

Section 1: The Framework: How You Fit In

Topic 1

Introduction to Amateur Radio Emergency Communications

Objectives

Welcome to Topic 1.

This topic will introduce you to the general concepts of public service communication. It will help prepare you to be the most helpful you can be as a volunteer.

Student preparation required:

You should have a sincere interest in improving your skills as a communications volunteer.

As you begin this series of courses, let us first thank you for choosing to expand your knowledge of Amateur Radio public service communications. Our professionalism and the effectiveness of our public service efforts will be greatly improved if we all share a common base of knowledge, skills, and procedures.

In this course, you will learn new skills and new ways of thinking about existing skills. Sometimes the way “we have always done something” is no longer useful or appropriate. We hope that this course will challenge you to become the best emergency communicator possible.

You may have ideas and material that could add to the base of knowledge presented here. Simply make a note of them and include them in the course evaluation form at the end of the course. Since our methods and techniques must continually adapt to meet the needs of the communities and agencies we serve, so must this course. We will periodically update this course, taking into consideration comments from all participants.

What a Communications Emergency Is

A communications emergency exists when a critical communications system fails or is overloaded and puts the public at risk. A variety of circumstances can overload or damage critical day-to-day communications systems. It could be a storm that knocks down cellular sites, telephone lines, or radio towers; a massive increase in the use of a communication system that causes it to become overloaded; or the failure of a key component in a system which has widespread consequences. Examples are easily found. Violent storms and earthquakes may

impact communications infrastructure. Critical facilities can also be damaged in “normal” circumstances: underground cables are severed, fires occur in telephone equipment buildings, or a car crash knocks down a key telephone pole. Hospital or 911 telephone systems can fail. Even when no equipment fails, a large-scale emergency such as a chemical or nuclear incident can result in system overload or failure. Some emergency operations occur in areas without any existing communication systems, such as with backcountry searches or fires.



What Makes a Good Communications Volunteer

Communications volunteers come from a wide variety of backgrounds and with a range of skills and experience. The common attributes that all effective volunteers share is a desire to help others without personal gain of any kind, and the ability to work as a member of a team and to take direction from others. Emergency communications volunteers need to be able to think and act quickly, under the stress and pressure of an emergency.

You cannot help others when you are worried about those you love. Your family should always be your first priority. Adequate personal and family preparation will enable you to get your own situation under control more quickly so that you are in a position to be of service to others.

Where You Fit In

Amateur Radio operators (often called “hams” or “ham radio operators”) have been a communication resource in emergency situations ever since radio has existed. To the agencies they serve, amateurs are immediately available communication experts. Amateurs have the equipment, the skills, and access to the necessary frequencies, along with a diversified network

of stations at homes, emergency operations centers, and served agencies to provide added communications capacity during times of emergency or disaster. They are licensed and preauthorized for national and international communication.

Hams have the ability to rapidly enlarge their communication capacity to meet growing needs in an emergency, something commercial and public safety systems cannot normally do. Many of the skills are the same ones that are used in everyday ham activities. However, just having radios, frequencies, and basic radio skills is not enough. Certain emergency communication skills are very different from those you use in your daily ham radio life. Courses like this one help fill that need, as do local training programs and regular emergency exercises. Without specific emergency communication skills, you can easily become part of the problem rather than part of the solution.

As you might expect, technical and operating skills are critical. Just as important, though, is your ability to function as a team player within your own organization and the organization you are serving. Those critical skills will also be covered in this course.

What You Are Not

As important as what you are, is what you are not. There are limits to your responsibilities as an emergency communicator, and it is important to know where to draw the line.

You are not a “first responder.” Except in rare cases of chance, you will seldom be first on the scene. You do not need flashing lights and sirens, gold badges, or fancy uniforms. In most cases, beyond reporting the situation to the proper authorities, ham radio operators have little usefulness as communicators at the very beginning of an emergency.

You have no authority. In most cases, you cannot make decisions for others, or make demands on the partner you serve or any other partner. The only decisions you can make are whether or not to participate, and those affecting your own health and safety.

You cannot do it all. When the partner you are helping runs short of doctors, cooks, or traffic cops, it is not your job to fill the void. In most cases, you are not trained for it. That does not mean you cannot lend a hand to fill an urgent need when you are qualified to do so, or perform other jobs for the partners, of which communication is an integral part, and for which you are trained and capable.

You are not in charge. You are there to temporarily fulfill the needs of a partner whose communication system is unable to do its job. They tell you what they need, and you do your best to comply.

“Day-to-Day” Versus “Emergency” Communication

In your daily ham radio life, there is no pressure to get any particular message through. You do

things at your leisure, and no one's life depends upon you. In an emergency all that changes. Here are some differences you may see:

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| Unlike general Amateur Radio activities, which involve primarily Amateur Radio operators, emergency communication involves both Amateurs and non-Amateurs. | Unlike regular activities, emergency operations happen in real time. Important activities cannot be delayed for convenience. |
| Instead of one leisurely net a day, emergency communicators are often dealing with several continuous nets simultaneously to pass critical messages within a limited timeframe. | Unlike public service events that are scheduled and planned, emergency communicators are often asked to organize and coordinate field operations with little or no warning. |
| Unlike public service events where the communicators serve primarily under the direction of one lead organization, emergency communicators may need to interact with several key organizations simultaneously. | Unlike typical home installations, emergency stations must be portable and able to be set up and operate anywhere in a very short time. |
| Unlike contesting, which involves contacting any station for points; emergency communicators need to contact specific stations quickly to pass important messages. Teamwork is important, not competition between stations. | Unlike Field Day, where you can plan on a two-day operation, emergency operations have no schedule and are likely to continue for at least several days. |
| Unlike commercial communication solutions, where there is no reserve capacity for handling a sudden and massive increase in communication volume, Amateur Radio emergency communicators have the equipment, skills, and knowledge to create additional capacity in a very short time. | |

The Missions

The job you are asked to do will vary with the specific partner you serve. If that partner is the American Red Cross (ARC), you may be providing the communications needed to maintain a system of shelters and other relief efforts. If it is a state or local emergency management partner, you could be handling inter-partner communications or serving as the eyes and ears of the emergency managers. When a hospital's telephone system fails, you might be handling the "mechanics" of communicating so that doctors and nurses can concentrate on patients. In a large forest fire or search and rescue operation, you might be setting up personal phone patches for firefighters or rescuers to their families or assisting with logistical communications to ensure that food, supplies, personnel, and materials arrive when and where needed. For the National Weather Service (NWS), you will be reporting storm locations and weather conditions so that NWS personnel can better inform and warn the public. In any widespread disaster, hams could be assisting all the agencies listed above, and more, at the same time.

Communicating — Job #1

While you are proud of your skill as a radio operator, and of the impressive equipment and systems you have in place, it is important to remember that your job is *communicating*. If a partner asks us to deliver a long shelter supply list to headquarters, you should be prepared to use the most expedient and efficient means at your disposal; this may be by phone, e-mail, or radio. Our job is to get the message through. Do not think about how to use ham radio to send the message — just think about the best and fastest way to send it. If that means using ham radio, so much the better. If all you have is CB or Family Radio, use it. If a partner asks you to use their radio system, do it. Your operating and technical skills are just as important as your ham radio resources.

Anatomy of a Communications Emergency

In the earliest stages of many disasters, there is no immediate need for emergency communications services. (An obvious exception would be a tornado or earthquake.) This phase might occur during a severe storm “watch” or “warning” period. You should use this time to monitor developments and prepare to deploy when and if a request for assistance comes. Some nets, such as the Hurricane Watch Net (HWN) or SKYWARN, may be activated early in the storm watch or warning phases to provide the National Weather Service and other agencies with up-to-the-minute information.

Once a potential or actual need for more communications resources is identified, a partner puts out the call for its volunteer communicators. Depending on the situation, operators and equipment might be needed at an Emergency Operations Center (EOC) or to set up in field locations, or both. In some areas, a Rapid Response Team (RRT) or similar small sub-group might deploy a minimal response within a very short time, to be backed up by a second, more robust response within an hour or two.

Once operations begin, all kinds of things can happen. The volume of messages can grow quickly, and confusion is common. In addition to handling messages, your team will need to think about relief or replacement operators, food and water, sleeping accommodations, batteries, fuel, and other logistical needs. Plan for the failure of radios and antennas and how to replace them. Some operators will need to leave early for personal reasons.

Communications assignments might include staffing a shelter to handle calls for information, supplies, and personnel, “shadowing” an official to be their communication link, gathering weather information, or collecting and transmitting damage reports. Some nets might pass health and welfare inquiries to refugee/evacuee centers or pass messages from refugees to family members outside the disaster area. Other nets might handle logistical needs for the partners, such as those regarding supplies, equipment, and personnel.

Nets will be activated, rearranged, and dismantled as needs change. Volunteers will need to remain flexible in order to meet the changing needs of the partners. Over time, the need for

emergency communications networks will diminish as the message load decreases, and some nets will be closed or reduced in size. Operators will be demobilized (released to go home) one by one, in small groups, or all at once as the needs dictate.

Not long after the operation has ended, the emergency communications group should review the effectiveness of its response, either alone or with the partners. This might be done on the air in a formal net, by e-mail, or in a face-to-face meeting. However, it is done, it should occur as soon as possible after operations have ended to be sure that events are fresh in everyone's minds. Evaluations, done properly, can greatly improve your organization's — and your own — effectiveness.

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

Communications emergencies can result from a variety of situations, including storms, earthquakes, fires, and equipment damage or failure. Normal communications systems are rapidly overloaded by the increase in usage caused by an emergency, and most have little or no reserve capacity. Amateur Radio operators are a national resource in a communications emergency, and your mission will vary with the partner you serve. Ham radio operators have the skills, equipment, and frequencies to rapidly expand the message-carrying capacity of their networks. Specific emergency communications skills are also required to meet the special needs of a communications emergency.