Section 2: The Networks for Messages

Topic 5

Basic Communication Skills

Objectives

Welcome to Topic 5.

This topic introduces you to communication skills that are specific to emergency communications operations and will help you appreciate how they differ from typical Amateur Radio operations.

Student Preparation required:

None.

Introduction

An emergency communicator must do his or her part to get every message to its intended recipient, quickly, accurately, and efficiently. Several factors can affect your ability to do this, including your own operating skills, the communication method used, a variety of noise problems, the skills of the receiving party, the cooperation of others, and adequate resources. In this unit, we will discuss basic personal operating skills. Many of the other factors will be covered in later units.

Life-and-death communications are not part of our daily experience. Most of what we say and do each day does not have the potential to severely impact the lives and property of hundreds or thousands of people. In an emergency, any given message can have huge and often unintended consequences. An unclear message, or one that is modified, delayed, misdelivered, or never delivered at all can have disastrous results.

Listening

Listening is at least 50 percent of communication. Discipline yourself to focus on your job and "tune out" distractions. If your attention drifts at the wrong time, you could miss a critical message. Listening also means avoiding unnecessary transmissions. A wise person once said, "A man has two ears and one mouth. Therefore, he should listen twice as much as he talks." While you are asking, "When will the cots arrive?" for the fourth time that hour, someone else with a

life-and-death emergency might be prevented from calling for help.

Sometimes the job of listening is complicated by noise. You might be operating from a noisy location, the signal might be weak, or other stations may be causing interference. In each of these cases, it helps to have headphones to minimize local noise and help you concentrate on the radio signal. Any veteran of a major emergency will tell you that headphones are one of the "must have" items in emergency communications operations. Digital Signal Processing (DSP), filters, and other technologies may also help to reduce radio noise and interference.

Microphone Techniques

Even something as simple as using your microphone correctly can make a big difference in intelligibility. For optimum performance, hold the mic close to your cheek, and just off to the side of your mouth. Talk across, rather than into, the microphone. This will reduce breath noises and "popping" sounds that can mask your speech.

Speak in a normal, clear, calm voice. Raising your voice or shouting can result in over-modulation and distortion and will not increase volume at the receiving end. Speak at a normal pace — rushing your words can result in slurred and unintelligible speech. Pronounce words carefully, making sure to enunciate each syllable and sound. Radios should be adjusted so that a normal voice within two inches of the mic element will produce full modulation. If your microphone gain is set so high that you can achieve full modulation with the mic in your lap, it will also pick up extraneous background noise that can mask or garble your voice.

A noise-canceling microphone is a good choice since it blocks out nearly all unwanted background noise and is available in handheld and headset boom configurations.

Headset boom microphones are becoming less expensive and more popular, but care should be taken to choose one with a cardioid or other noise-canceling type element. Many low-cost headset boom mics have omnidirectional elements and will pick up extraneous noise.

"Voice operated transmission" (VOX) is *not* recommended for emergency communication. It is too easy for background noise and off-air operator comments to be accidentally transmitted, resulting in embarrassment or a disrupted net. Use a hand or foot switch instead.

When using a repeater, be sure to leave a little extra time between pressing the push-to-talk switch and speaking. A variety of delays can occur within a system, including Continuous Tone Coded Squelch System (CTCSS) decode time and transmitter rise time. Some repeaters also have a short "kerchunk" timer to prevent brief key-ups and noise from keying the transmitter. It also gives time for some handhelds to come out of the "power-saver" mode. Leaving extra time is also necessary on any system of linked repeaters, to allow time for all the links to begin transmitting. Momentary delay in speaking after keying up will ensure that your entire message is transmitted, avoiding time-wasting repeats for lost first words.

Lastly, pause a little longer than usual between transmissions any time there is a possibility that other stations may have emergency traffic to pass. A count of "one, one thousand" is usually sufficient.

Brevity and Clarity

Each communication should consist of only the information necessary to get the message across clearly and accurately. Extraneous information can distract the recipient and lead to misinterpretation and confusion. If you are the message's author and can leave a word out without changing the meaning of a message, leave it out. If the description of an item will not add to the understanding of the subject of the message, leave it out. Avoid using contractions within your messages; words like "don't" and "isn't" can be easily confused. If someone else has drafted the message, work with the author to make it more concise.

Make your transmissions sound crisp and professional, like the police and fire radio dispatchers and the air traffic controllers. Do not editorialize or engage in chitchat. An emergency net is no place for conversation on the order of, "Hi Larry, long time no hear," "Hey, you know that rig you were telling me about last month …," or any other non-essential conversation.

Be sure to say exactly what you mean. Use specific words to ensure that your precise meaning is conveyed. Do not say, "That place we were talking about," when "Wellington Middle School" is what you mean. Using non-specific language can lead to misunderstandings and confusion.

Communicate one complete subject at a time. Mixing different subjects into one message can cause misunderstandings and confusion. If you are sending a list of additional food supplies needed, keep it separate from a message asking for more sandbags. Chances are that the two

requests will have to be forwarded to different locations. If they are combined, one request will be lost.

Plain Language

As ham radio operators, we use a great deal of jargon (technical slang) and specialized terminology in our daily conversations. Most of us understand each other when we do, and if we do not on occasion it usually makes little difference. In an emergency, however, the results can be much different. A misunderstood message could cost someone's life.

Not everyone involved in an emergency communication situation will understand our slang and technical jargon. Even terms used by ham radio operators vary from one region to another, and non-hams or new hams will have no knowledge of most of our terminology. Ham radio operators assisting from another region might understand certain jargon very differently from local ones.

For these reasons, all messages and communications during an emergency should be in plain language. "Q" signals (except in CW communication), 10 codes, and similar jargon should be avoided. The one exception to this is the list of standard "prowords" (often called "prosigns") used in amateur traffic nets, such as "clear," "say again all after," and so on.

Avoid words or phrases that carry strong emotions. Most emergency situations are emotionally charged already, and you do not need to add to the problem. For instance, instead of saying, "horrific damage and people torn to bits," you might say "significant physical damage and serious personal injuries."

And please watch the speed at which you speak. It should be at a normal rate. Many times, emergency operators get too excited and talk very fast, making it hard for receiving stations to understand them.

Phonetics

Certain words in a message may not be immediately understood. This might be the case with an unusual place name, such as "Franconia" or an unusual last name, like "Smythe." The best way to be sure it is understood correctly is to spell it. The trouble is, if you just spell the word using letters, it might still be misunderstood, because many letters sound alike at the other end of a radio circuit. "Z" and "C" are two good examples. For that reason, radio communicators often use *phonetics*. These are specific words that begin with the letter being sent. For instance, "ARRL" might be spoken as "alpha romeo romeo lima."

To reduce requests to repeat words, use phonetics any time a word has an unusual or difficult spelling, or may be easily misunderstood. Do not spell common words unless the receiving station asks you to. In some cases, they may ask for the phonetic spelling of a common word to clear up confusion over what has been received. Standard practice is to first say the word, say "I spell," and then spell the word phonetically. This lets the receiving station know you are about to spell the word they just heard.

Several different phonetic alphabets are in common use, but most ham radio operators and public safety agencies use the ITU Phonetic Alphabet, shown below, and others use military alphabets. Many ham radio operators like to make up their own phonetics, especially as a memory aid for call signs, and often with humorous results. *This practice has no place in emergency communications*. In poor conditions, unusual phonetic words might also be misunderstood. We need to be sure that what we say is always interpreted exactly as intended — this is why most professional communicators use standardized phonetics.

ITU Phonetic Alphabet	**Numbers**
A — alpha (AL-fa) B — bravo (BRAH-voh) C — charlie (CHAR-lee) D — delta (DELL-tah) E — echo (ECK-oh) F — foxtrot (FOKS-trot) G — golf (GOLF) H — hotel (HOH-tell) I — india (IN-dee-ah) J — juliet (JU-lee-ett) K — kilo (KEY-loh) L — lima (LEE-mah) M — mike (MIKE) N — november (no-VEM-ber) O — oscar (OSS-cah) P — papa (PAH-PAH) Q — quebec (kay-BECK) R — romeo (ROW-me-oh) S — sierra (SEE-air-rah) T — tango (TANG-go) U — uniform (YOU-ni-form) V — victor (VIK-tor) W — whiskey (WISS-key) X — x-ray (ECKS-ray) Y — yankee (YANG-key) Z — zulu (ZOO-loo)	Numbers are somewhat easier to understand. Most can be made clearer by simply "over-enunciating" them. **Phonetics** One: "Wun" Two: "TOOO" Three: "THUH-ree" Four: "FOH-wer" Five: "FY-ive" Six: "Sicks" Seven: "SEV-vin" Eight: "Ate" Nine: "NINE-er" Zero: "ZEE-row" Numbers are always pronounced individually. The number "60" is spoken as "six zero", not "sixty." The number "509" is spoken as "five zero nine," and not as "five hundred nine" or "five oh nine."

Prowords

Prowords, called "prosigns" when sent in Morse code or digital modes, are procedural terms with specific meanings ("pro" is short for "procedural"). They are used to save time and ensure that everyone understands precisely what is being said.

Some prowords are used in general communication, others while sending and receiving formal messages. The usage and meaning of some prowords in other services, such as police, fire, or military, may differ from Amateur Radio usage. Here are some prowords and prosigns in

common usage in Amateur Radio communications:

Voice	Morse	Meaning and Digital Function
Clear	SK*	End of contact; end of communication. In CW, SK is sent before final identification.
Over	KN*	Used to let a specific station know to respond.
Go ahead	K	Used to indicate that any station may respond.
Out	CL*	End of contact; end of communication, no reply expected.
Stand by	AS*	A temporary interruption of the contact.
Roger	R	Indicates that a transmission has been received correctly and in full.

*Two letters are sent as one character in CW.

Tactical Call Signs

Tactical call signs can identify the station's location or its purpose during an event, regardless of who is operating the station. This is an important concept. The tactical call sign allows you to contact a station without knowing the FCC call sign of the operator. It virtually eliminates confusion at shift changes or at stations with multiple operators.

Tactical call signs should be used for all emergency nets and public service events if there are more than just a few participants. If one does not already exist, the Net Control Station (NCS) may assign the tactical call sign as each location is "opened." Tactical call signs will usually provide some information about the location or its purpose. It is often helpful if the tactical call signs have a meaning that matches the way in which the partner identifies the location or function.

Some examples might be:

Net — for net control station
Springfield EOC — for the city's Emergency Operations Center
Firebase 1 — for the first fire base established, or a primary fire base
Checkpoint 1 — for the first checkpoint in a public service event
Canyon Shelter — for the Red Cross shelter at Canyon School
Repair 1 — for the roving repair vehicle at a bike-a-thon
Mercy — for Mercy Hospital

To be effective, a tactical call sign, once assigned, should be used consistently (i.e., don't use "EOC" one time and "Command" the next). A list of tactical call signs and the locations or functions to which they are assigned should be made known to all who might make calls to or receive calls from each such location or function.

Calling with Tactical Call Signs

If you are at "Aid 3" during a directed net and want to contact the net control station, you would say, "Net, Aid 3". If you had emergency traffic, you would say, "Aid 3, emergency traffic," or for priority traffic, "Aid 3, priority traffic." Notice how you will have quickly conveyed all the

information necessary without having used any extra words.

If you have traffic for a specific location, such as Firebase 5, you would say, "Aid 3, priority traffic for Firebase 5." This tells the NCS everything it needs to correctly direct the message. If there is no other traffic holding, the NCS will then call Firebase 5 with, "Firebase 5, call Aid 3 for priority traffic." Note that no FCC call signs have been used — so far.

Here is an example of how tactical call signs were used during the 2012 Boston Marathon

https://www.youtube.com/watch?v=zc3foaw_jnE

Station Identification

In addition to satisfying the FCC's rules, proper station identification is essential to promoting the efficient operation of a net. The FCC requires that you identify at 10-minute intervals during a conversation *and* at the end of your last transmission. During periods of heavy activity in tactical nets it is easy to forget when you last identified, but if you identify at the end of each transmission, you will waste valuable time.

The easiest way to be sure you fulfill FCC station identification requirements during a net is to give your FCC call sign as you complete each exchange. Most exchanges will be far shorter than 10 minutes. This serves two important functions:

1. It tells the NCS that you consider the exchange complete (and saves time and extra words).

2. It fulfills all FCC identification requirements.

Completing a Call

After the message has been sent, you would complete the call from Aid 3 by saying, "Aid 3, <*your call sign*>." This fulfills your station identification requirements and tells the NCS that you believe the exchange to be complete.

If the Net Control Station believes the exchange is complete, and Aid 3 had forgotten to identify, then the NCS should say, "Aid 3, do you have further traffic?" At that point, Aid 3 should either continue with the traffic, or "clear" by identifying as indicated above.

For this method to work properly, the NCS must allow each station the opportunity to identify at the close of an exchange.

A Review of Habits to Avoid

- Thinking aloud on the air: "Ahhh, let me see. Hmm. Well, you know, if …"
- On-air arguments, criticism, or rambling commentaries

- Shouting into your microphone
- "Cute" phonetics
- Identifying every time you key or un-key the mic
- Using "10" codes, Q-signals on phone, or anything other than "plain language"
- Speaking without planning your message in advance
- Talking just to pass the time

Reference Links

ARES Manual
http://www.arrl.org/files/file/Public%20Service/ARES/ARESmanual2015.pdf

ARES Field Resources Manual
http://www.arrl.org/files/file/Public%20Service/ARES/ARESFieldResourcesManual-2019.pdf

Review

Clear, concise communications save time and reduce misunderstandings. Avoid any non-essential transmissions. Use tactical call signs to call other stations and give your FCC call sign only at the end of the complete exchange, or every 10 minutes during longer exchanges. Plain language is understood more easily than most codes and jargon, and by a wider range of people.