Joint Communications Task Force

PACE PLAN

for Community, Neighborhood

and Family / Household

ESF-2 Emergency Communications

v 1.7

November 22. 2024

Contents

Purpose

The purpose of this document is to establish resilient communications plans for individuals, families, and local organizations, as well as for Joint Communications Task Force (JCTF) members across the country. The PACE templates address four methods (Primary, Alternate, Contingent, and Emergency) and are shown as both the Basic and Advanced plan.

- The Basic Plan is intended for individuals to use with their families and/or communities and local organizations. Specifically tailored requirements will determine the technologies used. For the Basic plan, there are two versions:
    - One to be used by licensed amateur radio operators (Basic Ham Plan)
    - One to be used by non-licensed participants (Most common scenario), referred to as the Basic Individual/Community Plan.
- The Advanced Plan is intended for a larger audience (Nationwide JCTF members) and is best utilized when members have an amateur radio license.
- A checklist is also provided; this list highlights a path that users can follow to become better acquainted with local emergency services and volunteer efforts.

How to Use This Document

1. Refer to the Basic Plan framework and develop an individual plan for family use.
    a. Create and share the PACE plan with all family members. Ensure **everyone** understands how to use the different communication methods.
    b. Practice using the Alternate and Contingency methods occasionally so everyone is familiar with them.
    c. Establish backup meeting points and times in case communication methods fail altogether.
2. Using the Basic Plan framework, create a plan for your local organization if needed.
3. Refer to the JCTF checklist to learn about next steps for JCTF members.
4. Refer to the Advanced Plan framework and participate in communication exercises as needed.

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Considerations

Geographic Area: Basic PACE plans are simpler for small geographic areas; larger areas will require different approaches.

Technology: Some items, such as AM/FM radios and cell phones, are easily accessible. Other items, such as GMRS, VHF/UHF, or HF radios require advance purchase and familiarization. HF Digital apps such as Winlink and JS8 require a computer and interface. Help is available through your local Ham club or the EMCOMM Work Group.

Training & License Requirements: Become familiar with the devices ahead of time; some devices, such as VHF/UHF or HF equipment require a license after passing an exam while other devices, such as GMRS radios, require a fee-only license.

Practice: Don't wait until the emergency occurs; practice the plan with your family members and ensure that each member knows how to communicate according to your plan.

Customize for Your Needs: This plan is merely a framework; customize the template for your needs. One group may implement satellite communications as an alternate method, while another group may choose to use handheld CB radios or use different methods entirely. Many cell phones now allow limited satellite communications in emergencies.

Basic PACE Plan

Basic Ham Plan – Used If All Participants DO Have an Amateur Radio License

	Method	Device	Note	Trigger
Monitor	Monitor AM/FM (NOAA or ESA) or shortwave radio broadcasts	Shortwave Radio, AM/FM radio, VHF/UHF radios	Dual-band hand VHF/UHF transmitters (HTs) can also monitor NOAA broadcasts. In times of emergency, emergency info will be broadcast on NOAA frequencies. Refer to Appendix A2.	N/A
PRIMARY	This is the go-to method that family members use as a daily solution.	Cell Phone	Use SMS instead of voice.	N/A
ALTERNATE	Activate and attempt communication using Zello.	Cell Phone	Need to install Zello on phone; will not work if cell service and Wi-Fi are down. Refer to Appendix A1.	Activate when Primary fails.
CONTINGENCY	Switch the VHF radio on and place on pre-selected frequency. At ten minutes past the hour, attempt to establish communication for five minutes. If there is no response on primary frequency, switch to alternate frequency and repeat the procedure for five minutes. If there is no response, switch the radio off and repeat this procedure every hour at ten minutes past the hour.	Amateur Radio	Requires at least a Tech license and hand transceiver (HT). Refer to Appendix A5.	Activate when Alternate fails.
EMERGENCY	This is the last-resort method when the others fail. Travel to predesignated location. If able to do so safely.	Time/Place	Example: "If I am not there exactly at 1200 hrs, wait 60 min; if you have not heard from me, start making appropriate inquiries." After two hours, if no contact, notify emergency services."	Attempt Contingency for three hours. If no contact, switch to Emergency.

Basic Community Plan – Used If All Participants DO NOT Have an Amateur Radio License

	Method	Device	Note	Trigger
Monitor	Monitor AM/FM (NOAA or ESA) or shortwave radio broadcasts.	Shortwave Radio, AM/FM radio, VHF/UHF radios	Dual-band hand VHF/UHF transmitters (HTs) can also monitor NOAA broadcasts. In times of emergency, emergency info will be broadcast on NOAA frequencies. Refer to Appendix A2.	N/A
PRIMARY	This is the go-to method that family members use as a daily solution.	Cell Phone	(1) Use SMS instead of voice. (2) Use email as backup.	N/A
ALTERNATE	Activate and attempt communication using Zello	Cell Phone	Need to install Zello on phone; will not work if cell service and Wi-Fi are down. Refer to Appendix A1.	Activate when Primary fails.
CONTINGENCY	Activate and attempt communication on agreed-upon GMRS channel	GMRS Radio	Requires GMRS radio and license (Fee only, no testing required). Only effective within a few miles unless repeaters are used. Refer to Appendix A10.	Activate when Alternate fails.
EMERGENCY	This is the last-resort method when the others fail. Travel to predesignated location. If able to do so safely.	Time/Place	"If I am not there exactly at 1200 hrs, wait an hour and at 1300 hrs, if you have not heard from me, start making appropriate inquiries." And, "by 1400 hrs, if no contact, notify emergency services."	Attempt Contingency for three hours. If no contact, switch to Emergency.

JCTF Checklist

Purpose: To better participate in the Advanced PACE plan and to better serve your local community, you can pursue the following objectives:

1	Install Zello and participate in the monthly JCTF Zello net. Refer to Appendix A1.
2	Earn the Technician amateur radio license. Refer to Appendix A8.
3	Complete ICS 100 Refer to Appendix A7.
4	Complete ICS 200 Refer to Appendix A7.
5	Complete ICS 700 Refer to Appendix A7.
6	Complete ICS 800 Refer to Appendix A7.
7	Obtain a VHF/UHF dual band hand transceiver (HT).
8	Research and manually document your local relevant VHF/UHF repeaters and additional frequencies in case of emergency; also program them into your HT.
9	Locate and monitor your local ARES or SKYWARN repeater.
10	Locate your local ARES affiliated club and attend a meeting.
11	Attend and participate in a local Field Day or Parks On The Air (POTA) activation.
12	Install Winlink and join the JCTF Winlink group. Refer to Appendix A6.
13	Install JS8Call and join the JCTF JS8Call net. Refer to Appendix A11.
14	Introduce yourself to local emergency response/first responder organizations and determine how to best volunteer in case emergency communications are required.
15	Pursue and obtain General or Amateur Extra licenses; either will enable you to communicate on HF bands and provide you with additional options for long-range communications. Refer to Appendix A8.

Advanced PACE Plan

Purpose: A PACE plan for nationwide use ensures that communication can continue in the event of widespread disruptions, such as natural disasters, cyberattacks, or other crises affecting a country's infrastructure. This plan is scalable to cover different regions and large areas across the country, utilizing various layers of communication technology.

Audience: JCTF members located across the country. Information communicated via the Advanced plan can then be communicated to local organizations via the Basic Plan.

	Method	Device	Note	Trigger
Monitor	Monitor AM (NOAA or ESA) or shortwave radio broadcasts, as well as JCTF email communications.	Shortwave Radio, PC or Cellphone	Dual-band hand VHF/UHF transmitters (HTs) can also monitor NOAA broadcasts. In times of emergency, emergency info will be broadcast on NOAA frequencies. Refer to Appendix A2.	N/A
PRIMARY	Activate Zello net.	Cell Phone	Need to install Zello on phone; will not work if cell service and Wi-Fi are down. Refer to Appendix A1.	N/A
ALTERNATE	Contact Workgroup via JS8Call.	PC & Internet or PC & HF Transceiver if internet not available.	Refer to Appendix A11.	Activate when Primary fails.
CONTINGENCY	Contact Workgroup via Winlink.	PC & Internet or PC & HF Transceiver if internet not available.	Refer to Appendix A6.	Activate when Alternate fails.
EMERGENCY	Contact via SSB	HF Transceiver	Need to determine bands & frequencies to be used for voice communications. Will also need to designate a central U.S. contact (Or several) for relays.	Attempt Contingency for three hours. If no contact, switch to Emergency.

Next Steps

1) Basic Individual/Community Plan:
    a. Print and store a hard copy of this plan; in case you have no commercial power, a printed copy will be invaluable.
    b. Individually implement the Basic plan as needed.
    c. Practice the plan with all family/organization members on a repeatable basis.

2) JCTF Checklist
    a. Pursue completing the JCTF Checklist.
    b. As part of the checklist, pursue obtaining an amateur radio license, which will enable you to use the Advanced PACE Plan (Refer to Appendix A8).

3) Advanced Plan:
    a. Finalize technologies and frequencies to be used.
    b. Produce a test plan and recruit volunteers to serve as Net Control.
    c. Test each step on a routine basis.

Appendices

A1. Zello - A Communications Tool you can use RIGHT NOW WITHOUT A LICENSE

Zello is a cell phone app and is internet dependent so it is not the 'ultimate' black sky solution, but it will come in handy for local and regional disasters. It provides very worthwhile operating experience too!

1. Install the Zello app on your cell phone, available in both the Apple App Store and Google Play Store.
    - The free app is all you need – no need to install "Zello Work"
    - Be careful not to mistake Zello with the Zelle online payment app or the Zillow Real Estate app.
    - Deny all requests for access to your personal data – the app will work fine.
    - The app is easy to install and use but if you love to read tech manuals, user guides can be found at:
    - https://support.zello.com/hc/en-us/articles/17578715747981-Zello-iPhone-User-Guide
    - https://support.zello.com/hc/en-us/articles/17954095093389-Zello-Android-User-Guide

2. Set up a Zello channel for your neighbors, your team(s), your family and friends.
    - Click on "Channels" then on the blue circle in the lower right-hand corner
        - Select "Create a new channel" then follow the prompts.
        - **Encourage all channel members to protect the identity of the channel name and channel members!**
    - Become thoroughly familiar with the resources and suggestions available at www.ready.gov especially the family communications plans.
    - Do periodic test calls among family members for proficiency.

Don't get too creative when selecting a username. It could be awkward when requesting assistance in a disaster area and might even get you ignored! A good convention would be "First Initial, Last Name, City, State" (e.g., "R Jones – Chicago, IL")

There are other Push-to-talk (PTT) cell phone apps and even other technologies (e.g., FRS & GMRS, Citizens Band) that can serve this same purpose, perhaps some are even better than Zello but your ultimate goal should be to **…**

> Obtain your FCC Amateur Radio License and focus on the true Black Sky solutions! <

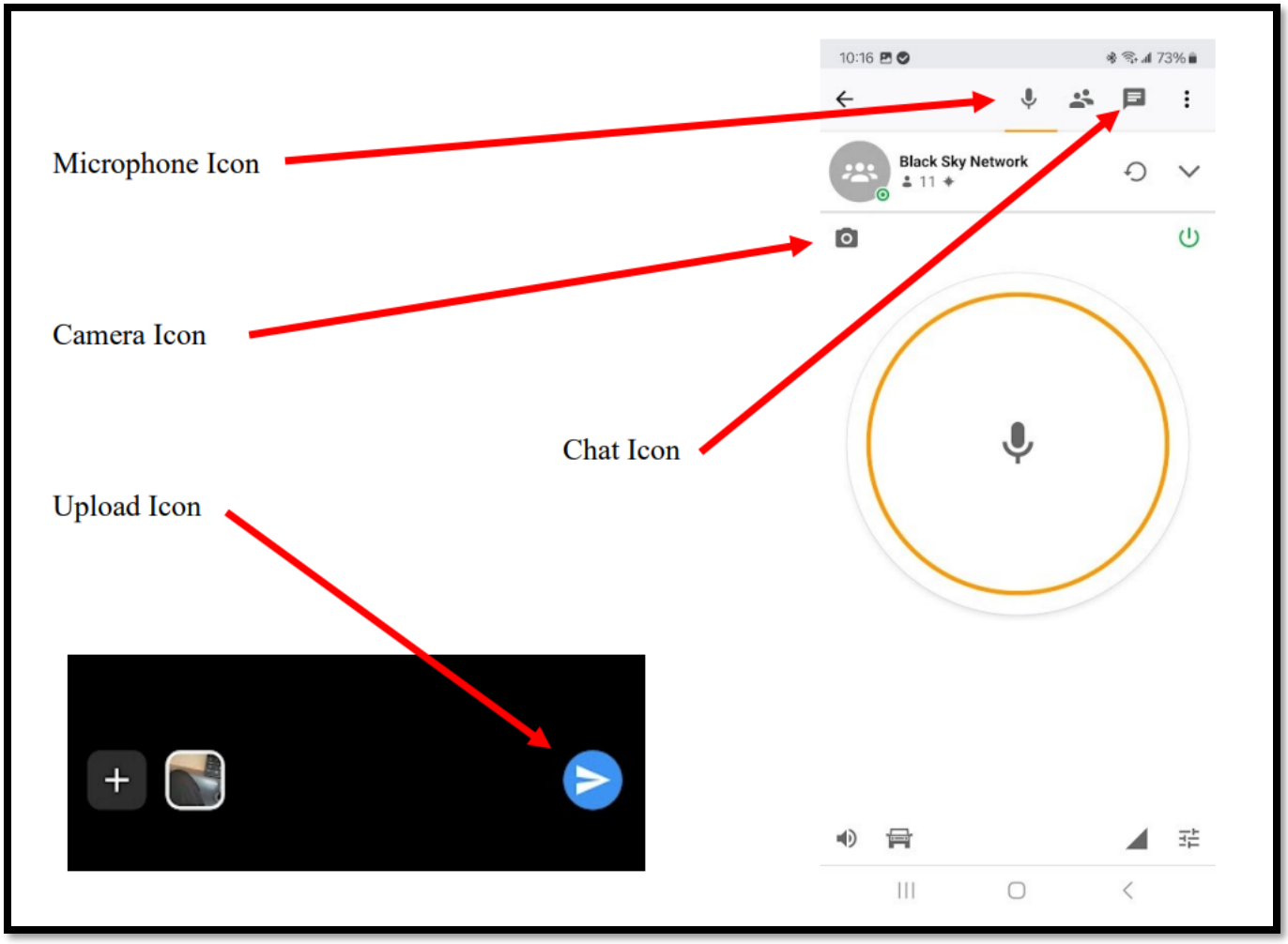
The JCTF Emergency Communications current plan is to conduct the Zello check in net on the fourth Wednesday of each month beginning January 24th, 2024 at 8 PM eastern, 5 PM Pacific. **For those who cannot participate at that time, you can send a text within Zello to check in one hour before the net and up to 9:30 PM Eastern to get 'mapped' for that net.** Your message should include you first & last names, city & state. Be on the lookout for group meeting and Zello Net announcements.

- Ask your Task Force or Team Leader for the specific name and QR Code (optional) for ***your*** team's Channel name.

See below for how to share pictures within the Zello app.

Taking pictures within the Zello App:

1. Select the user or channel with whom you want to share the picture.
2. Go to the MIC page if you're not already there (select the microphone icon at the top of the page. It should look like this:)
3. Select the Camera Icon.
4. That should open the camera app on your phone – take the shot you want to share.
5. Hit the upload (right arrow) icon in the bottom right of the camera app.
6. Open the chat – your picture should be there.
7. To delete – Press and hold the picture. You'll get a screen that gives you the choice to delete the message (the pic you just added or your last message) or to delete all messages.



A2. Nationwide Alert Monitoring – Finding News & Information Post-Disaster

FEMA's Integrated Public Alert & Warning System (IPAWS) is a nationwide system for local alerting that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

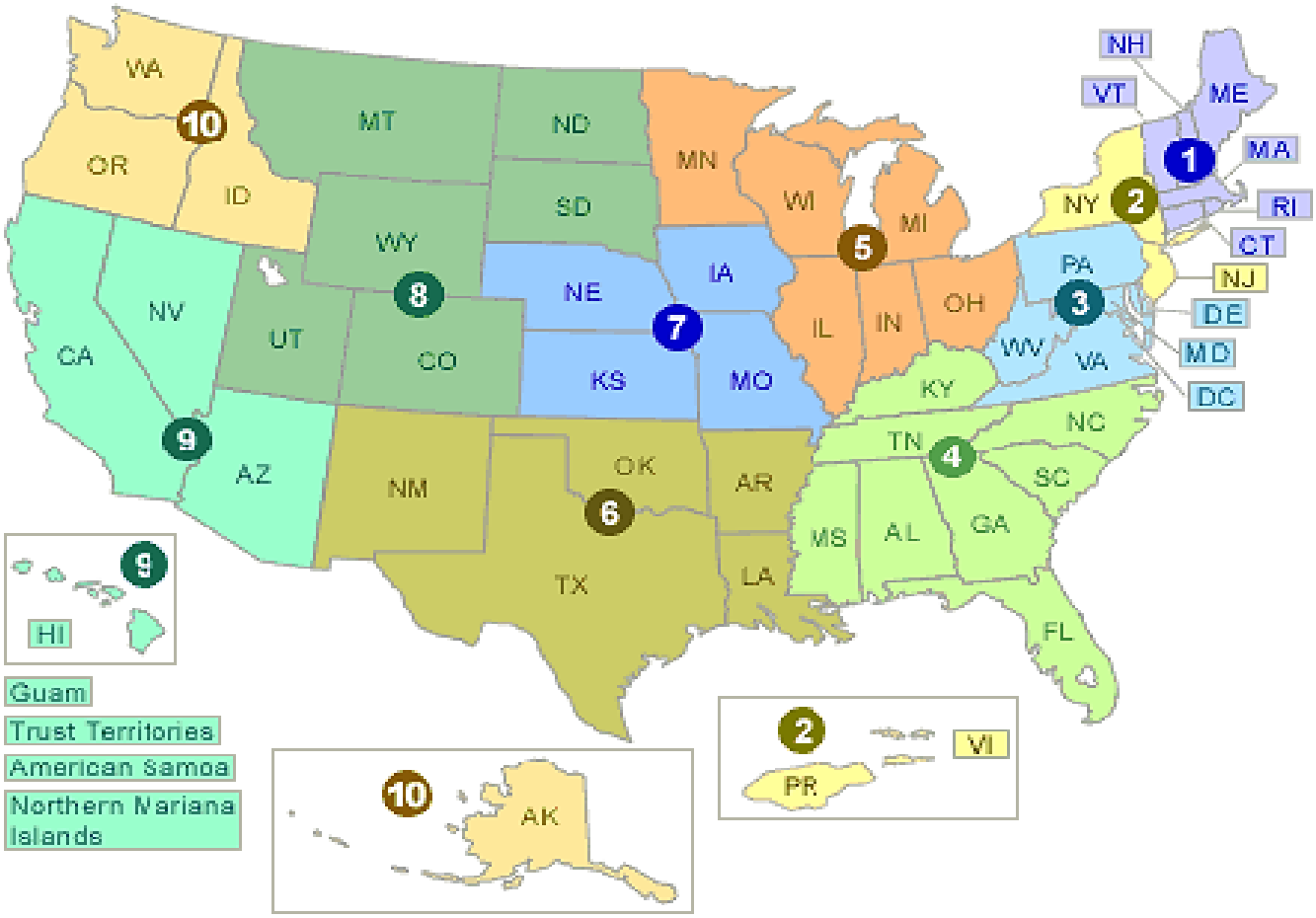
A little discussed program maintained by the IPAWS Program Management Office is the National Public Warning System (NPWS – formerly the Primary Entry Point or PEP System). NPWS consists of more than 70 radio stations throughout the US and its territories. These are the old 'clear channel' high-power AM stations that increase power to 50,000 watts after sundown.

These facilities have been supplied with FEMA back up power, extensive on-site fuel storage, and off-line HEMP protected programming and transmission systems. Connectivity is provided by hardened VSAT. They have been subjected to full-scale HEMP testing.

This is why the US Government insisted that new car manufacturers keep AM radios in their vehicles. **If your area suffers a major disaster, you still have a chance of picking up one or more of these stations broadcasting from along the periphery of the disaster. All you need is an AM Broadcast Receiver.** See the map (slightly out of date but still useful) and the list of stations, below.

Also see: https://en.wikipedia.org/wiki/Emergency_Alert_System

As the late former Chief Engineer of radio station WLS (890 AM, Chicago), Warren Shulz, used to say: "The end of the world will be broadcast on AM radio and received by crystal sets."



FEMA Regions

Station	City	State	AM (kHz)	FM (mHz)	PEP/IPAWS Status and Coverage Area	FEMA Region
WTIC	Hartford (Farmington)	CT	1080.0	-	PEP for Connecticut	I
WBZ	Boston (Medford)	MA	1030.0	-	PEP New England; not ME and CT	I
WGAN	Portland	ME	560.0	-	PEP for Maine	I
WROW	Albany	NY	590.0	-	PEP for NE NY State	II
WBNW	Endicott	NY	-	105.7	PEP Central NY State	II
WABC	New York	NY	770.0	-	PEP New York City and New Jersey	II
WHAM	Rochester	NY	1180.0	-	PEP Western NY State	II
WBAL	Baltimore	MD	1090.0	-	PEP for Maryland; Covers DC	III
WFED	Wheaton (Washington, DC)	MD	1500.0		PEP Washington DC	III
WTEL	Philidelphia	PA	610.0	-	PEP E. Pennsylvania and Delaware	III
KDKA	Pittsburg	PA	1020.0	-	PEP Wester Pennsylvania	III
WTAR	Norfolk	VA	850.0	-	PEP Confirmed IPAWS	III
WRXL	Richmond	VA	-	102.1	PEP Confirmed IPAWS	III
WVBE	Roanoke	VA	610.0	-	PEP Confirmed IPAWS	III
WCHS	Charleston	WV	580.0	-	PEP for West Virginia	III
WJOX	Birmingham	AL	690.0	-	PEP for Alabama	IV
WOKV	Jacksonville	FL	690.0	-	PEP Northern Florida and S. Georgia	IV
WAQI	Miami	FL	710.0	-	PEP South Florida	IV
WFLF	Pine Hills (Maitland)	FL	540.0	-	PEP Confirmed IPAWS	IV
WSVR	Gainsville	GA	-	97.1	PEP Confirmed IPAWS	IV
WMAC	Macon	GA	940.0	-	PEP Confirmed IPAWS	IV
WMSI	Jackson	MS	-	102.9	PEP for Mississippi	IV
WBT	Charlotte	NC	1110.0	-	PEP Confirmed IPAWS	IV
WSFL	New Bern	NC	-	106.5	PEP Confirmed IPAWS	IV
WQDR	Raleigh	NC	-	94.7	PEP North Carolina	IV
WCOS	Columbia	SC	-	97.5	PEP for South Carolina	IV
WGTK	Greenville	SC	-	94.5	PEP North Carolina	IV
WJCW	Johnson City	TN	910.0	-	PEP Eastern Tennessee	IV
WJXB	Knoxville	TN	-	97.5	PEP Eastern Tennessee	IV
WREC	Memphis	TN	600.0	-	PEP Western Tennessee	IV
WSM	Nashville	TN	650.0	-	PEP Middle Tennessee and SW Indiana	IV
WLS	Chicago	IL	890.0	-	PEP Northern Illinois and W. Indiana	V
WJR	Detroit (Riverview)	MI	760.0	-	PEP for Michigan	V
WCCO	Minneapolis	MN	830.0	-	PEP Minnesota	V
WLW	Cincinnati	OH	700.0	-	PEP for SW Ohio, Kentucky, E. Indiana	V
WTAM	Cleveland	OH	1100.0	-	PEP Confirmed IPAWS	V
WTMJ	Milwaukee	WI	620.0	-	PEP for SE Wisconsin;	V
WWL	New Orleans	LA	870.0	-	PEP Confirmed IPAWS	VI
KAAY	*Little Rock*	*AR*	*1190.0*	-	***Shut Down; land sold***	*VI*
KWKH	Shreveport	LA	1130.0	-	PEP Confirmed IPAWS	VI
KKOB	Albuquerque	NM	770.0	-	PEP for New Mexico	VI
KRMJ	Tulsa	OK	740.0		PEP for Oklahoma	VI
KLBJ	Austin **(San Antonio)**	TX	590.0	-	PEP for Central Texas	VI
KROD	El Paso	TX	600.0	-	PEP for West Texas	VI
WBAP	Arlington (Fort Worth)	TX	820.0	-	PEP Central Texas	VI
KTRH	Houston	TX	740.0	-	PEP Texas (SE TX and W LA ?)	VI
WHO	Des Moines	IA	1040.0	-	PEP for Iowa	VII
WHB	Kansas City	MO	810.0	-	PEP Kansas and Western Missouri	VII
KMOX	St Louis	MO	1120.0	-	PEP Eastern Missouri and S. Illinois	VII
KRVN	Lexington	NE	880.0	-	PEP Nebraska	VII
KOA	Denver	CO	850.0	-	PEP for Colorado	VIII
KERR	Polson	MT	750.0	-	PEP Montana	VIII
KFYR	Bismark	ND	550.0	-	PEP North and South Dakota	VIII
KSL	Salt Lake City	UT	1160.0	-	PEP Utah	VIII
KTOW	Casper	WY	1030.0	-	PEP for Wyoming	VIII
KDRI	Tuscon	AZ	830.0	-	PEP Arizona (was KFLT)	IX
KMJ	Fresno	CA	580.0	-	PEP Central California	IX
KFI	Los Angeles	CA	640.0	-	PEP Southern California	IX
KOGO	San Diego	CA	600.0	-	PEP San Diego	IX
KCBS	San Franciso	CA	740.0	-	PEP Northern California	IX
KXNT	*Las Vegas*	*NV*	840.0	-	PEP Confirmed IPAWS	IX
KKOH	Reno	NV	780.0		PEP Confirmed IPAWS	IX
KBOI	Boise	ID	670.0	-	PEP for Idaho	X
KPNW	Eugene	OR	1120.0	-	PEP for Oregon	X
KOPB	Portland	OR	-	91.5	PEP Oregon	X
KIRO	Seattle	WA	710.0	-	PEP Washington State	X
KFQD	Anchorage	AK	750.0		PEP for Alaska	X
KHKA	Honolulu	HI	1500.0	-	PEP for Hawaii	X

See which of these stations you can tune in on your AM radio BEFORE disaster strikes! You can also receive FEMA and other alerts directly to your cell phone. Two very popular apps are the FEMA app and the American Red Cross Emergency app.

Some are accessible on your PC. This is only a partial list as there are many available but, for weather forecasts see:

https://www.accuweather.com/

https://weather.com/

https://www.weather.gov/

https://quakewatch.net/

https://www.weather.gov/nwr/ - This is the page for NOAA Weather Radio. Here you can find the frequencies for continuous weather forecasts for your area. These channels can be programmed into any modern handheld radio that operates on the 2 Meter Ham band.

As you get more involved in Amateur Radio you will quickly realize how the Sun and space weather impact not only radio performance but many other aspects of life as well. Here are a few good sources for space weather info:

https://www.swpc.noaa.gov/

https://www.solarham.net/

https://spaceweather.com/

https://www.spaceweatherlive.com/ is also available on Android as is the Space Weather Reporter app. I'm told Apple has several of their own. Take a look, let us know. Check them out. Stay informed!

A3. Integrating into the Ham Radio Community Before You're Licensed

You are strongly encouraged to pursue FCC Amateur ("Ham") Radio Licensing. The test is relatively easy, easy-to-understand study guides abound, and you have many resources for help and information right here in the JCTF. Without a license, your ability to reach out is limited. Once you're licensed, you'll have access to a whole new world of communications technology!

Here are a few suggestions for integrating into the Ham community before you get your license. 1) Go to [www.QRZ.com.](http://www.QRZ.com)

1. Click on "by Callsign" in the upper left corner of the banner. In the resulting drop-down select "by Name/Address. Enter the name of your city or county or zip code then click on "Search". You now have a list of all the licensed Hams in your area. Look through the list and see if you recognize any names. Reach out to those neighbors to let them know you're interested in Ham Radio and that you are especially interested in Emergency Communications.

2. You can find that same information in map form at https://haminfo.tetranz.com/map.

3. Do a word search online for "Ham radio clubs near [your zip code]". Most clubs will welcome you right in! Get to know your local Hams. Ask every question you can think of – Hams love helping others, especially those who want to join the hobby. If there are several clubs in your area make a point of visiting several or all of them. Find the one(s) that fit(s) best.

4. Don't have time to study for that exam (oh come on – my son passed the test at ten years old and that did not get him into the Guiness Book of Records! Check YOUR level of commitment!?!) tell that eighth-grader next door, you know, the one who helps you reset your internet when it goes offline, or maybe your grand kids or any other techie you may know, that you'll get them their first radio if THEY get their license. I can coach you through the process AND introduce you to the QRZ "Jump Start" program through where new licensees can get a brand new radio for FREE! So now you know who to go to when disaster strikes!

A4. Email to Text to Email

In an emergency, the cellular phone system can quickly get bogged down as too many subscribers try making calls all at once. The messaging app on your phone can prove reliable in times of heavy congestion by transmitting your messages in pieces then reassembling the pieces into a readable text for your desired recipient (provided the cell service is still functioning in your area).

But did you know you can send email from your cell phone messaging app? Did you know you can send text messages from your email to a cell phone? All major cell service providers have email domains just for this purpose. Below is the list of the major carriers but try this – go to the messaging app on your cell or iPhone, create a new conversation addressed to your email address and see what shows up in your email. That will be the address to use for sending emails to your cell phone.

This could come in handy when reaching out for help in an emergency. More contacts = better chance of being heard.

AT&T [phone number]@txt.att.net

Boost Mobile [phone number]@smsmyboostmobile.com

Cricket [phone number]@sms.cricketwireless.net

FirstNet [phone number]@txt.firstnet-mail.com

T-Mobile [phone number]@tmomail.net

U.S. Cellular [phone number]@email.uscc.net

Verizon [phone number]@vtext.com

Virgin Mobile [phone number]@vmobl.com

Verizon customers can text “OFF” to 4040 to block email-to-text messages

Warning, some email apps / carriers may block this so test it out before you need it. Practice sending messages in both directions to friends and family. Tell them why you’re doing it and encourage them to do the same. Try it with and without a leading “1” in the phone number.

A5. The Wilderness Protocol

National Simplex Frequency / National Calling Frequency - 146.520 MHz

The Wilderness Protocol is a dedicated effort to provide communications between hams who are hiking, backpacking, and camping in uninhabited areas. This ensures emergency communications help reaches areas beyond normal repeater coverage. It is also used in events when local repeaters are off-the-air, and communications are needed during emergencies. The Wilderness Protocol is also important during times of unrest, disasters, and local emergencies. The Wilderness Protocol recommends that amateur radio operators monitor the National Calling Frequency, at specific times of the day in case of emergency or priority calls.

Procedures for "Wilderness Protocol"

It is recommended amateur operators monitor the National Calling Frequency as the primary contact frequency, and also monitor your local simplex frequencies and local repeaters.

The National Calling Frequency should be known nation-wide. Monitoring this frequency provides support for travelers passing through your area. Adding and monitoring your local known frequencies provides support for family and friends.

MONITOR TIMING: Monitor the standard National Calling Frequency 146.520 MHz, and any local frequencies every three hours starting at 7:00 a.m., local time, on the hour and until five minutes past the hour and repeat every three hours.
Ø 7:00 a.m.
Ø 10:00 a.m.
Ø 1:00 p.m.
Ø 4:00 p.m.
Ø 7:00 p.m.
Ø 10:00 p.m.

ALTERNATE TIMING: If you have plenty of battery power, monitor five minutes before the hour through five minutes after the hour, this allows for differences in individual time settings. You can always listen for longer if you want.

ENHANCED MONITORING: Fixed stations or portable stations with enough battery power could listen every hour.

CONTINUOUS MONITORING: Fixed stations or portable stations with fixed power could listen at all times that they are near their radio. It's recommended to use a scanner to monitor. This can be portable and move with you, saving battery power on a portable radio until you need to respond. Continuous monitoring is needed especially during local, regional, and national disasters.

MONITORING STANDARDS: During an emergency, listen to the frequencies until four minutes past the hour. If there is no activity, then make a call letting others know you are monitoring and available. Remember to listen first and then call with a short transmission message. For the Wilderness Protocol

to work, radio operators need to be listening for calls. If no one is listening, then there will be no one to help.

RESPONDING TO A CALL FOR HELP: When a call comes in, listen carefully. When the caller is done broadcasting, respond and ask questions according to what has happened:

Ø What is the emergency?

Ø Is anyone hurt?

Ø Where are you located?

- · Home address
- · Road name with mile marker
- · Lat & Long
- · Trail name
- · Campground name

Ø Is there someone I can contact for you? If needed, contact 911 to report the incident.

If you unable to call 911, you may be able to relay emergency information through another amateur operator who has better access to a repeater and/or 911.

A6. Winlink

Winlink installation, set up and sending your first message

For our licensed Ham members, creating your Winlink account and getting the Winlink app up and running on your computer is the first step to building your Black Sky station. This video will walk you step-by-step through that process:

https://www.youtube.com/watch?v=qSLghO6RgFU&list=PLvg1CrZfziQtzQg70flt1Ht2aK3XF03m

Even if you don't have your radio setup for digital, you can send Winlink messages via telnet just like regular email. There is great value to be found in learning to use this application regardless of the mode by which you send! Practice! Practice! Practice!

Once you're all setup, select Message > New Message then enter NDRC in the "To:" field – you don't need a fully-qualified domain name if you're sending from Winlink to Winlink.

You can put your own personal address in the CC line and I'll respond to your regular email and your new Winlink address.

Add a subject and anything in the body of the message then click "Post to Outbox" (upper lefthand corner of the message window).

To the right of "Open Session" select "Telnet Winlink" from the drop-down. Now click on the words "Open Session". When it says "Ready" in the session window, click on "Start".

That's all there is to it – you just sent your first Winlink email!

"Extra Credit"

- Open a new message then click on "Select Template".
- Click the + sign next to "Standard Templates" and navigate through the many options. This is a big part of why Winlink is so popular with emergency service agencies; you have the ability to quickly and easily compose and send the standard FEMA forms (under +ICS USA Forms).
- Just for practice, Select the ICS 213 Form. It will open in a browser. Complete as best you can (this is only practice) then click the "Submit" button at the bottom of the page.
- Close the browser and everything you just entered into the form will now appear in the text of your new message window, ready to address and send.
- Note: See if your GPS coordinates showed up correctly in the message window.

A7. FEMA Incident Command System

The National Incident Management System (NIMS) was developed in the 1970s by the US Forestry Service and multiple firefighting agencies. During a particularly deadly wildland fire season in Southern California, agencies realized they needed to improve the way they work together and develop better methods for coordinating resources. Their logical approach to emergency management has since been adopted by emergency management agencies nationwide.

ICS / NIMS guides all levels of government, non-governmental organizations and the private sector to work together to prevent, protect against, mitigate, respond to and recover from incidents. The system is so scalable, it not only applies to Stafford Act disasters but has been used for planning wedding receptions and kid's birthday parties. NIMS provides stakeholders across the whole community with the shared vocabulary, systems and processes to successfully deliver the capabilities described in the National Preparedness System. NIMS defines operational systems that guide how personnel work together during incidents.

The FEMA ICS / NIMS courses will enhance your value in emergencies! The beginning courses are available online and fairly easy to complete. At minimum, you should plan on taking IS100, IS200, IS700 and IS800. Begin by applying for your SID number (Student ID) at https://cdp.dhs.gov/femasid/register

As mentioned in an earlier section, Space Weather is gaining importance in many aspects of our lives. FEMA now offers IS-66 "Preparing the Nation for Space Weather Events". Estimated time for completion is two hours. It is a fascinating study and will give you a taste for how the other courses and testing are structured. Go to: https://training.fema.gov/is/courseoverview.aspx?code=IS-66&lang=en

After that, go to https://training.fema.gov/emiweb/is/icsresource/trainingmaterials/ and select "Baseline Courses". Take them in the order recommended. You'll be amazed at what you'll learn here! While you're at it, get your whole family First Aid / CPR / AED trained and certified. Suggest: https://hsi.com/solutions/cpr-aed-first-aid-training/locate-a-training-center

A8. Getting Your Ham License

This guidance assumes you've answered the question of WHY you want a HAM Radio License and focuses on HOW to get you there. Here are a few tips.

The Amateur Radio Service a.k.a. "HAM Radio" in the USA is governed by the Federal Communications Commission and requires passing a test before you can operate a radio transmitter by yourself. There are currently three classes of HAM license – Technician, General and Amateur Extra - each one in order offering additional operating privileges. By the way, MORSE CODE is no longer required for any class of HAM Radio license.

The entry level Technician, or "Tech" class license, requires you pass a 35-question test with a score of 74% of higher. Every question you could possibly see on this exam is contained in a test pool which resides in the public domain and can be found online (with correct answers!). The pool consists of 411 questions (+/-) divided into 35 groups; expect to see one question from each group on the test. The most recent version of the tech test pool was revised effective July 1, 2022, is valid until June 30, 2026, and can be downloaded here:

https://www.ncvec.org/index.php/2022-2026-technician-question-pool-release

Look for these direct links:

http://ncvec.org/downloads/Technician%20Pool%20and%20Syllabus%202022-2026%20Public%20Release%20Errata%20March%207%202022.docx

http://ncvec.org/downloads/Technician%20Pool%20and%20Syllabus%202022-2026%20Public%20Release%20Errata%20March%207%202022.pdf

http://ncvec.org/downloads/2022-2026%20Tech%20Graphics.pdf

Download the graphics files while you're there. These are 3 schematic diagrams you may see on your test. A schematic is like a map of an electrical circuit which you will learn more about as you pursue your studies. WAIT! DON'T GO! Don't let this scare you. Children as young as 8 years old have passed this test and received their licenses – it is easily within your grasp!

There is a never-ending debate in the HAM world regarding the suggested depth of training for new folks. "Should they learn the content or just study the answers?" I personally don't believe you can just "study the answers" without picking up at least some understanding of the content. Conversely, if you're determined to become an electrical engineer before you take the test you'll never get there. Here is where I suggest you strike the balance: look for the Michael Burnett "Fast Track" books. He focuses on the correct answers but gives you the why & the how along with occasional memory ticklers. He also has a great website with supplementary quizzes and practice tests for each chapter. Get your license, join a club, watch what the others do and ask a lot of questions.

Many will advise you to purchase the American Radio Relay League (ARRL) license manual, which I wholeheartedly endorse. It is a GREAT reference and one you will reach for time and time again long after you've passed your license. Here are links to both books on Amazon.

https://www.amazon.com/ARRL-Ham-Radio-License-Manual/dp/1625951558/ref=tmm_other_meta_binding_swatch_0?_encoding=UTF8&qid=&sr=
($30 spiral bound; $20 in Kindle)

https://www.amazon.com/Track-Technician-Class-Radio-License-ebook/dp/B0B11RFZXH/ref=sr_1_1?crid=3176AJ9NKTUP9&keywords=fast+track+technician+license&qid=1673281123&s=books&sprefix=fast+track+technician%2Cstripbooks%2C155&sr=1-1
($20 paperback; $10 Kindle)

I have also benefitted from the books by Gordon West and have a friend who raves about the Craig Buck books, all these and others are available on Amazon as well. You will find many good YouTube videos. Dave Casler, HAM Radio call sign KE0OG, has a video series that follows the ARRL manual chapter by chapter - but use the videos as a supplement to the books mentioned above.

Two last bits of advice:

1) Go to: https://www.arrl.org/find-a-club and / or search online for the phrase "Amateur Radio Clubs Near Me" (or near your zip code). Find a club in your area. You don't need a license to participate – most clubs will welcome you right in (and shame on any that don't!) Show up to a few meetings. Tap into the brain trust. You'll gain more practical operating advice here than you will from any book!

2) Find a test session NOW. Pick a date. Set a goal. Mark it on your calendar. Many clubs hold their own test sessions (see #1 above) but testing is also available online now (Thanks COVID!). See: https://hamstudy.org/sessions/online

I hope to "see" you on the air soon!
73! (HAM-speak for "Best Regards")
Bob Smith
JCTF EMCOMM Work Group Leader
Ham radio callsign N0OM

A9. Making an Emergency Call

- Immediately: Program the National Calling Frequency into your radio(s) 146.520 MHz, before you need it.

- Whenever you can, try calling on the hour, as listed above.

- When you need help, start by listening to the frequencies you have programmed in your radio. If you hear someone using a channel, ask to break in.

- If no one is talking on the radio, pick a channel based on what you know of the area; for example, a local repeater. If you don't know the area, start by using the National Calling Frequency.

- When you call out, always say the name of the channel you are on. Example: This is KC7*** on the National 52 with emergency traffic.

- This helps when someone is scanning frequencies and only hears your message before the signal drops and goes back to scanning. This way, they heard what channel you are using and can respond on the same channel.

- Repeat as needed and try other channels you have programed in your radio.

PRIORITY TONE SIGNALS: To help reach out when time is critical, this method is suggested for priority radio transmissions only.

Use the **LONG TONE ZERO (LTZ)**. Begin calls for assistance with about 10 seconds of tone. To do this, key up and hold down the zero button to continuously transmit the zero DTMF tone. Then proceed to make your emergency call. This should help those listening to recognize that an emergency or priority call is coming through.

*Monitoring the National Calling Frequency while traveling is a good idea. Amateur radio operators have found it a good way to help others or to get help when it's needed it.

*The protocol only becomes effective when many people use it.

*This program is not to replace anything a club or group is doing for Emergency Communications. It is a good starting point or something to add to your group that can help across this country.

*Finally, remind others of the protocol at your club meetings and on radio nets. It's a good thing to know!

A10. Getting Acquainted With GMRS

General Mobile Radio Service (GMRS) radios are a powerful tool for communication, especially for families, communities, and small organizations looking to establish reliable connectivity in situations where cell service may be unavailable. GMRS radios provide an accessible, relatively straightforward way to communicate over short to medium distances without requiring extensive technical knowledge.

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1. What is GMRS?

GMRS is a radio service regulated by the FCC in the United States, operating on UHF frequencies (462-467 MHz). It allows users to communicate via handheld, mobile, and base station radios. GMRS radios require a license to operate, but the licensing process does not involve any test—just a simple application and fee.

- **Range**: Typical handheld GMRS radios have a range of 1-5 miles, while base stations or repeaters can extend the range to 20 miles or more, depending on the terrain.
- **License Requirement**: One license covers the entire family, valid for 10 years.
- **Channels**: GMRS operates on 22 channels, with some shared with Family Radio Service (FRS) radios.

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2. Getting Licensed

To use GMRS legally, you need an FCC license. Fortunately, there's no exam required—just a simple application and fee.

1. **Go to the FCC Website**: Access the FCC's Universal Licensing System (ULS) at FCC ULS.
2. **Create an FCC Account**: If you don't have an account, create one and get an FCC Registration Number (FRN).
3. **Apply for the License**: Use your FRN to apply for a GMRS license, which costs around $35.
4. **Family Coverage**: The GMRS license covers all immediate family members.

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3. Choosing a GMRS Radio

GMRS radios come in various models, from handheld (walkie-talkie style) to base stations and vehicle-mounted units.

Types of GMRS Radios:

- **Handheld**: Portable and easy to carry; range is generally 1-5 miles.
- **Vehicle-Mounted**: Increased range (up to 10-15 miles), especially when paired with an external antenna.
- **Base Station**: High power, suitable for home use; range up to 20 miles, especially with an external antenna.

Features to Look For:

- **Wattage**: Higher wattage increases range, with handheld radios typically 1-5 watts, while mobile and base stations can go up to 50 watts.
- **Weather Alerts**: Some models include NOAA weather alerts, useful for emergency situations.
- **Repeater Capability**: GMRS repeaters can extend your radio's range significantly. Choose a radio compatible with GMRS repeaters if you need extended coverage.

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4. Basic GMRS Radio Operation

- **Power On and Set Channel**: Turn on the radio, then use the controls to set your desired channel (1-22).
- **Volume and Squelch**: Adjust the volume to a comfortable level, then set the squelch to filter out unwanted background noise.
- **Push-to-Talk (PTT)**: Hold down the PTT button while speaking. Release the button to listen.
- **Monitor Channels**: If using a shared channel, listen before speaking to avoid interrupting others.
- **Use Call Signs**: Identify yourself by stating your callsign at least every 15 minutes.

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5. Using GMRS Repeaters

GMRS repeaters receive and re-transmit your signal, allowing you to extend your communication range significantly.

To Use a Repeater:

- **Set Frequency**: Set your radio to the repeater's input/output frequency.
- **CTCSS/DCS Tones**: Some repeaters require specific CTCSS (Continuous Tone-Coded Squelch System) or DCS (Digital-Coded Squelch) tones to activate.
- **Check Repeater Range**: Not all repeaters are public; consult resources like MyGMRS.com to find and confirm repeaters in your area.

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6. Communication Etiquette and Safety Tips

- **Keep Messages Brief**: Avoid hogging the channel; keep messages clear and concise.
- **Monitor First**: Always listen before you transmit, especially on shared channels.
- **Use Clear Language**: Avoid using codes or jargon—speak clearly for easy understanding.
- **Emergency Protocols**: Reserve channels for emergency use in case of a disaster.
- **Battery Care**: Keep extra batteries or a portable power source handy for extended usage.

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7. Practice and Testing

Familiarize yourself and your family with GMRS by conducting practice drills:

- **Practice Calls**: Try using the radio from various locations to understand the range and signal quality.
- **Emergency Protocols**: Set up emergency protocols, such as a designated channel for family use.
- **Routine Check-Ins**: Perform regular check-ins to ensure everyone remembers how to operate the radio.

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8. Resources for Learning More

- **Online Guides and Videos**: YouTube and websites like MyGMRS.com have resources and tutorials.
- **Local GMRS Groups**: Some areas have GMRS clubs or groups that you can join to learn more.
- **User Manual**: The best place to start is with the manual of your specific GMRS radio model.

Conclusion

GMRS radios are a powerful addition to any emergency communication plan, providing a reliable, easy-to-use system for families and communities. By understanding how to operate these radios and practicing good communication habits, you can ensure effective communication in times of need.

A11. Getting Acquainted With JS8Call

JS8Call is a digital communication software designed for amateur radio operators. It's built on the JS8 digital mode, which allows for robust and reliable text-based communication even in poor signal conditions. JS8Call is particularly useful for emergency and preparedness communication because of its long-range capabilities on HF frequencies and low-power requirements.

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1. What is JS8Call?

JS8Call is an adaptation of FT8, a digital mode developed for weak signal communication. Unlike FT8, which is mainly automated and limited to pre-set messages, JS8Call allows for free-text communication, making it ideal for chatting and emergency communication. It uses the same efficient encoding as FT8, meaning it can transmit messages over very long distances with minimal power.

Key Points:

- **Open Text**: Send and receive open text messages (not just pre-set messages).
- **Long-Range, Low Power**: JS8Call is efficient and ideal for HF bands, making it suitable for low-power (QRP) operation.
- **Networked Messaging**: Relay messages through other stations and store-and-forward messaging.

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2. Getting Started with JS8Call

Requirements

License: An amateur radio license is required to transmit with JS8Call.

Hardware:

- HF Radio (compatible with digital modes)
- Computer with USB or audio interface to connect with your radio
- External audio interface (e.g., Signalink or similar) if your radio doesn't support direct USB connection

Software:

- Download and install JS8Call from js8call.com
- Install audio drivers if required by your radio interface

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3. Setting Up JS8Call

Install the Software:

- Download the latest version of JS8Call.
- Run the installer and follow the setup instructions.

Configure Radio Settings:

- **Select Radio Model**: In the settings menu, choose your radio model from the list.
- **CAT Control**: Set up computer-aided transceiver (CAT) control if your radio supports it. This allows the software to control your radio's frequency and mode.
- **PTT (Push-to-Talk) Control**: Set up PTT control, either through CAT or VOX (voice-operated switch) on your radio.

Audio Configuration:

- **Input and Output Devices**: Set your computer's input and output devices to match your radio's audio interface.
- **Adjust Audio Levels**: Check that the audio levels are set correctly to avoid overdriving the signal. You should see a strong, clean signal in the waterfall display without distortion.

Set Band and Frequency:

JS8Call operates on a variety of HF frequencies. Choose a band that's open for your area and time of day.

Common frequencies are listed in the software, usually in the 40, 30, and 20-meter bands.

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4. Operating JS8Call

Basic Communication:

- **Free Text Messaging**: In the message box, type your message and press "Enter" to send.
- **Directed Calls**: You can call a specific station by typing @CALLSIGN (e.g., @N0OM Hello!) to initiate contact.
- **Auto-Reply and Messaging**: Set up auto-reply options for responding to calls automatically when you're away.

Relaying Messages:

- **Message Relays**: You can send messages through other JS8Call users when you're out of direct range. To do this, simply type @RELAY CALLSIGN MESSAGE to instruct nearby stations to relay.
- **Store-and-Forward**: This feature allows other stations to store your message and forward it later when the intended recipient is available.

Emergency Features:

- **Beaconing**: Set up a beacon to periodically transmit your location and status. This helps others find you during an emergency.
- **Heartbeat Requests**: Check who's online by sending a HEARTBEAT request. This broadcasts a message asking all stations to respond if they're within listening range.
- **Grid Square Locator**: JS8Call can automatically include your grid square location in your transmissions, helping others know where you are geographically.

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5. Basic Commands in JS8Call

@ALLCALL: Broadcast to all stations within range.

@RELAY CALLSIGN: Ask another station to relay your message to a specific station.

@HEARTBEAT: Request a heartbeat response to see which stations are online.

@GRID: Send your location grid square for situational awareness.

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6. Tips for Effective JS8Call Operation

- **Use Low Power**: JS8Call is very efficient. Using too much power can create interference; 5-10 watts is usually sufficient.
- **Monitor the Waterfall**: Watch the waterfall display to see other stations and adjust your frequency to avoid interference.
- **Check Propagation**: HF propagation varies throughout the day. 40 meters works well in the evening, while 20 meters is better during the day.
- **Practice Regularly**: Familiarize yourself with JS8Call features during non-emergency times, so you're ready if you need it.

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7. Etiquette and Best Practices

- **Keep Messages Short**: JS8Call isn't designed for lengthy conversations. Keep messages brief and to the point.
- **Acknowledge Receipt**: Confirm when you receive messages, especially when relaying.
- **Stay Updated**: JS8Call is frequently updated, so download new versions when available to benefit from improvements.

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8. *Common Uses for JS8Call*

- **Emergency Preparedness**: JS8Call is ideal for disaster response due to its long-range capabilities and low power requirements.
- **Remote Location Communication**: For those in rural areas, JS8Call offers a way to communicate over long distances when infrastructure is limited.
- **Community and Ham Networks**: Connect with others in the ham radio community for regular check-ins and preparedness exercises.

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9. Resources for Learning More

- **JS8Call Website**: js8call.com - for software downloads, updates, and guides.
- **YouTube**: Search for JS8Call tutorials to watch step-by-step guides.
- **Ham Radio Forums**: Join forums like QRZ.com and eHam.net to connect with other JS8Call users.
- **Practice Nets**: Look for local or online JS8Call practice nets to gain real-time experience.

Conclusion

JS8Call is a powerful and versatile tool for text-based radio communication, enabling reliable messaging across long distances with minimal power. With regular practice and familiarity, JS8Call can be an essential part of your communication toolkit, especially in emergency situations or remote operations. Happy operating and remember to keep experimenting and learning!

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