategy
4. Apply tactics most likely to accomplish objectives by assigning correct resources and monitor results.

**Part II – Organization Structure**

1. The ICS structure begins with the Incident Commander (IC). The IC is responsible for the management of the incident and begins by setting incident objectives.
2. Often an incident may cross boundaries. Unified Command is the ICS process that allow the multiple jurisdiction to develop unified objectives and strategies for the incident.

Radiogram attached

# Town ARES/RACES Net Dialog

(Day) \_\_\_\_\_ (Time) \_\_\_\_\_ hours

(Frequency) \_\_\_\_\_ mhz, (Offset) \_\_\_\_\_ hz, (Tone PL) \_\_\_\_\_

## OPENING THE ARES/RACES NET

CQ, CQ, CQ, all amateur radio operators. Does anyone need the repeater for emergency or priority traffic? *(drop)*

Attention all stations. This is the (Town) \_\_\_\_\_ District (Number) \_\_\_\_\_  
Amateur Radio Emergency Service and Radio Amateur Civil Emergency Service net, also known  
as the ARES/RACES net, conducted on the (Club Name) \_\_\_\_\_  
(Repeater Call Sign) \_\_\_\_\_ repeater in (Town) \_\_\_\_\_  
(State) \_\_\_\_\_ *(drop)*.

During times of declared disaster or emergency, or during official training and exercise sessions,  
RACES communications are conducted on behalf of local government and are considered as official  
governmental communications. This weekly net is a directed net and is conducted for the purpose of  
RACES training, operating procedures, and routine administration. Your net control for tonight  
(Date) \_\_\_\_\_ is (Your Call Sign) \_\_\_\_\_,  
(Phonetic Call Sign) \_\_\_\_\_ *(drop)*.

A directed net is created when there are a number of stations needing to use the Frequency or  
the volume of traffic cannot be dealt with on a first-come first-served basis. The Net Control Station will  
determine who uses the frequency and what traffic will be passed first *(drop)*.

Please do not break into the net without direction from net control. If you do have an  
emergency during the net please state the word "emergency" followed by your call and the frequency  
will be turned over to you for the duration of the emergency. If you have information for the net please  
use the word "info" followed by your call. If you have a question for the net please use the word "query"  
followed by your call *(drop)*.

When checking into this net, please use the hesitation method. The procedure is as follows: say  
"THIS IS ...". Release your push to talk switch to see if you are doubling with anyone. If you do not hear  
anyone else talking then proceed to give your call-sign phonetically, using the standard ITU phonetic  
alphabet and your name and state if you have any information dealing with emergency  
communications for the net by saying "I have traffic", then stand by and wait for net control to  
acknowledge you before doing anything else within the net *(drop)*.

Please do not leave this net unless you first inform net control and receive permission to do so. I  
will now stand by for anyone with emergency or priority traffic only *(drop)*.  
(IF NO TRAFFIC THEN PROCEED.)

If the group is large, then:

The check-in procedure for this net is in two phases. First is a roll call of The ARES/RACES members. When  
you hear your call sign, respond with your call sign, your name, and state if you have traffic for the net.  
The second phase will allow for all others to check-in. Net control will call each member that has traffic,  
respond with your call-sign and traffic *(drop)*.

If the group is small, then:  
Since this is a small group, I will ask for check-ins. State your call-sign, your name, and If you have traffic *(drop)*.

*(ACKNOWLEDGE ALL STATIONS THAT CHECK INTO NET. STOP THE NET AND ASK THE NET TO STAND BY WHEN YOU NEED TO, SO YOU CAN WRITE DOWN EVERYONE CHECKING-IN. WHEN NO FURTHER STATIONS CHECK INTO THE NET THEN PROCEED WITH THE NET.*

*REMEMBER TO ASK FOR NEW CHECK-INS OR IF ANYONE HAS ANYTHING FOR THE NET EVERY FEW MINUTES [APPROX. 5 - 10]].*

## **ARES/RACES NET OPERATION PROCEDURE**

*(LIST ANY BULLETINS OR PRIORITY MESSAGES YOU MIGHT HAVE FOR THE NET.*

*LIST ANY CURRENT AND ADDITIONAL ARES/RACES INFORMATION FOR THE NET YOU MIGHT HAVE. HAVE EACH INDIVIDUAL STATION THAT STATED THEY HAVE INFO FOR THE NET*

*LIST WHAT THEY HAVE AND PASS IT. HANDLE ANY EDUCATIONAL INFORMATION TO BE COVERED DURING THIS NET.*

*REMEMBER TO HAVE A PAUSE TO SEE ANYONE THAT COMES INTO THE NET LATE WISHES TO CHECK-IN).*

## **ANNOUNCEMENTS**

## **CLOSING THE ARES/RACES NET**

Are there any final stations wishing to check into the net? *(drop)*

Are there any comments or questions? *(drop)*

*(IF THERE IS NO FURTHER ACTIVITY PROCEED TO CLOSE THE NET).*

This is *(Your Call Sign)* \_\_\_\_\_, net control station for this session of the *(Town)* \_\_\_\_\_ ARES/RACES Net thanking all of the stations that checked-in today for participating and supporting the net. I also want to thank those stations that did not check in for standing down while the net was in operation. Your help in maintaining this net is greatly appreciated by one and all *(drop)*.

This net is repeated every *(Day)* \_\_\_\_\_ at *(Time)* \_\_\_\_\_ hours. All stations may now secure from this net. This is *(Your Call Sign)* \_\_\_\_\_ closing the net at *(Time)* \_\_\_\_\_ local time and returning the repeater to regular amateur radio operation. Good evening. *(drop)*.

\* Note: Blanks should be filled in during training sessions.

# County ARES/RACES NET Dialog

(Day)\_\_\_\_\_ (Time)\_\_\_\_\_ hours

(Frequency)\_\_\_\_\_ MHz, (Offset)\_\_\_\_\_ hz, (Tone PL\_\_\_\_\_)

## NET INTRODUCTION PROCEDURE

CQ, CQ, CQ, all amateur radio operators. Does anyone need the repeater for emergency or priority traffic? *(drop)*

Calling together the (County)\_\_\_\_\_ county ARES/RACES Net. This is (Your Call Sign)\_\_\_\_\_.  
(Phonetic Call Sign)\_\_\_\_\_,  
(Town)\_\_\_\_\_ ] (ARES/RACES Officer)\_\_\_\_\_,  
(RACES ID)\_\_\_\_\_ I will be your net control station for this session of the  
[County\_\_\_\_\_] county ARES/RACES Net for (Date)\_\_\_\_\_. This net  
meets on (Day's)\_\_\_\_\_ at (Time)\_\_\_\_\_ hours local time through the  
facilities of the (Club Name)\_\_\_\_\_ repeater  
(Repeater Call Sign)\_\_\_\_\_. *(drop)*

The purpose of this net is to relay information that is of interest to amateur radio operators who assist with emergency communications within and around (County)\_\_\_\_\_ County, and assist in the training of local amateur radio operators to handle emergency communications. We welcome and encourage all amateur operators to check into this net even if you are not a member of ARES or RACES. *(drop)*

Please remember that this is a directed net. Please do not break into the net without direction from net control. If you do have an emergency during the net please state the word "emergency" followed by your call and the frequency will be turned over to you for the duration of the emergency. If you have information for the net please use the word "info" followed by your call. If you have a question for the net please use the word "query" followed by your call. *(drop)*

When checking into this net please use the hesitation method. The procedure is as follows: say "THIS IS ...". Release your push to talk switch to see if you are doubling with anyone. If you do not hear anyone else talking then proceed to give your call sign phonetically, using the standard ITU phonetic alphabet, your name, location, RACES ID number, and any position you hold within the emergency operations structure. Also state if you have any information dealing with emergency communications for the net, then stand by and wait for net control to acknowledge you before doing anything else within the net. *(drop)*

Please do not leave this net unless you first inform net control and receive permission to do so. I will now stand by for anyone with EMERGENCY or PRIORITY TRAFFIC ONLY. *(drop)*

I will now stand by for the regular net check-in by townships. Please remember to give your call slowly and phonetically along with your name, location, RACES number, and position for the benefit of everyone else in the net. Also please remember to state if you have anything for the net. *(drop)*

Order of check-ins:

Division 1 \_\_\_\_\_

Division 2 \_\_\_\_\_

Division 3 \_\_\_\_\_

Division 4 \_\_\_\_\_

Division 5 \_\_\_\_\_

Division 6 \_\_\_\_\_

Division 7 \_\_\_\_\_

Division 8 \_\_\_\_\_

Division 9 \_\_\_\_\_

Division 10 \_\_\_\_\_

Stations outside of (County) \_\_\_\_\_ county

*(ACKNOWLEDGE ALL STATIONS THAT CHECK INTO NET. STOP THE NET AND ASK THE NET TO STAND BY WHEN YOU NEED TO, SO YOU CAN WRITE DOWN EVERYONE CHECKING IN. WHEN NO FURTHER STATIONS CHECK INTO THE NET THEN PROCEED WITH THE NET*

*REMEMBER TO ASK FOR NEW CHECK-INS OR IF ANYONE HAS ANYTHING FOR THE NET EVERY FEW MINUTES [APPROX. 5 - 10]].*

#### **NET OPERATION PROCEDURE**

*LIST ANY BULLETINS OR PRIORITY MESSAGES YOU MIGHT HAVE FOR THE NET. POLL EC'S OF EACH TOWNSHIP TO SEE IF THEY HAVE ANY INFORMATION FOR NET.*

*LIST ANY CURRENT AND ADDITIONAL ARES/RACES INFORMATION FOR THE NET YOU MIGHT HAVE. HAVE EACH INDIVIDUAL STATION THAT STATED THEY INFO FOR THE NET.*

*LIST WHAT THEY HAVE AND PASS IT.*

*HANDLE ANY EDUCATIONAL INFORMATION TO BE COVERED DURING THIS NET.*

*\*\* REMEMBER TO HAVE A PAUSE TO SEE ANYONE THAT COMES INTO THE NET LATE WISHES TO CHECK-IN.*

#### **ANNOUNCEMENTS**

#### **NET CONCLUSION PROCEDURE**

*(CALL FOR ANY FINAL STATIONS WISHING TO CHECK INTO THE NET AND CHECK TO SEE IF THERE ARE ANY FURTHER COMMENTS OR QUESTIONS. IF THERE IS NO FURTHER ACTIVITY PROCEED TO CLOSE THE NET.*

This is (Your Call Sign) \_\_\_\_\_, (Town) \_\_\_\_\_ (ARES/RACES Officer) \_\_\_\_\_ and net control station for this session of the (County) \_\_\_\_\_ county ARES/RACES Net thanking all of the stations that checked in today for participating and supporting the net. I also want to thank those stations that did not check in for standing down while the net was in operation. Your help in maintaining this net is greatly appreciated by one and all (drop).

The *(County)*\_\_\_\_\_ county Amateur Radio Emergency Services wishes to again thank the *(Club Name)*\_\_\_\_\_ for the use of their repeater for the operation of this net. All stations may now secure. This net is now secured at *(Time)*\_\_\_\_\_ local time. This is *(Your Call Sign)*\_\_\_\_\_ returning the repeater to its normal amateur operation. Good Evening. *(drop)*

\* Note: Blanks should be filled in during training sessions.

# Local Frequencies

## Local Repeater Frequencies:

- 1. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 2. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 3. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 4. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 5. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 6. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 7. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 8. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 9. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone
- 10. \_\_\_\_\_ MHz,      \_\_\_\_\_ Offset      \_\_\_\_\_ PL Tone

## Local Simplex Frequencies:

- 1. \_\_\_\_\_ MHz
- 2. \_\_\_\_\_ MHz
- 3. \_\_\_\_\_ MHz
- 4. \_\_\_\_\_ MHz
- 5. \_\_\_\_\_ MHz
- 6. \_\_\_\_\_ MHz
- 7. \_\_\_\_\_ MHz
- 8. \_\_\_\_\_ MHz
- 9. \_\_\_\_\_ MHz
- 10. \_\_\_\_\_ MHz

# Protective Equipment and Precautions

ARES/RACES personnel act in a communications function and not first care providers, so their risk should be minimal. This is a general guide to personal protective measures and equipment for prevention of injuries due to incidental exposure to physical / chemical / biological hazards at disaster sites where personnel may be deployed.

## General:

Officials shall not knowingly deploy or assign volunteers to any locations or assignments, which place them in physical danger. However, any field deployment poses a potential risk of accident or personal injury. Examples of common risk factors, which may be encountered by deployed personnel include:

- Travel hazards to and from the deployment site
- Weather or environmental effects, lightning, cold, wet, wind, dust, flying debris
- Incidental exposure to chemicals or pathogens in flood waters, etc.
- Terrain, slippery or insecure footing, risk of falls, injuries
- Tool or equipment use, risk of hand or eye injuries, electric shock
- Human factors, stress or fatigue.

## Responsibility:

Volunteers must be aware of potential hazards to which they could be exposed. Disaster Response Team members are required to provide their own sturdy footwear, work gloves, safety glasses and outdoor work clothing. Additional personnel protective equipment (PPE) such as hard hats and respirators is required for damage assessment work.

Leadership is responsible to conduct risk assessment with served agency officials. Mission planning should include precautions to mitigate ordinary hazards, identify potential incidental hazards and recommend appropriate personal protective measures. At minimum field team leaders must complete a Hazard Abatement Plan Checklist daily to perform a basic risk assessment for each deployment. Volunteers must be briefed daily before their deployment and be informed of specific hazards identified, an assessment of risk exposure, and planning precautions taken to ensure a safe working environment including provisions for job rotation, personal hygiene, housekeeping and maintenance to minimize exposures.

Served agencies are responsible under OSHA regulations, 29 CFR Part 1910 to employ all feasible engineering and work practice controls to eliminate, reduce or mitigate hazards. Volunteers serving state and local government agencies benefit from the same legal protection as paid staff to include safety orientation relevant to their assignments. The agency safety program shall systematically assess hazards, inform volunteer personnel why, when and what protective measures or equipment are necessary and to train volunteer staff in the application of said protective measures or equipment and to provide adequate safety equipment and require its use, whenever doing so is indicated by the OSHA Standard.

## Evaluating the Need for Personal Protective Equipment (PPE)

The following list is not all-inclusive, but provides some common examples of typical ARES/RACES operations where individuals may be exposed to hazards, which can be mitigated by proper selection, training and routine use of PPE.

### EYE PROTECTION:

Airborne dust and flying particles  
Hazardous chemical irritants  
Exposure to intense light or lasers  
Blood and/or body fluid splashes

### HEAD PROTECTION:

Falling and wind blown objects  
Low overhead clearances, exposed beams  
Confined spaces, foot travel in mountains  
Or heavily wooded terrain  
Exposed electrical wiring or components

### FOOT PROTECTION:

Penetrations by sharp, jagged objects  
Uneven, rocky, slippery, muddy ground  
Tools, equipment, rolling/falling objects  
Exposed electrical wiring or components  
Hazardous or flammable materials

### HAND PROTECTION:

Use of cutting tools  
Handling sharp or jagged materials  
Hazardous chemical irritants  
Blood and/or body fluid exposure  
Heat, abrasion exposure  
Exposed electrical wiring or components

### BODY PROTECTION:

Irritating dust or chemical splashes  
charging  
Exposure to sharp or jagged surfaces

### HEARING PROTECTION:

Noise from heavy equipment

### Potential Operations of Concern:

Damage assessment, Skywarn storm spotting  
Battery charging, soldering, equipment repairs  
Welding, cutting, laser operation  
First aid, emergency medical, triage, treatment

Tower and antenna work, Skywarn storm spotting  
Damage assessment  
Search and rescue operations

Power systems and communications, arc welding

Damage assessment  
Search & rescue operations  
Station set-up, logistics and supply  
Power systems and communications  
Fueling vehicles and generators

Power systems, communications, search & rescue,  
Damage assessment, logistics, material handling  
Battery charging, soldering, equipment repairs  
First aid, emergency medical, triage, treatment  
Soldering, field cooking, rope work, manual labor  
Power systems and communications

Debris clearance, battery maintenance and

Damage assessment, search and rescue operations

Machinery and generator noise.

## Criteria for Selection of Personal Protective Equipment (PPE)

### EYE PROTECTION:

- Protect against specific hazard(s) encountered
- Comfortable to wear
- Must not restrict vision or movement
- Durable and easy to clean and disinfect
- Must not interfere with function of other required PPE
- ☐ Meets requirements of ANZI Z87.1-1989, with side shields.

### FACE SHIELDS:

- Use in combination with goggles or safety glasses when you must protect yourself from impact hazards and chemical splashes (chain saws, power tools, risk of battery explosion)

### HEAD PROTECTION:

- Resists penetration by objects
- Absorbs shock of a blow
- Is water resistant and slow burning
- With instructions explaining proper adjustment, replacement of suspension and head band
- Meets requirements of ANZI Z89.1-1986, Class A or B.

### FOOT PROTECTION:

- Resists penetration by sharp objects
- Comfortable to wear
- Durable and easy to clean and disinfect
- Provide secure traction on slippery or irregular surfaces
- Provide ankle support
- Meets impact and compression protection requirements of ANZI Z41-1991
- May be designed to be electrically nonconductive to protect from electrical hazards

### HAND PROTECTION:

- Nature of hazard(s) and work to be performed determines proper selection of gloves
- Comfortable to wear
- Protect against heat and cold
- Cut, puncture and abrasion resistant
- Either durable and easy to clean or disinfect, or is single-use disposable
- Protect against chemical exposure and blood-borne pathogens
- Durable work gloves of leather or canvas (rope work, use of hand tools)
- Chemical and liquid resistant gloves (equipment, generator and battery maintenance)
- Medical exam gloves (First aid, emergency medical, triage, treatment)
- Detailed requirements for selection and use of insulating rubber gloves for use against electrical hazards.

### BODY PROTECTION:

- Environmental conditions, the nature of hazard(s) and work to be performed will determine proper selection of outer protective clothing
- Comfortable to wear
- Protect against heat, cold, wind, rain, chemical splashes
- Cut, puncture and abrasion resistant, durable and easy to clean.

All members are encouraged to provide their own N95 or R95 respirators for use in dusty environments such as damage assessment and debris clearance, even when exposures are below exposure limits, to provide an additional level of comfort and safety. R95 will provide some protection against nuisance gases.

## **Infection Control Awareness and Precautions**

### Types of Potentially Infectious Materials (“fomites”)

- **Body secretions / excretions**
  - Human: poor disaster sanitation conditions
  - Animal: livestock, rodents, vermin, insects
  - Decayed carcasses
- **Putrefiable materials**
  - Garbage and refuse
  - Spoiled foodstuffs
- **Allergens**
  - Concentrated fungi
  - Molds
- **Stagnant surface water**
  - Mosquito harborage
- **Contaminated flood waters**
  - Sewage, water treatment system overflow
  - Petroleum and agricultural chemical contamination
- **Structural instability**
  - Trauma risk, falls, sharps potential

### Mechanisms of Transmission

- **Direct contact** (“portal of entry”); non-intact skin
- **Penetrating injury** (percutaneous)
- **Aerosol**
- **Vector borne**
- **Physical injury**, causing portal of entry

### Categories of Transmissible Microorganisms

- **Tetanus** (occurrence likely in adults who have not received a dose of tetanus toxoid booster within 10 years, esp. agricultural workers contacting manure).
- **Hepatitis A, Hepatitis B** (C less likely)
- **Enteric bacteria** (e.g. E. coli, Salmonella)
- **Vermin-mediated**
  - Cats: Toxoplasmosis
  - Rats (urine): Leptospirosis
  - Tularemia
  - Plague (rat flea)
- **Toxins** (decaying, spoiled foodstuffs)
- **Vector-borne** (Lyme, West Nile, Malaria)

## Disaster Worker Protection

- Tetanus toxoid vaccine (booster recommended every 10 years)
- Hepatitis A/B vaccine
- Personnel protective equipment (PPE)
  - Awareness training
  - Correct sizes
  - Ample supply
- Medical screening (post-event) if symptoms

## **Guidelines for Follow-up of Exposure to Blood and Body Fluids**

In all exposure incidents the ARES/RACES member shall IMMEDIATELY notify the incident safety officer of the served agency. An exposure is not a simple contact. An exposure is a specific eye, mouth, other mucous membrane, non-intact skin or parenteral (piercing) contact with blood or potentially infectious material.

1. Clean the exposed area immediately with soap and water. If soap and water are not available, a disinfecting cleaner such as alcohol or antiseptic scrub should be used.

2. Notify your field team leader and the incident safety officer immediately after exposure occurs.

3. *The served agency safety officer will immediately contact the agency's consulting on-duty physician regarding the circumstances of the exposure. If needed, the physician will consult by phone with exposed personnel. Served agencies should have consulting physicians available 24 hours a day. The initial step will entail determining whether a true exposure has occurred. Appointments for testing, counseling or treatment will be made on the advice of the agency's consulting physician.*

4. If the consulting physician feels that an exposure has occurred, they will direct the employee to either come to their office immediately or go to the nearest facility to undergo blood sampling and consultation. CDC guidelines for post exposure prophylaxis (PEP) will be followed.

5. If the source patient is known, it is important to obtain information such as name, date of birth, social security number, address and phone number so that the physicians can contact them to arrange for testing.

6. If source patient is unknown, consulting physicians will follow CDC protocol for unknown source post exposure prophylaxis.

7. The served agency safety officer will ensure that the proper paperwork is completed such as Exposure Incident Report and Workers' Compensation forms.

8. If you have questions do not delay treatment. Go to the nearest hospital emergency room. Record all pertinent information regarding a specific exposure, using the following form and bring with you to the Emergency Room:

# Guidance For Radio Amateur Civil Emergency Service (FEMA)

Civil Preparedness Guide  
Federal Emergency Management Agency  
Washington, D.C. 20472  
CPG 1-15  
March 18, 1991

## Foreword

This Civil Preparedness Guide (CPG) has been prepared as a reference to assist State and local emergency management officials in establishing and operating Radio Amateur Civil Emergency Service (RACES) capabilities for use in responding to and managing emergencies and disasters. This CPG outlines the procedures for developing a RACES plan and provides an example of a plan format.

(Signed)

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Grant C. Peterson  
Associate Director  
State and Local Programs And Support Directorate

Distribution: Special

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# Chapter 1 - General Information

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- 1-9. Emergency Situations

### **1-1. Purpose.**

This Civil Preparedness Guide (CPG) provides guidance to State and local governments that utilize Radio Amateur Civil Emergency Service (RACES) as a means of emergency communications.

### **1-2. Applicability and Scope.**

a. The provisions of this CPG are applicable to State and local Governments that Utilize RACES in emergencies.

b. In cases of conflict, Federal Communications Commission (FCC) Rules and Regulations will take precedence over the provisions of this CPG.

### **1-3. Authorities.**

a. The Communications Act of 1934, Section 606, as amended.

b. Executive Order 12472, Assignment of National Security and Emergency Preparedness Telecommunications Functions.

### **1-4. Reference.**

Title 47 Code of Federal Regulations (CFR), Part 97, Subpart F, and RACES.

## 1-5. Background.

a. RACES is an organization of amateur radio operators who volunteer to provide radio communications for State and local governments in times of emergency. Created in 1952 primarily to serve in civil defense emergencies, RACES provides essential communications and warning links to supplement State and local government assets during emergencies.

b. RACES is a special part of the amateur operation sponsored by the Federal Emergency Management Agency (FEMA). RACES provides emergency communications for civil preparedness purposes only. RACES is conducted by amateurs using their primary station licenses or by existing RACES stations. In the event that the President invokes the War Emergency powers, amateurs officially enrolled in the local civil preparedness group would become limited to certain frequencies, while all other amateur operations would be silenced.

## 1-6. Definitions.

a. **RACES** is a radio communications service, conducted by volunteer licensed amateur radio operators, for providing emergency communications support to State and local governments.

b. **RACES Station** is an amateur radio station licensed civil defense organization, at a specific land location, to provide the facilities for amateur radio communications in the RACES.

c. **Amateur Radio Communications** is noncommercial radio communications by or among amateur radio stations solely with a personal aim and without pecuniary or business interest.

## 1-7. The Role of State and Local Governments.

a. **Local Governments.** The role of local governments is to establish and train a RACES organization designed to provide or supplement essential emergency communications within their local jurisdiction.

b. **State Governments.** The role of State governments is to establish and train a RACES organization designed to provide or supplement emergency communications between elements of State Government and between State and local governments.

## 1-8. FEMA's Role.

FEMA's role is to provide planning guidance, technical assistance, and funding for establishing a RACES organization at the State and local government level.

## 1-9. Emergency Situations.

The RACES organization provides or supplements communications during emergencies where normal communication systems have sustained damage. It may be used in a wide variety of situations, including:

- a. Natural Disasters;
- b. Technological Disasters;
- c. Nuclear Accidents;

- d. Nuclear Attack;
- e. Terrorist Incidents; and
- f. Bomb Threats.

## **Chapter 2 - Eligibility and Procedures for RACES**

- 2-1. General
- 2-2. RACES Eligibility
- 2-3. Procedures for Establishing a RACES Organization
- 2-4. Recruitment and Retention
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### **2-1. General.**

This chapter provides information on the requirements and procedures for establishing a RACES organization. Operator privileges in RACES are dependent upon the class of license held by the amateur.

### **2-2. RACES Eligibility.**

Any United States citizen, who possesses a valid FCC Amateur Radio Operator License, technician class or higher, is eligible to become a member of RACES. The services of amateurs who have a Novice Class license may be used, but this is not recommended due to the privilege limitations.

### **2-3. Procedures for Establishing a RACES Organization.**

The following procedures are to be followed for establishing a RACES organization:

a. To establish a RACES organization, the Director, State or local government Emergency Operating Center (EOC) or Director of Emergency Management (or designated representative) should first appoint, in writing, a reliable amateur to serve as the RACES Officer. This individual serves as a liaison between the RACES organization and the Director's office and assists in the development of the RACES organization, recruits members, and keeps the Director, EOC, informed of all RACES activities, progress, and needs.

b. The RACES Officer is a General Class Amateur, or higher, thoroughly knowledgeable of FCC Rules and Regulations and familiar with the functions of the Amateur Radio Relay League (ARRL) and the Amateur Radio Emergency Services of the ARRL. Individuals with strong organizational abilities, good verbal and written communications skills, and experience in emergency center operations are ideal candidates.

### **2-4. Recruitment and Retention.**

a. Each prospective member completes a RACES Operator Application and returns it to the RACES Officer. The RACES Officer designs the application to meet local requirements. The application must not contain information that is protected under the Privacy Act. The RACES Officer recommends

acceptance or nonacceptance to the Emergency Management Director. Once approval is granted, the Director prepares a letter designating the applicant as a certified RACES member. A photograph identification card for each RACES member is highly recommended.

b. In order to serve effectively as a volunteer member of the emergency staff, access to otherwise restricted areas, such as the EOC or the jurisdiction's communications center, may be associated with RACES participation and assignments. To the extent that similar requirements exist for other members of the emergency staff with access to restricted areas, a limited background check for RACES applicants is also recommended. This should be performed in accordance with the jurisdiction's regulations and procedures.

c. RACES members are responsible for:

1. Participating in the training sessions;
2. Briefing the RACES Officer of any changes in equipment or amateur status that may affect operation in the RACES program;
3. Developing a strong background in emergency procedures, FCC Rules and Regulations, and network procedures;
4. Being available when emergency communications are required by the appointing Director;
5. Helping strengthen the organization by offering suggestions and positive feedback to correct deficiencies;
6. Complying with volunteer standards established by the jurisdiction; and,
7. Notifying the RACES Officer, in writing, when terminating membership.

d. Membership participation should be evaluated every 2 years. If a member's participation is lacking, membership terminates; if deemed adequate, membership continues for another 2 years.

## **2-5. Training.**

a. Training sessions should be scheduled to exercise the efficiency of the emergency plan and the proficiency of the RACES members. On the average 1 hour per week should be devoted to RACES activities and training.

b. RACES organizations may be utilized during drills and exercises in order to train members and exercise the emergency plan. RACES exercises will help with updates or revisions to the RACES plan. Special RACES drills and exercises serve as a mechanism for honing skills in emergency communications procedures in general and for training in any specific or unusual protocols used by the jurisdiction. Periodic participation in full scale exercises is also beneficial in promoting familiarity with other elements of the jurisdiction's emergency plans and procedures the communications function must support.

c. All training must be recorded in the participant's and RACES unit's files.

## 2-6. Development of a RACES Plan.

a. Once membership reaches a strength that is considered adequate by the RACES Officer, bylaws and an emergency plan that meet local requirements must be written.

b. Development of a RACES plan is vital to the organization and its importance cannot be overemphasized. A plan must be prepared in accordance with the local area needs and the facilities available within that particular area. Written plans must clearly describe each area to be covered. All local government RACES plans are forwarded to the State disaster preparedness communications officer for coordination and retention. All State Government RACES plans are forwarded to the FEMA Regional Communications Officer for coordination and retention.

c. The following items should be addressed, at a minimum, within the plan and provisions made to cover them:

1. Identify the community or area where coverage is required;
2. Identify the type of support needed, i.e., shelter, communications, hospital, etc.
3. Identify the network to be used to provide each type of support, the operating frequency, mode of operation, and location of the network control station for each network;
4. Establish the RACES Unit's chain of command, identifying the emergency management organization's communications officer (or other official) to whom the RACES unit reports;
5. Identify frequencies--high frequency and very high frequency--to be used by the mobile, portable, repeater, and fixed stations;
6. Provide the addresses of all known fixed station locations required to support each network;
7. Define the areas of operation of mobile stations required to support each network;
8. Describe, briefly, the communications equipment required for portable, mobile, and fixed operations;
9. Describe, briefly, the communications equipment, antenna, and power source required for portable, mobile, and fixed operations;
10. Include a statement that states, "FCC Rules and Regulations apply to the operation of a radio in the amateur service and therefore apply to the RACES organization."

d. A checklist unique to the local requirements may be developed and incorporated into the plan. Testing and drills may be scheduled but must not exceed a total time of 1 hour per week.

e. The appendix provides an example of a local plan which may aid in the development of a local plan.

## **2-7. RACES Activation.**

a. RACES may be activated by the appointed Director of an Emergency Management Office, or authorized representative, for a particular area. The activation is in accordance with an approved civil defense communications plan in any emergency concerning the following:

1. Safety of life;
2. Preservation of property;
3. Alleviation of human suffering and need;
4. Any disaster endangering the public;
5. Act of sabotage; or
6. Testing and drills.

b. RACES stations and operators supplement surviving communications facilities, or provide emergency communications requirements.

## **2-8. RACES Unit Records.**

It is recommended that the Emergency Management organizations provide appropriate space and maintain custody of these records. The following records should be maintained by the RACES Unit:

- a. The jurisdiction's current RACES plan;
- b. Records of all RACES Unit activation, drills, and training;
- c. Individual RACES Unit member files, including application form, copy of license, and a record of participation in activation, drills, and training;
- d. Equipment manuals, with additional operating instructions, where appropriate. This includes equipment owned by RACES Unit members, but made available for common use (e.g., equipment including personal equipment on loan and installed in the EOC); and
- e. Additional records or other documentation, as required by the Emergency Management Office.

## **Chapter 3 - Operations - War Time Emergency Situations and RACES Drills**

3-1. General

3-2. List of Frequencies (Wartime Emergency Situations)

3-3. Message Format and Transmission Mode

3-4 General Limitations

3-5. Limitation on the Use of RACES Stations (Wartime Emergency Situations)

### 3-1. General.

This chapter provides information on the use of frequencies in emergency situations when the War Emergency Powers, under the provisions of the Communications Act of 1934, Section 606, as amended, have been invoked by the President.

### 3-2. List of Frequencies (Wartime Emergency Situations).

a. The frequency bands listed below are available to stations transmitting communications in RACES on a shared basis with the amateur service. In the event of an emergency that necessitates the invoking of the President's War Emergency powers under the provision of Section 706 of the Communications Act of 1934, as amended, only RACES stations and amateur stations participating in RACES may transmit on the following frequencies:

#### Frequency or Frequency Bands

##### KHz:

1800-1825  
1975-2000  
3500-3550  
3930-3980  
3984-4000  
7079-7125  
7245-7255  
10100-10150  
14047-14053  
14220-14230  
14331-14350  
21047-21053  
21228-21267

##### MHz:

28.55-28.75  
29.237-29.273  
29.45-29.6  
50.35-50.75  
52-54  
144.50-145.71  
146-148  
2390-2450

b. In addition, 1.25 cm (220.0-225.0), 70 cm (420.0- 450.0), and 23 cm (1240-1300 MHz) are available.

c. Frequencies at 3.997.0 MHz and 53.30 MHz are used in emergency areas to make initial contact with a military unit and for communications with military stations on matters requiring coordination.

### 3-3. Message Format and Transmission Mode.

a. The RACES message format should parallel other communications services such as ARRL, United States Army Military Affiliated Radio System and/or FEMA.

b. Each message element should be defined to minimize confusion. In emergency communications, most messages are assigned immediate transmission precedence. The emergency communication individual must understand the order of transmission and the precedence governing its sequence. The following defines message precedence:

1. IMMEDIATE precedence messages are processed ahead of all other precedence messages and sent or delivered in the order of receipt.

2. PRIORITY precedence messages are processed in the order of receipt and processed after IMMEDIATE precedence messages and ahead of all ROUTINE precedence messages. PRIORITY precedence messages are sent or delivered in the order of receipt.

3. ROUTINE precedence messages are processed in the order of receipt and after the IMMEDIATE and PRIORITY precedence messages.

c. The mode of transmission should be selected to suit the emergency situation and to utilize the available communication resources. The mode must remain flexible in the emergency plan. To eliminate confusion, list modes in order of preference. The following are several recommended modes:

1. Voice Communications (telephone)-In most situations, voice fulfills the communications requirement. Use voice communications when a printed copy is not necessary.

2. Radio Teletype (ASCII/BAUDOT)-When printed copy is essential, select one of these.

3. Packet (High Frequency/Very High Frequency (VHF))- VHF Packet operation is synonymous with the transfer of information between amateur stations throughout the United States. Packet is an extremely accurate mode that could be used for most local emergency communications. Information may be passed between packet stations at high speed with complete accuracy. Packet is highly recommended when an accurate printed copy is required for an emergency operation.

c. Many other modes are available that could be used for emergency communications; however, the modes listed in subparagraphs 3-3c(1), (2), and (3) should be considered before other modes. Mode selection must be within the boundaries of FCC Rules and Regulations and the authorized modes for the frequencies listed in this plan. VHF frequency modulation could provide a reliable voice link between mobile units, pedestrians, and the EOC.

### **3-4 General Limitations.**

a. RACES stations operating in any of the frequency bands listed in this plan shall not cause harmful interference to other services that might share the frequencies.

b. All messages transmitted by a RACES station must be authorized by the emergency organization for the affected area.

c. All messages transmitted in connection with drills or tests are plainly identified as such by use of the words drill or test in the body of the messages.

### 3-5. Limitation on the Use of RACES Stations (Wartime Emergency Situations).

a. While performing duties as a RACES operator, members may not communicate with amateurs who are not RACES members. Only emergency communications may be transmitted as defined in FCC Rules and Regulations. No amateur radio station shall be operated in the RACES unless it is certified as registered in a disaster service organization.

b. No RACES station shall be used to transmit or receive messages for hire, nor for communications for compensation, direct or indirect, paid or promised.

## Appendix.

### RACES Service Plan for the Support of Local Government During Emergencies

(Based on the plan developed at Tacoma, Washington)

To convert this plan for use in your community, replace the underlined portions of the sample plan with the information you compile in completing the worksheets, and provide annexes applicable to your community.

For statistical information purposes, it is requested that a copy of your community's amateur plan be sent to:

The FEMA region and the disaster services office you serve.

Limited planning assistance is also available by contacting the FEMA region that supports your state.

## APPROVALS

This plan has been reviewed and approved by the following authorities:

Defense Commissioner,  
Federal Communications Commission

FEMA Regional Communications Officer

State RACES Officer

Director  
Tacoma Department of Emergency Services

Chairman  
Washington State Emergency Communications Committee

Chairman, Tacoma/pierce County  
Operational Area Emergency Communications Committee

RACES Coordinator, Tacoma/pierce County  
Amateur Radio Support Group

## 1. Introduction.

a. **Scope.** This plan provides guidance for the Radio Amateur Civil Emergency Service (RACES) to support local government officials during certain emergency conditions.

b. **Purpose.** This plan is intended to provide coordinated operation between the City of Tacoma government officials and the RACES organization during times when there are extraordinary threats to the safety of life and/or property. Maximum benefits from a RACES organization can be obtained only through careful planning which identifies the organizations, agencies, and individuals concerned and assigns a definitive role to each. This plan enables agencies and organizations having emergency responsibilities to include the RACES organization in local emergency plans and programs.

c. **Operations.** This plan becomes official for the City of Tacoma Washington when signed by the Federal Communications Commission (FCC); Director of Emergency Services; Chairman of the State Emergency Area Emergency Communications Committee; and authorized RACES representatives. Under this plan, the Director of Emergency Services is empowered to request the use of Available volunteer communications facilities and personnel. Acceptance of or participation in this plan shall not be deemed as a relinquishment of license control, and shall not be deemed to prohibit an amateur radio service licensee or broadcast licensee from exercising independent discretion and responsibility in any given situation under the terms of its license.

## 2. Authority. Part 97 Subpart A, Federal Communications Commission Rules and Regulations.

3. **Authentication.** The form of authentication that will be used between the activating official and the RACES organization is personal identification or knowledge of the individuals involved.

4. **Identification.** The methods used to identify a RACES member and key personnel during a communications support operation are the following:

- a. Local Emergency Services Identification Card, and
- b. Personal Acquaintance.

## 5. Implementation Procedures.

a. **Procedures for Government Officials.** Upon notification or determination of an emergency condition or situation posing an extraordinary threat to life and/or property, **the City of Tacoma Washington Director of Emergency Services** will contact the RACES Liaison Officer.

The **Director of Emergency Services** will use the following format when contacting the RACES Liaison Officer:

This is **Lee Clark**, Director of the **City of Tacoma Department of Emergency Services**. I request that the RACES organization be activated for **Tacoma, Washington** because of (description of emergency situation).

In order to speed personnel activation during emergency conditions or provide other announcements, an authorized official may contact the Tacoma/pierce County Operational Area-emergency broadcast system station and request that a public service announcement be made to assist activation of the RACES organization.

Upon request of the emergency condition, a termination notice will be issued by appropriate government officials.

b. **Procedures For Amateur Radio Operators.** Upon request by authorized authorities, the designated RACES member(s) will report to the EOC and activate the required emergency nets using the frequencies below:

Shelter net 29.5 MHz USB

Evacuation net 146.52 MHz FM

Hospital net 223.5 MHz FM

RACES members missing a designated assignment by the EOC network control are encouraged to check in at any time.

In the event that assistance is offered by amateurs not living within the immediate area, amateurs will contact the EOC on the previously listed simplex frequencies or locally used repeater frequencies for assignment and dispatch.

At the cessation of the emergency, authorized officials initiate roll call from the EOC using any one or more of the previously listed simplex frequencies and local repeater frequencies. RACES members will then acknowledge and confirm receipt of termination message.

6. **Tests.** Tests of the system include:

a. One test per week of the RACES organization.

b. Annual emergency exercises.

7. **Annexes.**

a. Annex A: Lists Key personnel and their telephone numbers.

b. Annex B: Lists authorized RACES Radio Frequencies.

c. Annex C: Lists RACES members and resources.

d. Annex D: Functional block diagram of agencies that interface with the emergency organization.

e. Annex E: Local Checklists.

f. Annex F: Glossary of terms.

# New York State RACES Standard Operating Procedure

## Introduction

This manual is written to provide a standard of operation and a guide for training and message handling techniques and net procedures for Radio Amateur Civil Emergency Service (RACES) operators in New York State RACES Nets for state-wide nets as well as local county and city RACES nets. Instructions and general operating procedures presented in this Standard Operating Procedure (SOP) are applicable to message traffic handling by RACES and used in all RACES training. All amateur radio operators are encouraged to use this document in training and/or activated net operations. Proficiency is developed by practice using good procedures. Since message handling is the primary function of a RACES net, efficiency in this regard is the major goal toward which this SOP is directed.

## Description and Authority

RACES is an organization of Federal Communication Commission licensed amateur radio operators who volunteer to provide radio communications for state and local governments during times of emergency. Created in 1952 primarily to serve in civil defense emergencies, RACES provides essential communications and warning links to supplement State and local government agencies during emergencies.

**RACES is organized to provide emergency communications for civil preparedness purposes only.** RACES is a special part of the amateur radio service sponsored by the Federal Emergency Management Agency (FEMA), and is conducted by amateur radio operators using their primary station licenses or by existing RACES stations. In the event that the President invokes the War Emergency Powers Act, amateur radio operators enrolled with their local emergency management offices would become limited to certain frequencies, while all other amateur operations would be silenced.

**During an emergency, RACES is operated under the direct control of the local emergency management office,** as authorized by the Federal Communication Commission and the Director of the New York State Emergency Management Office.

RACES is authorized by Section 606 of the Communications Act of 1934 as amended by Part 97.407 of the Federal Communications Commission. A copy of part 97.407 is in the appendix. RACES guidance is also provided by FEMA document CPG1-15 March 1991. A copy of this document is available at the FEMA web site: [www.fema.gov/library/civilpg.htm](http://www.fema.gov/library/civilpg.htm)

NOTE: FCC rules, Part 97, still apply to all RACES stations and RACES operators participating in RACES operations.

## NYS RACES and ARES

ARES is the "Amateur Radio Emergency Service". This is the national amateur radio emergency preparedness organization sponsored by the American Radio Relay League (ARRL). This organization is completely different from RACES, although many goals are in common. In many cases, ARES will be used as a public service organization to assist with communications during non-emergency events such as parades, foot and bicycle races, and community events. Membership in the ARRL is not required for

amateur radio operator to be an ARES member. In general, ARES is organized to serve the public, and RACES is organized to serve the government. It is desirable for RACES members to also be enrolled in the ARES program. The additional training received during ARES public service events can be of great value during times of emergency. In addition to this, there are times of emergency when ARES will be the first organization to activate for communications assistance. As an emergency escalates, the local Emergency Manager may call for a RACES activation. At this time, with radio operators already activated, the operation can smoothly go from an ARES operation to a RACES operation. It must be noted that when this happens, the RACES members are now under the supervision of the County RACES Radio Officer and the County Emergency Manager, and are no longer directly involved with the ARES operation. At this point, operations will usually move to the EOC if the radio operators are not already there. It is suggested that one operator on each shift remain with the ARES operation to act as liaison between RACES and the non-RACES stations which may be involved supporting other agencies or organizations. Whenever possible, RACES and ARES communications should be on different net frequencies. Cooperation between the ARES and RACES organizations is of high importance, and cannot be understated.

### RACES Eligibility

Any United States citizen who possesses a valid FCC Amateur Radio Operator License, Technician Class or higher, is eligible to become a member of RACES. The services of amateurs who have a Novice Class license may be used, but this is not recommended due to the privilege limitations. All RACES operators are required to operate within the restrictions of their license class, as per FCC part 97.

### RACES Membership

**Membership in RACES is on a county level.** Individual members will register with the RACES Radio Officer of their county. The Radio Officer will provide a list of RACES members to the County Emergency Manager, who will approve the individual's membership in RACES. The County Radio Officer as well as the County Emergency Management Office will maintain this list.

**RACES members should be registered in one county only.** If a member is registered in more than one county, and there is a need for RACES volunteers in multiple counties, it would be impossible for individual county emergency managers to know the number of volunteers available.

### Insurance

**New York State does not now provide insurance of any type** (workman's compensation or otherwise) for RACES volunteers. The local county where the RACES member is registered may elect to provide insurance for RACES volunteers. This is solely at the discretion of each individual county's legislature or board of supervisors.

### RACES Activation

**All RACES activation must be through the appropriate civil defense (emergency management) office.** The statewide RACES high frequency net will be activated upon directions of the State RACES Radio Officer or other proper authority at the State Emergency Management Office (SEMO). Only the Senior Civil Defense Official (County Emergency Manager in most counties) or the person acting directly on behalf of this official has the authority to activate RACES on a county level.

## Location of RACES Operations

Since RACES serves the government with a means of supplemental communications, it is vital that **RACES radio operators be available at the Emergency Operations Center** or command post, as requested by the Emergency Manager. The Emergency Manager or the County Radio Officer will determine additional deployment of RACES operators. In most situations, RACES operators will be working "in the field", and not from their homes.

**No RACES volunteer will ever travel to any disaster site without prior approval of the Emergency Manager through the Radio Officer.** Travel into an area under a "declaration of emergency" may actually violate certain laws in effect by the declaration of emergency.

## Inter-County Operation

**As of this date, there is no statewide "Mutual-Aid" agreement for inter-county operation.** Any inter-county operational details must be determined between the counties involved. If a county has chosen to provide insurance coverage for RACES volunteers, it must be determined from the county's insurance carrier if the insurance will cover a RACES volunteer for "out-of-county" operation.

## New York State RACES Nets

A list of the HF RACES training nets is in the appendix of this document. Up to date information on HF as well as local VHF nets can be found on the New York State Emergency Management Office website: [www.nysemo.state.ny.us](http://www.nysemo.state.ny.us)

## Radiotelephone (Voice) Procedures

Specific instructions for the conduct of communications employing radiotelephone procedures are found in the appendix of this document. Departures from these procedures may result in confusion, and thus reduce accuracy and efficiency of message handling.

## Radiotelegraph Procedures

Currently, New York State is the only state still conducting a scheduled RACES net with the use of Morse code. This net will cease operations on January 1, 2000.

## Procedures for Other Digital Modes

Other digital modes such as Packet, Pactor, Pactor II, etc., may also be used for the transmission of RACES messages. **Due to the built-in error checking in these modes, plain language will be used at all times.** The use of Q-Signals and Prowords are to be avoided. If an error is made during a "keyboard-to-keyboard" digital transmission, the sending operator will send: "The following was sent in error", followed by the words sent in error. This will be followed by the words "correction follows", followed by the proper text. If an error is discovered in a message sent to a bulletin board, the message will be withdrawn if possible. If this is not possible, a subsequent message outlining and correcting the error will be sent.

**A message is not considered as delivered until the receiving station acknowledges receipt of the message.** A message left on a "public bulletin board" or a "personal bulletin board" is not considered as delivered until acknowledged by the station it was intended for. For this reason, "keyboard-to-keyboard" transmission is encouraged whenever possible.

## RACES Message Format

Effective January 1, 2000, New York State RACES must use the standard message form as used by the American Radio Relay League (ARRL) and the National Traffic System (NTS). Individual nets may, at the option of the net manager, use this format immediately. The use of the pre-printed ARRL Radiogram message form is suggested, but not mandatory.

Specific instructions on this message form are in the appendix.

## RACES Training Sessions

RACES HF training nets will be held once each week as noted in the net schedule in the appendix of this document. This will be conducted to improve the efficiency and operation of net procedures and message handling,

The Net Control Station (NCS) of any RACES net involving more than 1 county will provide a weekly report of net activities to the State Radio Officer (This may be bi-weekly if the same station is NCS for both weeks). This report will include the following:

- Date and time of each training session.
- Roll call of all stations in the net, indicating NCS and assistant NCS.
- Copy of "drill" message sent.
- Any other remarks or comments deemed necessary by NCS.
- The time permitted for RACES training is listed in FCC Part 97.407 E 4.

## Net Control Station Duties and Authority

**RACES nets are directed nets, and will be treated accordingly.** The authority of the NCS extends only to the operation of the net on the air. However, within this scope, and while the net is in session, the authority of the NCS is absolute. It is the duty of the NCS to maintain strict discipline and adherence to standard operating procedures. The decisions of the NCS are final and it's instructions must be strictly and immediately complied with.

The NCS will clear traffic within the net, and dispatch traffic to points outside the net as is required.

**The NCS derives authority from the State Emergency Management Radio Officer (or, in a local net, the County Radio Officer), and is responsible to that Officer for the conduct of the net.** The success or failure of net operations depends on keeping the net in order and operating swiftly and smoothly by use of the powers invested in the NCS for this purpose. The NCS may break into the net at any time, if it is the opinion that it is necessary to aid in the functioning of the net. NCS must keep a written record of all stations in the net and the traffic they have for transmission.

## Questions, Comments, and Updated RACES Information

Questions or comments regarding the New York State RACES program can be directed to the State Radio Officer via e-mail at the New York State Emergency Management Office web site. The internet address of the SEMO web site is: [www.nysemo.state.ny.us](http://www.nysemo.state.ny.us).

Net schedules and general information about the New York State RACES program will be found at this site [www.nysemo.state.ny.us/RACES/races.htm](http://www.nysemo.state.ny.us/RACES/races.htm).

# Final Examination

Complete this exam after you have completed Part 2. You must answer 75% of the questions correctly to pass this examination.

1. How is the word amateur defined?
  - a. incompetent individual
  - b. not working as a profession
  - c. less proficient than professionals
  - d. highly competent individuals
  
2. What agencies do the amateur radio operators normally serve?
  - a. U.S. military
  - b. Red Cross
  - c. National Guard
  - d. Corporations
  
3. What advantage does amateur radio have over other forms of communications?
  - a. depends on emergency power
  - b. independent of the telephone system
  - c. second best to cell phone communications
  - d. requires shorter antennas
  
4. What level does most amateur radio communications begin?
  - a. federal
  - b. state
  - c. local
  - d. international
  
5. What is ARES?
  - a. local government
  - b. federal government
  - c. private organization
  - e. county government
  
6. Are ARES members required to have a valid FCC amateur radio license?
  - a. yes
  - b. no
  
7. At what level is an emergency coordinator?
  - a. national
  - b. section
  - c. local
  - d. district
  
8. The ARRL SET is:
  - a. a local exercise in emergency communications
  - b. a national exercise in emergency communications
  - c. held once every two years
  - d. required by state government

9. Where does an ARES Mutual Assistance Team usually provides service
- a. mostly local
  - b. mostly in affected areas outside the local area
  - c. mostly in rainy areas
  - d. mostly in hazardous areas
- 10 What is RACES?
- a. local government
  - b. federal government
  - c. private organization
  - e. county government
11. If the President invokes his War Emergency Powers, who can operate?
- a. amateur operators with a valid FCC amateur license
  - b. RACES operators on any frequency
  - c. RACES operators on specified frequencies
  - d. amateur operators on specified frequencies
12. During an emergency, should you transmit non-critical information?
- a. yes
  - b. no
13. On CW, what emergency call is recognized?
- a. Emergency or Mayday
  - b. SOS
  - c. any call
  - d. international call
14. On voice, what emergency call is recognized?
- a. Emergency or Mayday
  - b. SOS
  - c. any call
  - d. international call
15. What mode will usually be the most practical for mobile operation?
- a. CW
  - b. Voice
  - c. Digital
16. What mode will usually give you the most range?
- a. CW
  - b. Voice
  - c. Digital
17. What mode will usually give you the most secrecy?
- a. CW
  - b. Voice
  - c. Digital

18. What is critically important when working with public officials and agencies
- a. getting the job done any way you can
  - b. being accepted by public officials and agencies
  - c. getting funding for equipment
  - d. demonstrating the cost effectiveness of amateur gear.
19. What is the national traffic system used for?
- a. handling telephone communications
  - b. handling amateur radio communications
  - c. handling police and fire communications
  - d. handling citizens communications
20. In the Incident Command System, what section does emergency communications come under?
- a. operations
  - b. planning
  - c. logistics
  - d. finance
21. Do amateur radio operators need to follow the chain of command during emergency operations?
- a. yes
  - b. no
22. In the Incident Command System, what section does the Communication unit provide?
- a. an action plan
  - b. tactical operations
  - c. support to meet incident needs
  - d. set objects and priorities
23. During emergency communications, how should you handle messages?
- a. speaking as fast as possible
  - b. speaking slowly and clearly
  - c. speaking in code
  - d. speaking in a foreign language
24. Which type of message should be given a higher priority?
- a. routine
  - b. priority
  - c. emergency
  - d. welfare
25. Does packet radio communications require a computer or terminal?
- a. yes
  - b. no
26. What is the TNC used for?
- a. enables the push to talk
  - b. enables the RS232 interface
  - c. interfaces between the computer and radio
  - d. controls the software

27. Is an antenna needed for packet operation?
- a. yes
  - b. no
28. In packet, what command is used to place the TNC into the command mode?
- a. [command] c
  - b. [control] c
  - c. [alterte] c
  - d. [shift] c
29. In packet, what command is used to place the TNC into the conversation mode?
- a. [command] convers or k
  - b. [control] convers or k
  - c. convers or k
  - d. [shift] convers or k
30. In packet, what should you enter after MY in the command mode?
- a. your name
  - b. your call sign
  - c. your location
  - d. your TNC code
31. In packet, what should you enter to connect to another packet station?
- a. connect {your name}
  - b. connect {their call sign}
  - c. connect {your call sign}
  - d. connect {their name}
32. In packet, is "C" equivalent to "CONNECT"?
- a. yes
  - b. no
33. In packet, what should be the first thing you enter to disconnect, while in the convers mode?
- a. disconnect
  - b. d
  - c. [control] c
  - d. [control] d
34. In packet, what is the command mode?
- a. a mode used to accept commands from the keyboard
  - b. a mode used to hold a conversation
  - c. a mode used to connect to another station
  - d. a mode used only during emergency communications
35. In packet, what is the convers mode?
- a. a mode used to accept commands from the keyboard
  - b. a mode used to hold a conversation
  - c. a mode used to connect to another station
  - d. a mode used only during emergency communications

36. In packet, what is digipeating used for?
- a. to connect the TNC to the computer
  - b. to connect directly to another station
  - c. to connect indirectly to another station
  - d. to connect to digital radios
37. In packet, a network node is used for?
- a. to connect to a worldwide network
  - b. to connect to a local network
  - c. to connect to another station directly
  - d. to connect to the internet
38. In packet, can you send and receive private mail?
- a. yes
  - b. no
39. In packet, what code is used to send NTS traffic?
- a. social security code
  - b. node call sign
  - c. zip code
  - d. FCC valid code
40. What is the first thing you should do during an emergency before volunteering?
- a. move as fast as you can
  - b. begin operating
  - c. be sure your family is safe
  - d. set up a net control station
41. Do you need to follow the chain of command during field operations?
- a. yes
  - b. no
42. What is very important during field operations?
- a. drink plenty of coffee
  - b. push yourself as much as possible
  - c. drink plenty of water
  - d. ignore personal requirements and get the job done
43. Who is the first person you should call to volunteer?
- a. emergency coordination / radio officer
  - b. the police department
  - c. the fire department
  - d. any served agency
44. What alphabet is used during the transmission of messages, such as call signs?
- a. plain English alphabet
  - b. ITU phonetic alphabet
  - c. ARRL alphabet
  - d. FCC alphabet

45. What equipment should you bring to a field operation?
- a. what your EC/RO recommends
  - b. what you think you will need
  - c. the maximum you can carry
  - d. the most cost effective equipment
46. What primary purpose does the volunteer handout serve?
- a. provides you with contact and technical information
  - b. provides you with an understanding of the incident
  - c. enables you to become a net control station
  - d. enables you to solicit volunteers
47. How much damage can a category 5 hurricane cause?
- a. minimal damage to vegetation
  - b. moderate damage to houses
  - c. extensive damage to small buildings
  - d. catastrophic building failures possible
48. How many volunteers are needed to cover 3 assignment locations?
- a. 12
  - b. 24
  - c. 36
  - d. 48
49. Who is not eligible to become a RACES member?
- a. any U.S. citizen, who possesses a valid FCC Amateur Radio Operator Novice license class
  - b. any U.S. citizen, who possesses a valid FCC Amateur Radio Operator Technician license class
  - c. any U.S. citizen, who possesses a valid FCC Amateur Radio Operator Advanced license, advanced class
  - d. any U.S. citizen, who possesses a valid FCC Amateur Radio Operator Extra license class
50. What is the average recommended amount of time devoted to RACES training per week?
- a. 1/2 hour
  - b. 1 hour
  - c. 1 and 1/2 hours
  - d. 2 hours