

Cumberland County ARES/RACES Emergency Communications Basic Training

EMERGENCY COMMUNICATIONS GUIDE

Use this guide to assist you when participating in emergency communications drills or actual emergencies

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The following list of items should either be already in your vehicle, or ready to load on a moment's notice.

1. Warm jacket, sturdy shoes, rain gear, bug repellent (dress appropriately for the weather conditions)
2. Note pads, pens and pencils, clip board, ID badges (ARES and CC EMA), copy of current your FCC License
3. List of net frequencies (available in the Cumberland County Resource Manual)
4. Traffic handling instructions, message forms (available on the Cumberland County ARES/RACES web site)
5. Maps of local area, special maps as needed for drills or other events
6. "Who's Who" list of contact names, phone numbers, and locations for officials and others (available in the Cumberland County Resource Manual) who may be important to the success of your mission
7. Full tank of fuel for your vehicle

Winter and Cold weather add-ons (in Maine, you should have these at all times)

8. Blankets, Winter clothing, gloves, snow boots, hat
9. Tow chain or strap, jack, jack pad (for snow), shovel (in case you get stuck)
10. Flashlight (2), spare bulbs and batteries
11. Basic vehicle tool kit, including battery jumper cables, lug wrench.
12. Spare fuses (at least 3 for each size used)
13. First aid kit, portable fire extinguisher, safety flares, hazard warning reflective markers

Part 2 – Life Support

Remember that emergencies usually happen at inopportune times. The weather in Maine is always a concern, and you must be in good physical condition if you are going to provide useful communications support during emergency situations.

Clothing: Rain gear, spare clothing, and don't forget extra socks, underclothing, and shoes. Wet clothing will make you less effective, and could even jeopardize your survival. Bring mittens and gloves, winter hat, extra jacket (parka in winter). If you might be someplace for an extended period, you may wish to bring a sleeping bag. Mosquito repellent mesh is mandatory in summer for most bush locations. Dry towels are useful for many things.

Food: "C" rations (Also known as MRE's), concentrated food bars, cold sandwiches, fruit, "trail mix", candy bars, coffee (as needed for the event at hand). Plan at least 1 gallon of water per day per person. Water purification tablets. Canteen or water bottle. Basic "mess kit". Fuel canisters (Sterno) for cooking if desired. Paper towels. Can opener. Eating utensils.

Medical: Comprehensive basic first aid kit, plus bug repellent, sun screen, aspirin tablets, antacid tablets, vitamin pills, soap. Any prescription medications you might require. Spare eyeglasses (if worn).

Shelter: Rain repellent plastic over-wear and/or a small tent. 2 Plastic coated tarpaulins. 100' of ¼" polypropylene rope. Also, material to build a fire, matches and/or cigarette lighter, knife, folding shovel, toilet paper. Optional items: Lantern, axe, saw, "Leatherman" combination tool, compass, spool of nylon cord.

Part 3 – Suggested Emergency Equipment List

Radio: HF transportable set (can be your regular base station radio) and/or a VHF/UHF mobile and/or hand-held set. Include microphone, headset, key and/or keyer, speaker/mic, as needed. Headsets are absolutely required for VHF/UHF hand-held radios when aboard buses or other emergency vehicles, or in high noise areas – recommended for ALL uses.

Antennas: Portable or mobile antennas suitable for the radio in use. For VHF/UHF, include an antenna suitable for outdoor use or external mounting on a vehicle (eg: Magnetic or clamp-on mount). Do not depend on "rubber duck" antennas. For HF, wire dipoles, end fed ¼ wave wires and similar antennas serve well. At least 2 or 3 25' lengths of RG-58 type coax cable w/connectors, plus "barrel" fittings, UHF/BNC adapters. HF antenna coupler if you have one. Heavy string or nylon cord to hold up HF antennas. Duct tape and cord to assist in attaching VHF/UHF antennas to vehicles. Extra wire for HF antenna ground radials or counterpoise. External antennas are absolutely required for VHF/UHF mobile use!

Power: HF radios can usually operate directly from 12V vehicle batteries. 2 or 3 spare alkaline and/or ni-cad packs (fully charged, of course) for hand held radios. Charger for hand held sets. Power cables for radios, AC extension cord, large clips to hook up to automobile batteries. DC power supply for HF set. Bring some "clip leads" for unexpected situations. Adapter to power/charge radios from vehicle cigar lighter socket.

Operating accessories: 2 notebooks, several pens/pencils, flashlight w/extra batteries & bulbs, extra fuses for every radio and charger. Tools: standard and Phillips screwdrivers (2 sizes), wire cutters, "Crescent" wrench, hex key set, pliers, tape measure, soldering tool and solder, VOM, electrical tape. Any special tools you may need that are specific to your equipment.

Part 4 – Operating Hints

HF Antennas: Keep portable antennas in the clear as much as possible. If given the choice between "high" and "clear" – choose clear. Horizontal antennas perform well on 80/75 and 40 meters for "local" service (within 500 miles). Try to get them at least 10' high – more if you can. For 20 meters and above, use ¼ wave verticals, vertical or sloping dipoles. If you can keep your antenna in the clear, additional height always helps. Include a ground rod or stake for use with end fed or random wire antennas (not needed with dipole type antennas). VHF/UHF Antennas: External antennas are always preferable. A simple dipole or "J" antenna hung in a tree or from a fence will always outperform an indoor

antenna. "Rubber duck" antennas are essentially useless inside a metal vehicle. Use a magnet or gutter clip mount instead. Even standing your HT on the vehicle roof will improve copy. If you are in a "bad spot", try moving a few feet and try again. If this helps, stay in the better location until your message is passed. Hold your HT so the antenna is vertical and away from your body.

HF Operations: Use headphones for better listening. Be ready to relay distant stations if needed. In power emergencies, a 100W rig at 25W saves batteries and is only 1 "S" unit weaker. Reducing CW speed improves copy. Know the standard phonetic alphabet.

VHF/UHF Operations: If copy is good, use reduced power to save batteries. Use phonetics only when asked. Be ready to respond promptly! Answer within 2 seconds if possible. *Do not yell!* If signals are weak, speaking more softly than normal often improves copy. When using repeaters, check the "reverse" frequency to see if a weak signal is better on "direct". Relay such signals to net control when appropriate. Use simplex channels for localized operations or auxiliary nets where possible, save the repeaters for wider area coverage.

Part 5 – Basic operating procedures for drills and actual emergencies

If there is a net control, that station will be in charge of routing all communications. Pay attention to what net control says, be ready to act on requests quickly, and refrain from transmitting unless called or you have new traffic to contribute. Do not leave the net without informing net control! If net control requests that you switch to a different channel to pass traffic, return to net as soon as that traffic is passed and notify net control that you have returned. Do not contact another station directly without instructions from net control.

If there is no net control, and you are basically familiar with how to run a net, please take charge and become net control. If you are net control and you need to take a break, be sure someone else is available to take over before leaving. Listen to the operation of the net before jumping in. Try to determine who is net control, what the overall situation is and who, if any, are the "key players" in the event at hand. Be sure you have something to contribute before breaking in. If the net control wishes to know who is available but not presently involved in the actual activity, he or she will ask for "check ins" - this is the time to make your presence known.

Remember, we are here to assist the various public officials (police, fire, disaster managers, or whoever else is in overall charge) - we are NOT here to take action independently. This means you should use common sense and your experience to expedite traffic – but you must not second guess the person in charge and start dispatching people, equipment, and materials, or otherwise performing tasks that are not communications in nature – unless of course that is also your official job for that situation. How you get the message passed is to a large extent up to you and your individual initiative. The person coordinating the event doesn't care how you get your part of the job done, as long as it gets done promptly and smoothly. Amateur radio is here to serve others, not to become the "star" of the show. Our job is best done when public officials realize they can rely on us to "get it done" while they worry about other more important things.

The operation may use "tactical" (example: "Bus 9" or "Fire Base") or standard amateur call signs, or (as is usually the case) a mix of both. If tactical call signs are used, you will be given an opportunity from time to time to identify your station. Do not transmit your ID unless requested, except when responding to a query. If called, give your ID once when answering the initial call, and not again until you are called with a different query or you are initiating a call to respond to a previous query. Over identification wastes time and interferes with other users when traffic is heavy. Do not use phonetics unless requested by either net control or the station(s) you are in contact with. Only when there are two or more stations (active at the same time) with very similar sounding calls should phonetics be used frequently – and even then partial phonetics are usually sufficient. Example: K1 Golf Alpha Xray instead of Kilo One Golf Alpha Xray. Speak clearly and slowly when relaying critical traffic. Saying something once clearly is better than having to repeat several times. If phonetics are required, know and use the standard ARRL/ICAO phonetic alphabet. "Homemade" or "cute" phonetics have no place during emergencies, and only delay and confuse messages and other traffic. Respond promptly when called! You should try to respond within 1 or 2 seconds when called. Long delays confuse the operation and slow traffic. If you are net control, it is your responsibility to keep traffic moving smoothly and to help less experienced operators as needed. Firm control of a net will result in fewer repeats and delays. Give short summaries of what is happening as time permits. This helps new arrivals, and keeps everyone focused on the event at hand.

Part 6 – Basic message handling

If you are handling a query (request for information), make sure you follow up and get the answer in a timely manner. When you have the answer, check in with net control and let him or her know that you have the response. If you cannot obtain the information needed, or it is impossible to contact the intended recipient, be sure and let both net control and the originating station know. If you need assistance in your efforts, ask net control for help. Always obtain the name and, if possible, the position of both the originator of a request and the person(s) who answer the query. Try to get a physical signature if you can. This is very important, and is necessary to assure all involved that the information is both genuine and accurate. In situations where formal messages are not being used, this is critical! If you are handling written traffic, get a "count" of the number of words in the original message, and any reply message (see example below). This count should be passed with the traffic and verified by both ends to make sure words were not missed. Make sure the count is correct before acknowledging receipt of the message. When handling message traffic by radiotelephone (voice), spell phonetically any unusual words or names the first time they occur. Common words and well known names can be passed as spoken words. Pause and ask the receiving station to confirm the text received from time to time. Typically, pause after the address block and after every 2 or 3 sentences. The receiving station will normally answer with "QSL" or "OK" (or something like that) if all is OK, and with "need a fill" or "repeat all after (word)" in case copy was garbled. The required parts of a message are as follows. Additional information regarding messages may be found in any ARRL Handbook or the ARRL Operating Manual.

Origination group: This is also where any reply will be sent. You must include the originating person's name, mailing address or place name, and, if available, telephone number. Also, include the date and time of origination. Typical date-time group: 01/06/99 0330Z

Who is the message going to? As above, include name, mailing address or place name, and if available, a contact telephone number.

Count of words and number groups. See example below. The count is needed to verify that the message was transmitted correctly. The count is sometimes called the "check".

Text of message: Make every attempt to limit message length to 25 words or less, including number groups and punctuation. Long messages can cause problems in emergencies.

Example: Need 15 water barrels at airport X Have 22 cases food rations on hand X All personnel have shelter X (signed) Joe Doe

(This message has a count of 20. Each word or number group counts as 1 word. Also, each "X" counts 1. "X" (spoken as "xray") is used in place of the period at the end of each sentence. Note that the "signature" is NOT included in the word count.)

All messages must have a signature (the originating person's name). Try to get a physical signature, if possible, on the "original" copy (text) that you used to generate the message.

Part 7 – What to do if problems occur

If you are using a hand held set, try moving a few feet. If there are obstructions between you and the receiving station (or repeater), try to move into a clearer spot. If your signal improves after such a move, *stay put* until the traffic is passed. Moving to yet another spot or returning to your original position is likely to cause signal loss and a return to no or poor copy conditions. Under marginal conditions, even the position of the radio can make a difference! Once you get a good signal., don't change anything until the traffic is passed. A very important point to remember when using VHF or UHF FM systems that if signals are weak, shouting or even normal talking can make things worse, instead of better. Under weak signal conditions, speak softly or farther from the radio – it will usually improve the copy on the other end. If copy cannot be obtained after moving to a different location, going to higher power, connecting a better antenna, or anything else you can try on your own, then ask for any station that is hearing both sides to relay for you. During net operations, check before moving off channel to make sure both yourself and the other station can hear each other clearly. If this is not the case, ask net control to assign a relay station, or otherwise assist you to make sure the traffic can be passed successfully. There may be an alternate means by which you can pass the traffic. It may be more efficient to make use of other communications services, telephones, commercial carriers, runners, or whatever else it

takes to get the job done. The idea is to successfully pass the message, not to restrict it to amateur radio channels only.

Part 8 – How to report emergencies

When reporting emergencies, several things are important. In every case, remember to give the receiving party (Police, troopers, Fire Dept, Ambulance, etc.) the following basic information:

What is the emergency. Is this a life threatening event? Is there a fire, a dangerous animal, a natural phenomenon (weather, earthquake, volcanic eruption, landslide, etc), or a dangerous man-made event, such as a traffic accident? Try to determine if anyone is injured, and if so, how many persons.

Are any physical conditions (such as sea conditions or visibility) pertinent to the emergency?

Describe what assistance is needed.

Do not move injured persons unless their life or safety is in immediate danger - wait for trained medical personnel.

Cover victims with blankets keep them warm and lessen shock and exposure injuries.

Where is the emergency. describe the location so that emergency response personnel can get there as quickly as possible. If on a highway, give mileage, landmarks, direction of travel on the road, and physical description of the vehicle, person, or whatever else will make it easy for responding personnel to identify the exact location. If not on a highway, give any appropriate landmarks or other means to identify the site to emergency personnel. (ie: 3 miles SSE of Icy Cape)

Who is calling? Give the emergency crew your name, where you are calling from, how you determined the nature of the emergency and a number or other way they can call you back if necessary. If you are calling via ham radio, stay on the line until they release you. Also, unless your safety is endangered and you are on the scene, stay put until the emergency crews arrive. If relaying from another station, stay in contact until released.

Part 9 – Standard operating frequencies

Statewide HF: 3940 kHz LSB / 7262 kHz LSB

Statewide 2 meter calling/coordination: 146.52 Simplex

Local ARES: 147.09 (+) (100.0 Hz CTCSS) or 146.415 MHz simplex (Primary)

147.525 (secondary) Additional frequencies: 53.57 (-)(103.5), 146.73 (-)(100.0 Hz), 147.36 (+)(100.0 Hz), 224.84 (-)(103.5)

28.400 (USB), 29.600 (FM), 52.565, 146.54 MHz, 223.44 MHz, 446.75 MHz, 1294.525 MHz

Cumberland County ARES/RACES web page: <http://www/qs1.net/ccares> Check this page for late breaking news, training schedules, information during emergencies, and useful tips.

Part 10 - Local information - (write in pertinent data for your location)

Police Emergency: _____ Non-emergency number. _____

Fire Emergency _____ Non-emergency number. _____

State Police Emergency. _____ Non-emergency number. _____

Hospital telephone: _____ Emergency Room telephone: _____