

**Athens Amateur Radio Club (K5EPH)**

**2022 FIELD OPERATIONS MANUAL (FOM)**

Rev 08/04/2022

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## 1.0 Athens Amateur Radio Club Field Operations Manual (FOM)

This manual is intended to serve as an emergency communications guide during actual emergencies, simulation drills, or public service events. This document has applications not only for members of the **Athens Amateur Radio Club (K5EPH)**, but for any organization that is involved in emergency communications in the East Texas area. This Field Operations Manual was developed to help emergency communicators with a minimal amount of documentation. The Field Operations Manual has information that is tailored for amateur radio operators deployed in emergency service work in the Athens Tx. area. It provides information, procedures, quick start forms; operating aids and templates developed for Athens Tx. emergency service operations. While there is no requirement or expectation for these guidelines, it is important that we understand common terminology, common tactics, and maintain common understanding to support each other and our neighbors. Our neighbors will look to us to provide the tools and expertise to relay the information that is critical to them and their families during an emergency.

The work is based on Amateur Radio Emergency Communications procedures, local information, and communications configurations. Portions of the manual were taken from the Henderson County ARES Field Service Manual.

### 1.1 What to Do First in Case of an Emergency

#### Things to complete prior to responding as an K5EPH Volunteer

1. Check that you are in good health and that your family is safe and secure.
2. Check that your property is safe and secure.
3. Monitor **147.220 Mhz Repeater (Positive (+ 6) Khz, offset 136.5 Hz Tone)** for instructions. If you are unable to reach Net control, check the backup frequency which is **146.520 SIMPLEX**. If you are still unable to reach Net control, start monitoring the **Cedar Creek repeater at 146.9000 (- 6) Khz 136.5 Hz Tone** or **Tyler Tx. SE Repeater at 146.960 (- 6) Khz 136.5 Tone**. and check for messages regarding **K5EPH**. Continue to cycle through these four frequencies until you can reach Net control.
4. Follow the instructions you receive from the if you can do so.

For more details see section 3.0.

## 1.2 Participation

In order for the Athens Amateur Radio Club ("K5EPH") group to effectively carry out its mission, all members should practice their skills and participate as often as possible in K5EPH activities, including, but not limited to, training nets, meetings, training and educational events, public service activities as well as exercises.

It is critical for all AARC members to maintain their readiness to participate in K5EPH emergency operations. To accomplish this, they should be familiar with all AARC documents, including this operations manual. In addition, their regular involvement in local AARC activities will ensure their familiarity with AARC operations.

## 1.3 Training / Weekly Nets

The Athens Amateur Radio Club conducts a weekly Net that is open to all amateur radio operators. This net can serve as an introduction to the K5EPH system in general and for those operators who are not otherwise familiar with AARC.

Each net will be conducted pursuant to the standard net script as outlined in this manual and available from the AARC coordinator. Every net should strive to include some element of training, either informational or interactive.

The net will be conducted on the **147.220 Mhz Repeater (Positive (+6) Khz, offset 136.5 Hz Pilot Tone)**.

## 1.4 Training Programs

Athens Tx Amateur Radio Club may conduct additional training at regularly scheduled Net meetings or at other times. All members are encouraged to attend and participate in these training programs whenever possible.

Other training is available from the American Radio Relay League through its Amateur Radio Introduction to Emergency Communications Level 1 Basic course. The Federal Emergency Management Agency also offers several levels and categories of emergency preparedness. Focusing particularly on the National Incident Management System and the Incident Command System. Members are encouraged to take the following NIMS courses IS-100.b, IS-200.c, IS-700.b, IS-800.b. Courses can be found at <https://www.fema.gov/emergency-managers/nims/implementation-training>

## 2.0 Preparation

A little bit of planning can really help eliminate problems that may be hard to overcome in the first few hours of an incident.

## 2.1 Family Emergency Plan

**Families Come First.** It is very important that Emergency Communications volunteers have an Emergency Family Plan. Before volunteering you must make sure that your family has the essentials needed for survival.

Remember when you were in school, and they had a fire drill? They did that for a reason. If there was a fire or other emergency everyone would know exactly what to do and how to do it. For that same reason you should have an emergency drill at least once or twice a year with your family.

You should not just talk about what to do in an emergency, but you should pretend there is a real emergency and carry out your plans. Have everyone go to their rooms and then turn on the fire alarm and tell everyone to get out without using the doors. See if everyone shows up at the designated meeting place.

Pretend there is an emergency, and you must leave your home. Set up tents in your yard or other location and live for a day without the luxuries you are used to. Do not go in your house for at least 24 hours. This exercise will help you to understand the challenges you will face in an emergency and help you to think of ways to be better prepared.

Another time you may want to practice what to do if everyone in the family is away from home when a disaster takes place. See if everyone can remember the communications plan and put it into effect. Use the communications plan to tell everyone where to go so that you can all meet up together. The important part is that you will learn much more about being prepared by having a dry run than by just sitting around the kitchen table talking about it.

With families fragmented during the day it is important that each member of the family has a method of communications. Many of our children have cell phones because it is very important that we can communicate. We might find in an emergency that our children will not be able to use their phones. It is recommended that families consider using Family Radio Service (FRS) radios. They are inexpensive and will provide communications for short distances. It is important that families practice using these radios or when they are needed, they will not work or they will have forgotten how to use them.

If you can integrate your family plan with others in your neighborhood this may help eliminate many problems that occur when children return to a home missing the parents. A little bit of planning can really help eliminate problems that may be hard to overcome in the first few hours of an incident.

In addition to preparing the family for emergencies, amateur radio operators must secure and ensure their amateur radio station is ready to operate during an emergency. A well prepared operator must ensure:

- Station is operational and can “weather” an emergency.
- Have a source of backup power for radio, lights, and environment (heat and cooling).
- Backup radios and antennas that can be quickly installed if the primary radio or antenna are damaged or inoperable. >more details in section 2-2.

FEMA has a couple of documents on their website to help families gather the needed information so that families can develop their family plans. Information needs to be assembled and each member of the family should have a wallet card that contains the contact information needed in case they are lost or separated from the family.

For resources to build this plan go to <https://www.ready.gov/plan>

## 2.2 Emergency Communications Volunteer

Only when the Emergency Communications Volunteer knows that the needs of their family have been met is it time to consider helping others that may need help. Preparation for helping as an Emergency Communications volunteer happens long before the event. Volunteers should have their Go kits assembled and ready for use at all times.

## 2.3 About Your “Go” Kit

Go Kits should contain basic equipment and supplies for the first 24 hours of an emergency.

**Radio Equipment:** Emergency Communicators at minimum are required to have a handheld (HT) 2 Meter radio for performing basic voice communications. Although HT radios are excellent for shadowing responders, they are not recommended for running a Net Control Station. They lack the power and endurance needed for this type of assignment. For this purpose, Emergency Communicators are encouraged to have a mobile that can support the 2 Meter band and if budgets allow 70 cm as well. It should be noted that as part of having a mobile, the Emergency Communicator needs to have all the accessories to adapt to many unexpected problems. As Emergency Communications evolve, they need to consider having capability in some of the following technologies: Packet Radio, Digital Voice, Amateur Radio Positioning System (APRS) and associated mapping software.

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

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

**Personal:** Include the staples: water 2 Liters per day for an adult, enough food for 24 hours; eating utensils. Shelter is also important. Here, you are only limited by the size of your kit and the thickness of your wallet. Some Hams plan to use their RVs as shelter, conditions permitting. Other disaster conditions may make the use of an RV impossible, so you should have several different plans for shelter. Light is important psychologically during an emergency. Make sure that you have several light sources available. Various battery-powered lights are available, and propane or gasoline-fueled lanterns are also good possibilities.

## 2.4 Basic 24 Hour Radio Go Kit Checklist

Item	Notes
2 Meter / 70 cm HT	Suitable for shadowing personnel.
Additional Antenna 12 - 18"	Stock antennas are generally inadequate.
Radio User Manuals or Cheat Sheet	You may need to change settings.
Headphones	Helps with a noisy environment. Only use in one ear.
AARC Field Operations Manual Ham Radio License, CERT Badge, Driver License	Information is vital.
Extra Batteries for 24 Hours of Operation	Can be battery packs or Alkaline batteries with proper carriers.
Appropriate Clothing	Safety vest, jacket, gloves
Food and Water	This is a 24-hour pack. A couple bottles of water and granola bars.
Maps of Area	Neighborhood, City, and State
Flashlight, Knife, Multi-Tool, Paper, Pen, Watch	
Cell Phone	
Small Backpack	Get a backpack for hand free use.
FRS / GMRS Radio (requires separate GMRS License)	So, you can work with neighborhood communications as well.
Ziplock / Waterproof Bags	
Medications	

## 2.5 Basic Long Term Deployment Go Kit Checklist

Personal Items		Operational Items	
Items	Notes	Items	Notes
Alarm Clock		Anderson 4-way Hub Minimum.	Fused if possible
All-purpose knife	Survival Knife Optional	Anderson Fused link 12-24"	ATO/ATC Fuses
Aluminum foil and plastic wrap		Anderson Power Pole Connectors	10 Pack 30 Amp
Aspirin / laxative and other over counter drugs		Anderson 12GA extension Cable 10'	



Change of clothes (1 week)		Anderson to Battery Clips	Insulated
Compass or GPS unit	4*	Anderson to Cigarette Lighter	Plug and Socket
First aid kit (Basic items)		Antennas, 1/4 W 2M	
Flashlight / Candles / Headlamp (LED)	Spare Batteries 4*	Antennas / Mast and associated hardware	
Foul weather gear (Poncho)		Area Map (Detailed)	
Gloves, Vest, and Safety Glasses		Batteries (Recommend 40-80AH)	1*
Liquid bleach to treat water / Sanitize		Coax 5', 50' with UHF (PL-259)	
Manual can opener		Electrical and Duct tape	
Mess kits or paper cups/plates & utensils	Cleaning Supplies	Extension (AC) Cord 25'	12GA Minimum
Money \$50-100 (one dollar bills)		Fuses: Assortment of ATO/ATC (Blade)	3*
Needle and thread		Headphones	
Photo ID		Inverter for power Laptop (rec Pure Sine Wave)	400-600 Watt
Portable, Battery-powered AM/FM radio	Extra Batteries 4*	Logbooks and forms	
Prescriptions (7-10 Days)		Paper, pens, and pencils	
Resealable plastic bags		Portable lighting	4*
Small canister, ABC-type fire extinguisher		Power supplies, chargers AC/Solar	
Small cooking stove / extra fuel		Programmable Scanner (EC Only)	Distraction
Snacks - Sugar, salt, pepper		FRS / GMRS Radio	4*
Supply of water (bottled water)	Adult requires 2L per day	RF Connectors Assortment PL-239	Note 2
Throat lozenges / hard candy		Safety glasses	
Toilet Paper / Personal Hygiene articles		Soldering iron and solder	(Self-Contained)
Waterproof matches and lighters		Volt Ohm Meter	
Food (MRE type)			

Notes:

- 1: You need to have enough battery to last 7 days unless you are reporting to a powered facility.
- 2: RF connectors: need to have adequate types to adapt your radios to served agency antenna configuration.
- 3: Recommend that you convert all power connections to Anderson Power and convert fuses where possible to ATO/ATC automotive blade type.
- 4: It is recommended that you standardize on one size of battery for all equipment.

## 2.6 Equipment and Tools Go Kit Checklist

Tools	<input checked="" type="checkbox"/>	Miscellaneous Items	<input checked="" type="checkbox"/>
Tool Kit			
Screwdrivers Assortment of Phillips / Flat Blade			
Pliers, Cutters (Diagonal)			
Adjustable Wrench			
Pocket Knife, Razor Knife			
Anderson Connector Crimper			
Tape (Electrical, Duct)			
String			
Rope 100'			




## 2.7 Food and Water Home, Vehicle, Work “Family & Personal Plan” Checklist

These lists are to help members to always be prepared for deployment. Remember that if you don't have your radio equipment (Grab-N-Go) this equipment may not be of value, unless the served agency or reporting location is equipped with radio gear.

Supplies	Home <input checked="" type="checkbox"/>	Vehicle <input checked="" type="checkbox"/>	Work <input checked="" type="checkbox"/>
Water			
Ready-to-eat meats fruits and vegetables			
Canned or boxed juices milk and soup			
High-energy foods such as peanut butter, jelly, low-sodium crackers, granola bars and trail mix.			
Vitamins			
Special foods for infants or persons on special diets			
Cookies and / or hard candy			
Instant chocolate, fruit drinks or Crystal Lite.			
Cereals			
Powdered milk			

## 2.8 Clothes and Bedding Family & Personal Plan Checklist

Although we hope we are never called to service away from home there will be those events that are local that will require a member to report directly to a served agency. You may be called upon in one of those events when the family is not at risk, and the served agency has submitted a request for support.

Item	Home 	Vehicle 	Work 
Complete change of clothes			
Sturdy shoes or boots			
Rain gear			
Hat and Gloves			
Socks			
Underwear			
Thermal underwear			
Sunglasses			
Blankets/sleeping bags and Pillows			

## 2.9 Document and Keys Family & Personal Plan Checklist

It is always a good idea to have critical documents for family members stored if you have to relocate during an event. It is always a good idea to always have these documents available. If that can be done electronically then that is fine.

Item	Stored
Personal identification (Driver's License)	

FEMA Training Credentials (Memory Stick)	
Cash and coins (Recommend \$50-100 in one-dollar bills)	
Credit cards	
Extra set of house keys and car keys	
Keep all vehicles in good running condition and keep tanks above ½.	
<p>Copies of the following: If you are required to relocate</p> <ul style="list-style-type: none"> <li>● Birth certificate</li> <li>● Marriage certificate</li> <li>● Driver's license</li> <li>● Social Security cards</li> <li>● Passports</li> <li>● Wills</li> <li>● Deeds</li> <li>● Inventory of household goods</li> <li>● Insurance papers</li> <li>● Immunization records</li> <li>● Bank and credit card account numbers</li> <li>● Stocks and bonds</li> </ul>	
Emergency contact list and phone numbers	
Rand McNally Map of State and surrounding areas / Cell Phone application of HEREWeGo (or equiv) with the State Of Texas map downloaded for offline use	

## 2.10 Forms Checklist

AARC members should have the following forms with them.

Item	Stored
AARC Field Operations Manual	
Emergency Network Band Plan or Band Plan	In AARC Field Operations Manual
Maps of West Valley City	In AARC Field Operations Manual
Map of Athens, State Of Texas and USA	

### 3.0 Activation

Disasters occur when they are least expected and usually when it could not be more inconvenient. They can be local in nature or larger in scope. As an AARC emergency communicator your services may be required during the initial indication that something has happened, you should make sure that your family is taken care of and that you are ready to be activated when the call comes.

During the initial stages of an Emergency, Police and Fire are dispatched and respond to the incident. These first responders will make the initial assessments and call for specific aid. Their first recommendation may be for more Police, Fire Trucks, Public utilities, Ambulance and Medical personnel, Hazardous material containment teams. Other specific agencies as needed will be notified and put on standby under their Emergency Plan, however given the ratio of emergency personnel to available resources, these agencies may be quickly overwhelmed. Social services become involved when people require food, clothing, and shelter. The Red Cross may be called if shelters are needed to be established.

AARC may officially be activated when called upon when our services are required by Governmental Officials. When an emergency occurs authorized emergency operators should try to contact Governmental Officials to obtain authorization to activate an Emergency Net. If authorized operators are unable to make contact with Governmental Officials then authorized emergency operators need to use common sense as to whether to activate a Net. AARC may also activate an Emergency NET but function in an information gathering capacity. Follow the steps below to determine if you are able to be activated and if so, how to proceed.

#### **Things to complete prior to responding as an K5EPH Emergency Volunteer**

Check that you are in good health and that your family is safe and secure.

Check that your property is safe and secure.

#### **Making Contact**

Initiate a personal radio log

Monitor **K5EPH 147.220 Mhz Repeater (Positive (+) 6 Khz, offset 136.5Hz Tone)** for instructions. If you are unable to reach Net control, check the backup frequency which is **146.9000 K5CCL Repeater (Negative (-) 6 KHZ offset 136.5Hz Tone)**. If you are still unable to reach Net control, start monitoring the Primary Valley frequencies found on the ICS-205 form and check for messages regarding AARC. Continue to cycle through these frequencies until you can reach Net control.

If a Net is established check into the Net when asked to. Let Net Control know of your status and availability.

If a Net is NOT established and Governmental Officials are unavailable, limit your communications primarily to information gathering. Keep decision making limited to organizing the Net until Governmental Officials are available.

Once Governmental Officials are available, remember that your responsibility is to receive and transmit information accurately and promptly. If you are asked by Officials to help with items not related to communications, and you feel comfortable doing it, please do. If you do not feel comfortable with the task, please explain this to the person making the request. Please keep in mind that operators must stay calm. If you are calm on the air, you have a better chance of keeping other operators calm. Encourage operators to remain patient as it will take time for emergency plans to be initiated. It may take a few hours to a few days for emergency responders to arrive on site. Correct inappropriate actions with patience and kindness. Operators may be a bit panicked, especially if someone is injured. Remind operators to refrain from talking in absolutes. Do not use phrases such as "Millions are injured" or "Everyone is dead."

**Deployment**

If deployed, find out if you will be assigned a tactical call sign if not, you will use your FCC call sign.

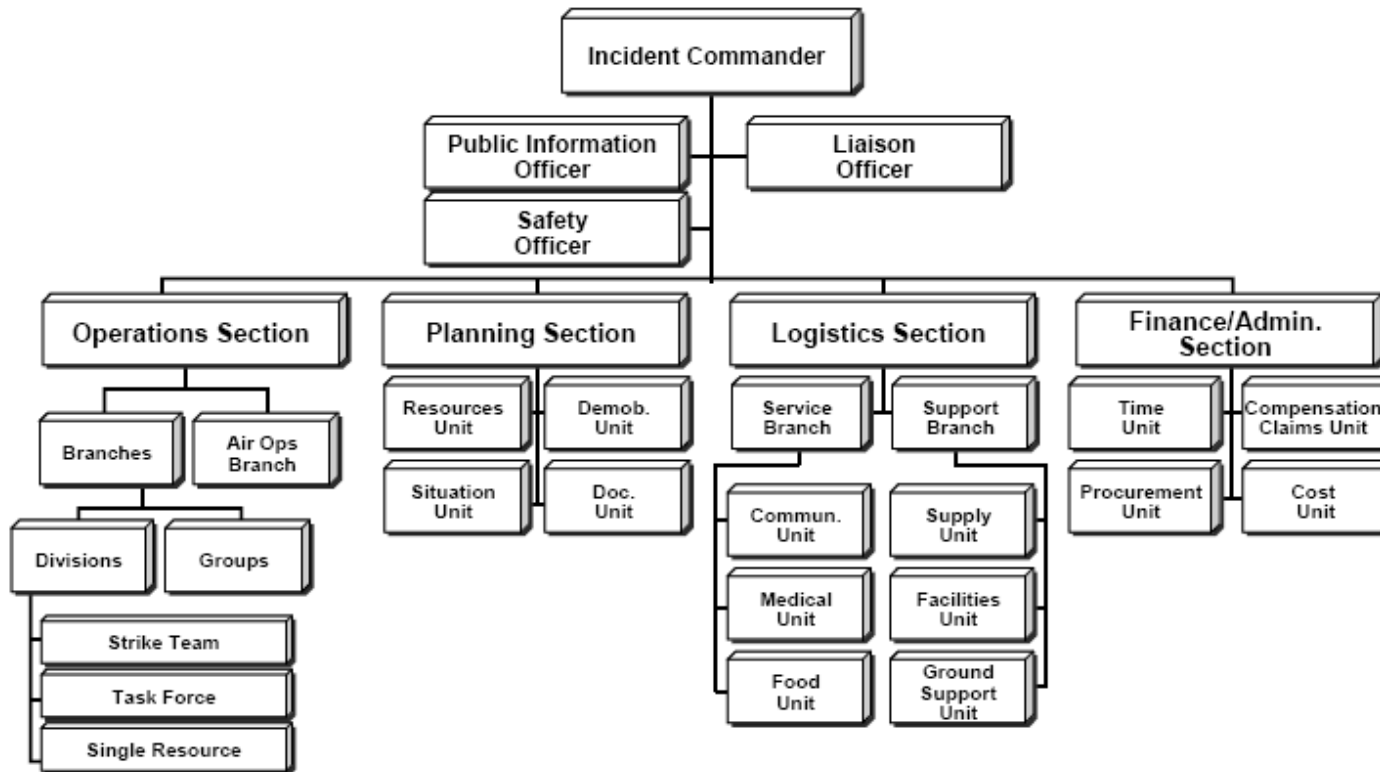
When a K5EPH member has been given an assignment to deploy, they should assemble equipment and report to the assigned location. Once on site you will need to report to the appropriate leadership for instructions as to where to set up as well as what services you are able to provide. Setup quickly and safely, contact Net control regarding your status and begin servicing the leadership at your location.

Contact Net Control if your status changes or there is a change in current operations that deviate from your assigned task.

Always monitor your assigned frequency. Notify Net Control if you will be unable to receive radio traffic. Examples would be the need to take a break, equipment maintenance, or relocation.



### 3.1 Incident Command System “ICS” Basic Organization Chart



## 4.0 Emergency Network Band Plan

AARC will use the **K5EPH 147.220 Khz Repeater (Positive (+) 6 Khz, offset 136.5Hz Tone)** as it's primary repeater frequency. As needed, we will use **146.900 Mhz CCARC Repeater (Negative (-) 6 KHZ offset 136.5Hz Tone)**. Refer to the ICS-205 form for additional frequencies.

#### 4.1 AARC ICS-101 Form

<b>1. Incident Name:</b>	<b>2. Date/Time Prepared:</b> <b>Date:</b> <b>Time:</b>
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#### 3. Basic Radio Channel Use

Ch#	Function	Channel Name	RX Freq	TX Freq	TX Tone	Mode A, D, M	Remarks
**	LSB Texas Emergency	Texas Emergency	7.240.00	7.240.00			
**	AARC Repeater	K5EPH	147.2200	147.8200	136.5 Hz	A	Primary Comms
**	2 Meter Call Simplex		146.520	146.520		A	Repeater Simplex
**	Henderson Cty ARES	K5CCL	146.9000	146.3000	136.5 Hz	A	Henderson, VZ, County ARES
**	Athens 70 cm Repeater	ETECS	442.850	447.850	136.5 Hz	A	
**	Winlink Packet	2M PKT	145.050	145.050		A	Node K2WVC-10
**	Winlink Packet	70 CM PKT	421.500	421.500	67 Hz	A	Node K2WVC-10
**	70 cm Call Simplex		446.000	446.000		A	
**	Weather Service Tyler, TX National Weather Service	WXK36	162.475			A	Monitor for Weather Alerts
**	ETECS Tyler, Tx SE	ETECS	146.960	146.360	136.5 Hz	A	Monitor
**	7290 Traffic Net	Varies By Net Control	7.290 LSB	7.290			<a href="https://www.7290trafficnet.org/_mgxrot/page_10749.html">https://www.7290trafficnet.org/_mgxrot/page_10749.html</a>
**	Edom Tx Repeater	ETECS	146.620	146.020	136.5	A	
**	LSB Texas ARES	Texas ARES	3.873.00	3.873.00			
**	LSB Texas ARES Health & Welfare	Texas Health & Welfare	3.935.00	3.935.00			
**	LSB Texas RACES Primary	Races Primary	7.248.00	7.248.00			

**	LSB Texas RACES Alternate	Races Alternate	3.975.00	3.975.00			
**	LSB Texas Emergency	Texas Emergency	7.250.00	7.250.00			
**	LSB Texas ARES Emergency Day	ARES Emergency Day	7.285.00	7.285.00			
**	LSB Texas ARES Health & Welfare	ARES Health & Welfare	7.290.00	7.290.00			

<b>4. Special Instructions</b>
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<b>Date/Time:</b>	<b>Incident Location: Athens City Hall</b>	<b>State: Texas</b>	<b>Lat: 32.205232</b>	<b>Long: -95.849578</b>
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<b>ICS 205</b>	<b>IAP Page: 1</b>	<b>5. Prepared By:</b>
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## 4.2 Winlink

Winlink is a worldwide radio email service that uses radio pathways where the internet is not present and can operate completely without the internet--automatically--using smart-network radio relays. Winlink provides its users email with attachments, position reporting, weather and information bulletins, and is well-known for its role in emergency and disaster relief communications. Licensed Winlink operators/stations use both amateur radio and government radio frequencies worldwide. WVCARC utilizes this system to send messages, forms, and attachments between different stations. We utilize both a 1200 baud, 2 Meter and 9600 baud 70 cm network. Our client of choice is Winlink Express as it supports all the features available on the Winlink network. However, alternative clients are acceptable. WVCARC members are encouraged to become proficient in the use of Winlink as well as the template / form functionality. Additional information regarding Winlink can be found at <http://www.winlink.org> as well as WVCARC's website <http://www.wvcarc.com>. Videos on Winlink can be found here: <https://www.youtube.com/playlist?list=PL-7mirT-kjfs84FQzLr-qv066Kl94rtYM>

Winlink and Packet data utilizes SSID's to access different services. K2WVC-10 and K2WVC-11 allow access directly to the Winlink server over the internet. K2WVC-1 and K2WVC-2 stores the messages directly on the node. Messages can then only be retrieved by connecting directly to that node. In an emergency K2WVC-1 on 145.050 should be used for local traffic and K2WVC-2 on 144.090 Mhz should be used as a backup. In order to receive a message on these nodes you need to connect to them first as this will automatically create a mailbox for you.

**Please take note of the frequency used when connecting to each node. Winlink email addresses can be found in the tactical call sign section.**

### 4.3 PiGate - Extending Communications to the Community

The PiGate is a small piece of hardware that can be brought into a disaster area, connected to an already existing VHF or HF amateur radio and antenna (like in your car or truck), and used to send email to the Winlink global email system through a Radio Message Server (RMS) station. The PiGate creates a Wifi hotspot that allows users to connect to it using a web browser, or an e-mail application, on their smartphone, tablet, or laptop. From there they can compose and send one-way email to their family and friends. The Winlink global e-mail radio service then routes the e-mail to any address in the world.

The PiGate is very small and has a very low power requirement, allowing it to be used in disaster situations without relying on any other services. Except for an external power requirement and a connection to a HF or VHF radio, it is completely self-contained.

#### Items Need

Radio - 2 meter Mobile preferred, name brand HT will also do.

Raspberry Pi - Pi 3b+ or Pi 4 model B.

TNC - TNC96k or similar

MicroSD Card - 8 GB or larger. Name brand such as Sandisk or Samsung

Battery - Size it to be able to run for 10 hours

More information on the PiGate as well as where to download the software can be found here: <http://www.pigate.net> Implementation is TBD

### 4.4 Tactical Call Signs

When tactical call signs are used properly by well-trained and practiced operators, they can prevent confusion, save a great amount of time, and aid in making a Net or operation run smoothly and efficiently. When used improperly, or with poorly trained and inexperienced operators, they will usually cause delays and confusion.

Typically, "tactical call signs" are used during disaster or other emergency situations to identify a specific location or a function. They are especially helpful when multiple operators are being rotated (in shifts) at stations such as a shelter, a net control station, or for a certain job/position (e.g. - logistics or "tech support"), or mobile units. Tactical call signs are also appropriate in regular (daily or weekly) public service, traffic, and other nets. Properly used, they provide training, practice, and experience.

#### 4.5 Fire Stations

Fire Stations / Tactical Call Sign	Winlink Address	Address
Athens EOC		
Fire Station		
Fire Station		
Fire Station		
Fire Station		
Fire Station		
Fire Station		

#### 4.6 Schools

School Name / Tactical Call Sign	Address

## 4.7 Standard Load

This is a standard programming sequence designed to make your radio operations faster and easier. It is also designed to give you local control over your own frequencies while somewhat standardizing channels and channel names county-wide.

Military and EMS personnel know that careful radio programming is essential to successful communications in emergency situations. Good communications in times of crisis can mean the difference between life and death or mitigating property losses.

In addition, in day-to-day operations and in training, having a common set of channel numbers and names will make it much easier for new operators to learn how to navigate the large number of frequencies that might be needed in an emergency. It is best to use a computer to program your radio. A digital copy of the Standard Load can be found online.

Channel	Receive Frequency	Offset Frequency	Name	CTCSS	Site Name
1					User Defined
2					User Defined
3					User Defined
4					User Defined
5					User Defined
6					User Defined
7					User Defined
8					User Defined
9					User Defined
10					User Defined

## 5.0 Operation Procedures

All AARC members are responsible for ensuring that they operate within the limitations of their FCC amateur radio license. They will also operate in compliance with the rules and regulations contained in Part 97 and abide by good amateur radio practices.

All stations will maintain a log of their activity during any activation. In addition, a log shall be maintained recording the identification of participating ERC members and their assignments.

## 5.1 Principles of Disaster Communication

1. Keep the transmit power level down. In a disaster, crucial stations may be weak. All other stations should remain silent unless they are called upon. If you're not sure you shouldn't transmit.
2. Monitor established Primary Valley Frequencies, see section 4.1. Many localities and some geographical areas have established disaster frequencies where someone is always (or nearly always) monitoring for possible calls.
3. Avoid spreading rumors. During and after a disaster situation, especially on the phone bands, you may hear almost anything. Unfortunately, much misinformation is transmitted. Rumors are started by expansion, deletion, amplification or modification of words, exaggeration, or interpretation. All addressed transmissions should be officially authenticated as to their source. These transmissions should be repeated word for word, if at all, and only when specifically authorized.
4. Authenticate all messages. Every message which purports to be of an official nature should be written and signed. Whenever possible amateurs should avoid initiating disaster or emergency traffic themselves. **We do the communicating; the agency officials we serve supply the content to be communicated.**
5. Strive for efficiency. Whatever happens in an emergency, you will find hysteria and some amateurs who are activated may feel that they must be sleepless heroes. Instead of operating your own station full time at the expense of your health and efficiency, it is much better to serve a shift at one of the best-located and best-equipped stations, suitable for the work at hand, manned by relief shifts of the best-qualified operators. This reduces interference and secures well-operated stations.
6. Select the mode and band to suit the need. It is a characteristic of all amateurs to believe that their favorite mode and band is superior to all others. However, the merits of a particular band or mode in a communications emergency should be evaluated impartially with a view to the appropriate use of each band and mode. There is, of course, no alternative to using what happens to be available, but there are ways to optimize available communications.
7. Use all communication channels intelligently. While the prime object of emergency communications is to save lives and property (anything else is incidental), Amateur Radio is a secondary communication means; normal channels are primary and should be used if available. Emergency channels other than amateur which are available in the absence of amateur channels should be utilized without fear of favoritism in the interest of getting the message through.
8. Do not "broadcast." Some stations in an emergency tend to emulate "broadcast" techniques. While it is true that the general public may be listening, our transmissions are not and should not be made for that purpose.

## 5.2 Message Precedence

**EMERGENCY**--Any message having life and death urgency to any person or group of persons, which is transmitted by Amateur Radio in the absence of regular commercial facilities. This includes official messages of welfare agencies during emergencies requesting supplies, materials, or instructions vital to relief to stricken populace in emergency areas. On CW, RTTY, AMTOR and packet this designation will always be spelled out. When in doubt, do not use this designation.

**PRIORITY**--Use abbreviation P on CW, RTTY, AMTOR and packet. This classification is for important messages having a specific time limit, official messages not covered in the emergency category, press dispatches and emergency-related traffic not of the utmost urgency.

**WELFARE**--This classification, abbreviated as W on CW, RTTY, AMTOR and packet, refers to 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. Welfare traffic is handled only after all emergencies and priority traffic is cleared. The Red Cross equivalent to an incoming Welfare message is DWI (Disaster Welfare Inquiry).

**ROUTINE**--Most traffic in normal times will bear this designation. In disaster situations, traffic labeled Routine (R on CW, RTTY, AMTOR and packet) should be handled last, or not at all when circuits are busy with higher-precedence traffic.



### 5.3 CANS Reports (Conditions, Actions, Needs, and Status)

The Conditions, Actions, Needs, and Status or CANS report is a concise bandwidth efficient method of providing a report from an assigned post. This method is taught in the Community Emergency Response Team course or CERT and is used in the incident command system. The goal is to report, in a quick, organized fashion, the overall situation. Not all 4 parts need to be given on each report. Only the ones that make sense.

**Conditions** are what you see, hear, and smell, your location, etc.

**Actions** are what you or others in the group are going to do in response to the conditions or to complete the assignment.

**Needs** are the easiest to understand. What is lacking that you can't solve with persons and resources on hand. You need someone or something that is not now available.

**Status** is the status of you, your team, victims, or participants.

CANS are more like guidelines than rules. They may not fit all situations. The purpose of the CANS report is to help you when you're in a stressful situation. That's the time when you might forget to provide one or more of your Conditions, Actions, Needs and Status. Follow CANS and you'll be giving the information that net control needs to support you.

### 5.4 Net Control Station

All directed nets will be managed by a Net Control Station (NCS). All net traffic will go through and be directed by the NCS. No station-to-station communications are permitted unless authorized by the NCS. The NCS may designate an Alternate Net Control Station (ANCS) to relieve or assist the NCS as may be necessary. The NCS and ANCS must keep complete logs of all traffic on the net.

### 5.5 Types of Emergency Nets

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

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

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

**Open and Closed Nets** -- A net may operate as an Open or "free from" net, or as a closed net where a net control station is used to control the flow of transmissions on the channel. Typically, when the amount of traffic is low or sporadic a net control isn't required, and an Open net is used. Stations merely listen before they transmit. When a net is declared a "closed" net, then all transmissions must be directed by the Network Control Station.

## 5.6 Emergency Net Preamble and Instructions

Attention all stations. Attention all stations. This is station: <<FCC Callsign>>, activating the Athens Amateur Radio Communications Net K5EPH. We will be operating under the call-sign K5EPH. This Tactical Net is for supporting Emergency Operations Centers located in the Henderson County Areas.

The Henderson County Emergency Communications net has been activated to assist with this emergency: (Describe the event and say only what you know for a fact. DO NOT SPECULATE about what happened).

At this time, I would like to know who is available to accept an Emergency Communications assignment. Only those who are available for assignment should give their call sign at this time. Please give your callsign using ITU phonetics, your current location, status, if you are able to deploy, or if you will be operating from your home location. Please note your equipment capability. I will now take station call signs one at a time:

---Record call signs on operator roster.

The situation is: This net will support Emergency Operation Center activities associated with: (Event Name). This Tactical Net is designed to support the response capabilities of <<Served Agency Name>>.

Are there any stations with EMERGENCY traffic at this time please come one at a time?

This is station Call Sign or Tactical Call: \_\_\_\_\_ acting as Net Control.

**5.7 Operator Roster**

Call Sign	Name	Location	Mobile	HT	Capability	Deployable	Status In / Out
Call Sign	Name	Location	Mobile	HT	Capability	Deployable	Status In / Out

<b>Call Sign</b>	<b>Name</b>	<b>Location</b>	<b>Mobile</b>	<b>HT</b>	<b>Capability</b>	<b>Deployable</b>	<b>Status In / Out</b>

### 5.8 Deployment Roster

Date			
Time	Call Sign	Task	Completed Time
Time	Call Sign	Task	Completed Time


### 5.9 ICS-213 Message Form

Transmitted By Callsign:		Check:		Return Receipt: Yes / No	Message #	
--------------------------	--	--------	--	--------------------------	-----------	--

To:		Position:	
From:		Position:	
Subject:		Date:	
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>			

Received By Callsign:		Received Date Time:	___/___/___ __:___
Delivered By:		Received Date Time:	___/___/___ __:___

*For clarity in conveying voice traffic, phonetics should be used whenever circumstances dictate and the ITU phonetics must be employed.*

## 5.10 ITU Phonetic Alphabet

A--Alpha	G--Golf	M--Mike	S--Sierra	Y--Yankee
B--Bravo	H--Hotel	N--November	T--Tango	Z--Zulu
C--Charlie	I--India	O--Oscar	U--Uniform	
D--Delta	J--Juliet	P--Papa	V--Victor	
E--Echo	K--Kilo	Q--Quebec	W--Whiskey	
F--Foxtrot	L--Lima	R--Romeo	X--Xray	

## 5.11 Keywords (Prowords) used in voice communications

The following words are used by all voice operators during both exercises and emergencies. Note that all use of jargon and “Q” signals are discouraged. All voice communications must be done in plain language ONLY. Please observe the following keywords. Typically, most amateurs use these words every day however, if you are not in the habit of using them then please be mindful of them when using voice communications during operations.

Affirmative	“Yes” or “Permission Granted”
All After	Repeat all your transmission after....
All Before	Repeat all your transmission before...
Break	“I wish to stop your transmission” Also used at the end of address and at end of text in message handling to enable repeats to be requested. Also used to terminate messages with one station and start a message to another during the transmission. For instance, “Thank you N5ORO for your report. Break KJ6SIF: are you ready to copy?”
Break Break	(Double break) This is used when a station has very time sensitive / critical emergency traffic that must be passed on frequency. Stations hearing a double break must relinquish the frequency immediately to the calling station.
Clear	“Transmission to this station is completed” This station is now free to establish communication with another station.
Correct	“You are _____” or “That is _____”
Disregard	The transmission was in error. Disregard it.



From	This is from station.....
Go Ahead	Begin sending . Used the same as "Over"
Initial	A single letter or initial follows.
I Spell	I will spell the next word.
Negative	Not received or NO.
Out	End of transmission. No response expected.
Over	End of transmission. Awaiting your response.
Read Back	Repeat the entire message.
Roger	Have received the last transmission. Does NOT mean Affirmative.
Say Again	Repeat last transmission
Stand By	I will monitor or Please Monitor.
This is	This is station....
Verify	Verify the entire message with addresses.
Wilco	I will comply or Will do.

## 5.12 The R-S-T System

<p><b>Readability</b></p> <ul style="list-style-type: none"><li>1 -- Unreadable</li><li>2 -- Barely readable, occasional words distinguishable</li><li>3 -- Readable with considerable difficulty.</li><li>4 -- Readable with practically no difficulty.</li><li>5 -- Perfectly readable.</li></ul>	<p><b>Tone</b></p> <ul style="list-style-type: none"><li>1 -- Sixty cycle A.C. or less, very rough and broad.</li><li>2 -- Very rough A.C., very harsh and broad.</li><li>3 -- Rough A.C. tone, rectified but not filtered</li><li>4 -- Rough note, some trace of filtering.</li><li>5 -- Filtered rectified A.C. but strongly ripple-modulated</li><li>6 -- Filtered tone, trace of ripple modulation.</li><li>7 -- Near pure tone, trace of ripple modulation.</li><li>8 -- Near perfect tone, slight trace of modulation.</li><li>9 -- Perfect tone, no trace of ripple or modulation of any kind.</li></ul>
<p><b>Signal Strength</b></p> <ul style="list-style-type: none"><li>1 -- Faint signals, barely perceptible.</li><li>2 -- Very weak signals.</li><li>3 -- Weak signals.</li><li>4 -- Fair signals.</li><li>5 -- Fairly good signals.</li><li>6 -- Good signals.</li><li>7 -- Moderately strong signals.</li><li>8 -- Strong signals.</li><li>9 -- Extremely strong signals.</li></ul>	

## 5.13 Principles of Repeater Operation

Use minimum power, otherwise, especially in heavily populated areas, you run the risk of keying more than one repeater, thus causing unnecessary interference. Low power also conserves batteries. Use simplex, whenever possible.

Observe the "pause" procedure between exchanges. When it is your turn to transmit, after the transmitting station stands by, count to two or three before pressing your transmit switch. Listen much, transmit a little. Announce your presence on a repeater when you are certain of being able to assist in an emergency, and don't tie it up with idle chatter. Monitor local ARES net frequencies, when otherwise not busy. Think before you talk. Anyone with an inexpensive public-service-band receiver can monitor. Stick to facts, control your emotions. Remember, during an emergency is the time when you are most apt to act and speak rashly. Articulate, don't slur. Speak close and talk across the mike not into it. Keep your voice down. In an emergency situation one often gets excited and tends to shout. Talk slowly, calmly. This is the mark of an experienced communicator.

### 5.13.1 Repeater Offsets Standards

2 Meter = 600 kHz Example: DUP- Receive on 146.220 Transmit on 147.820 DUP+

70 CM = 5 MHz = Example DUP- Receive on 447.00 Transmit on 442.00 DUP+ Receive on 442.00 Transmit on 437.00

### 5.13.2 Repeater Offset Direction

Frequency Range	Duplex Direction
145.200-145.495 146.610-146.995	DUP -
147.000-147.395	DUP +
442.000-444.995	DUP +
447.000-449.995	DUP -

### 5.13.3 CTCSS Subaudible Tone Frequency List

67.0	77.0	88.5	100.0	114.8	131.8	151.4	165.5	177.3	189.9	203.5	225.7	250.3
69.3	79.7	91.5	103.5	118.8	136.5	156.7	167.9	179.9	192.8	206.5	229.1	254.1
71.9	82.5	94.8	107.2	123.0	141.3	159.8	171.3	183.5	196.6	210.7	233.6	
74.4	85.4	97.4	110.9	127.3	146.2	162.2	173.8	186.2	199.5	218.1	241.8	

### 5.13.4 FRS and GMRS Frequencies

Channel	Type	Frequency	Power	Channel	Type	Frequency	Power
1	FRS / GMRS	462.5625 Mhz	2 / 5 watts	12	FRS / GMRS	467.6625 Mhz	.5 / .5 watts
2	FRS / GMRS	462.5875 Mhz	2 / 5 watts	13	FRS / GMRS	467.6875 Mhz	.5 / .5 watts
3	FRS / GMRS	462.6125 Mhz	2 / 5 watts	14	FRS / GMRS	467.7125 Mhz	.5 / .5 watts
4	FRS / GMRS	462.6375 Mhz	2 / 5 watts	15	GMRS	462.5500 Mhz	50 watts
5	FRS / GMRS	462.6625 Mhz	2 / 5 watts	16	GMRS	462.5750 Mhz	50 watts
6	FRS / GMRS	462.6875 Mhz	2 / 5 watts	17	GMRS	462.6000 Mhz	50 watts
7	FRS / GMRS	462.7125 Mhz	2 / 5 watts	18	GMRS	462.6250 Mhz	50 watts
8	FRS / GMRS	467.5625 Mhz	.5 / .5 watts	19	GMRS	462.6500 Mhz	50 watts
9	FRS / GMRS	467.5875 Mhz	.5 / .5 watts	20	GMRS	462.6750 Mhz	50 watts
10	FRS / GMRS	467.6125 Mhz	.5 / .5 watts	21	GMRS	462.7000 Mhz	50 watts
11	FRS / GMRS	467.6375 Mhz	.5 / .5 watts	22	GMRS	462.7250 Mhz	50 watts

### 5.13.5 MURS Frequencies

Channel	Frequency	Authorized Bandwidth
1	151.820 Mhz	11.25 kHz
2	151.880 Mhz	11.25 kHz
3	151.940 Mhz	11.25 kHz
4	154.570 Mhz	20.00 kHz
5	154.600 Mhz	20.00 kHz

## 6.0 US Amateur Radio Bands

Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/plc-database-amateur-notification-process/>. You need only register once for each band.

**2,200 Meters (135 kHz)**  
135.7 kHz 1 W EIRP maximum 137.8 kHz E,A,G

**630 Meters (472 kHz)**  
5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.  
472 kHz 479 kHz E,A,G

**160 Meters (1.8 MHz)**  
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz.  
1.800 1.900 2.000 MHz E,A,G

**80 Meters (3.5 MHz)**  
3.500 3.600 3.700 4.000 MHz E,A,G  
3.525 3.600 3.800 (200 W) N,T

**60 Meters (5.3 MHz)**  
CW, 5332 5348 5358.5 5373 5405 kHz E,A,G  
Dig 2.8 kHz (100 W)  
USB 5330.5 5346.5 5357.0 5371.5 5403.5 kHz

General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.

**40 Meters (7 MHz)**  
ITU 1.3 and FCC region 2 west of 130° west or below 20° north  
7.000 7.075 7.100 7.300 MHz E,A,G  
7.175 N,T (200 W)  
7.025 7.125 N,T (200 W)  
See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.

**30 Meters (10.1 MHz)**  
Avoid interference to fixed services outside the US.  
200 W PEP  
10.100 10.150 MHz E,A,G

**20 Meters (14 MHz)**  
14.000 14.150 14.350 MHz E,A,G  
14.025 14.150 14.225 E,A,G

**17 Meters (18 MHz)**  
18.068 18.110 18.168 MHz E,A,G

**15 Meters (21 MHz)**  
21.000 21.200 21.450 MHz E,A,G  
21.225 N,T (200 W)  
21.025 21.200 N,T (200 W)

**12 Meters (24 MHz)**  
24.890 24.930 24.990 MHz E,A,G

**10 Meters (28 MHz)**  
28.000 28.300 29.700 MHz E,A,G  
28.000 28.500 N,T (200 W)

**6 Meters (50 MHz)**  
50.1 50.0 54.0 MHz E,A,G,T

**2 Meters (144 MHz)**  
144.1 144.0 148.0 MHz E,A,G,T

**1.25 Meters (222 MHz)**  
219.0 220.0 222.0 225.0 MHz E,A,G,T  
N (25 W)

**70 cm (420 MHz)\***  
420.0 450.0 MHz E,A,G,T







**33 cm (902 MHz)\***  
902.0 928.0 MHz E,A,G,T

**23 cm (1240 MHz)\***  
1240 1300 MHz E,A,G,T  
N (5 W)  
1270 1295

All licensees except Novices are authorized all modes on the following frequencies:  
 2300-2310 MHz 10.0-10.5 GHz ‡ 122.25-123.0 GHz  
 2390-2450 MHz 24.0-24.25 GHz 134-141 GHz  
 3300-3500 MHz 47.0-47.2 GHz 241-250 GHz  
 5650-5925 MHz 76.0-81.0 GHz All above 275 GHz

‡ No pulse emissions

**KEY**  
**Note:**  
 CW operation is permitted throughout all amateur bands.  
 MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.  
 Test transmissions are authorized above 51 MHz, except for 219-220 MHz

 = RTTY and data  
 = phone and image  
 = CW only  
 = SSB phone  
 = USB phone, CW, RTTY, and data.  
 = Fixed digital message forwarding systems only

E = Amateur Extra  
 A = Advanced  
 G = General  
 T = Technician  
 N = Novice

See *ARRLWeb* at [www.arrl.org](http://www.arrl.org) for detailed band plans.

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## 8.0 Flow Chart

