

Hurst Amateur Radio Club

Newsletter

November - December, 2016



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RACES Today

Mike Haefner -- N5YM

In this installment of *RACES Today* we will discuss ways of getting the most from your handheld transceiver.

Most amateurs start with a "handy-talkie" handheld transceiver, or "HT," as their first radio when they get their first amateur radio license. Nearly all of us owns one, while some of us may own several. Some are inexpensive basic transceivers, while others offer multi-band, multi-function, multi-mode capabilities at a premium price. What all of these radios have in common is they are highly portable, battery-operated low-power communications devices. Nevertheless, as handy as they may be, a handheld transceiver with its original flexible antenna should not be your primary rig for RACES emergency communications.

For the reliable emergency communications, a dual-band mobile with at least a unity gain antenna is in order. However, this arrangement won't work for everyone. So, if all you have is an HT, or your mission dictates the use of a handheld radio, what follows will help you to "make the most" of what you have.

First, let's talk about the antenna. That factory antenna sure is convenient. It looks pretty good

The Hurst Amateur Radio Club W5HRC
<http://www.w5hrc.org>

Repeaters:

- VHF: W5HRC on 147.100 MHz with PL tone 110.9. (Yaesu Fusion)
- UHF: W5HRC on 442.850 MHz with PL Tone 110.9 (Echolink)

Nets:

- Weekly at 7:30 PM on Sunday on the W5HRC VHF repeater
- On a month with a 5th Sunday, at 7:30 PM on the W5HRC UHF repeater
- Simplex net on the 4th Sunday at 7:00 PM on 146.400 MHz
- "Women of Ham" net weekly on Thursday at 8:00 PM on the W5HRC VHF repeater

Club Meeting: Third Monday of each month (except December) at 7:00 PM at Hurst Fire Station #2 training room

and it's small enough that it doesn't poke you in the armpit when wearing the HT on your belt, or it fits well in your purse. That flexible "rubber ducky" antenna consists of a rubber covered helical spring that is intended to withstand rough handling, but by no means is it indestructible. Studies have shown that flexible antennas used on California fire lines for several weeks showed a 60% failure rate. You should periodically inspect your HT antenna and replace it as soon as you see any apparent kinks, cracks, abrasion or other wear. For RACES deployment you should always carry a spare antenna of some type.

As previously noted, the stock antenna is designed to be convenient, while performance is secondary. The National Institute of Science and Technology tested stock Public Safety "high-band" VHF and amateur 2-meter antennas. Flexible antennas commonly used on portable

transceivers have as much as -5db, “negative gain” compared to a quarter wave whip held at face level. This means that a 5-watt portable VHF handheld with a stock flexible helical antenna has a typical effective radiated power of only about 1-watt. The results are similar for UHF.

When it comes to HT antennas, bigger is usually better. Longer aftermarket antennas are available that approach or equal a half wavelength and will offer a significant improvement. Some of these antennas are telescopic half-wave antennas and others are more flexible “long rubber ducks.” A telescoping half-wave has been shown to increase useable simplex range of a typical 5 watt, 2-meter portable in average suburban ground clutter from about a mile with the stock flexible antenna to 3 miles or more, depending upon the height relative to the terrain

An expedient which improves the performance of an HT antenna is a counterpoise (19" long for 2-meters, 11" for 222 MHz or 6.5" for 70 cm) of stranded wire attached to a ring terminal which will fit over an SMA connector, enabling you to



An HT Counterpoise

thread the antenna over it and let the wire dangle down. This counterpoise, sometimes called as a “tiger tail” or “rat tail,” prevents transmitted RF from coupling with your body. Your antenna now performs like a center-fed dipole, instead of an “end-fed dummy load.”

Handheld transceivers perform poorly from within a vehicle. An external magnetic mount antenna is in order when operating from a vehicle. A mag mount will also improve HT performance around the home or office. However, it will need a ground plane such as a metal filing cabinet, metal trash can, cookie sheet, rain gutter, refrigerator, window air

conditioning unit, balcony railing or any other large metal object. Always carry suitable adapters so that you can connect your portable transceiver to an outside base or mobile antenna whenever one is available. For operation from home, an external antenna will dramatically improve HT performance, both on transmit and receive.

The next important consideration is power. A common error of some operators is failure to carry enough battery power to last through a full 12-hour deployment period. As a minimum, always carry at least one spare charged battery pack or an alkaline battery case. This will allow you to keep operating when the power goes off, if you can't recharge your battery pack.

It is a good idea to cycle and recharge your battery packs monthly. Keep track by writing the recharge date on a strip of tape on each pack. If you are operating in cold weather, keep rechargeable packs warm by keeping them in an inside coat or shirt pocket. Do not store rechargeable packs in your vehicle above 120 degrees F if you expect them to hold charge for any period of time.

An adapter cord to power your transceiver from an auto cigarette lighter plug is a great accessory to keep in your go kit. Also consider a second adapter cord that can be hooked to a gel cell battery or power supply. Auxiliary power cords for low current devices up should use twin lead, red-black AWG14 or AWG16 “zip cord” and terminated with Powerpole connectors for universal compatibility.

Finally, the operating position of you HT makes a real difference. Ideally, the radio should be held at face level, approximately 6 inches away from your mouth. Speak clearly, but do not shout. If you expect to operate in a noisy environment, consider using one of the lightweight headsets with boom microphone available to fit your particular handheld.

Resist attaching the HT to your belt and using a speaker mic. Carrying a portable on your belt produces approximately -20dB of attenuation,

reducing the effective radiated power of your 5-watt radio to 50 milliwatts!

If what you have is a portable transceiver, then this information will help to ensure that you can provide an adequate signal for reliable RACES emergency communications.

Back to Basics

The Powerpole Connector System

The Anderson Powerpole is a family of electrical connectors produced by Anderson Power Products. Powerpole connectors are physically and electrically genderless, thus avoiding the need to worry about which end is the plug and which the socket, or which end has the correct polarity.

The Powerpole connector has been adopted by most segments of the Ham Radio community as the standard 12-volt DC power connector for everything from radios to accessories. Two notable groups adopting the Powerpole connector are Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES).

Although Powerpole connectors are available with current ratings up to 180 amperes, the size most commonly used by hams is the 15 / 30 / 45 ampere variety. These three sizes all use the same plastic housing in multiple colors, differing only in the metal contacts inserted into the housings, which are selected based on the current capacity and wire size. ARES and RACES have adopted a standard polarity for assembling pairs of Powerpole connectors. The standard is red positive and black negative, with the housings oriented as shown in figure 1.

Contacts can be installed onto the wires using either the crimped or soldered method.



Figure 1

UPCOMING EVENTS

November 1, 3 and 8, 2016

Technician License Training Classes

6:30 to 9:30 PM

Hurst Fire Station #2 Training Room

<http://www.w5hrc.org>

November 5-7, 2016

ARRL November Sweepstakes – CW

Starts 2100 UTC Saturday

Ends 0259 UTC Monday

160, 80, 40, 20, 15 and 10 meter bands

<http://www.arrl.org/sweepstakes>

November 19-21, 2016

ARRL November Sweepstakes – Phone

Starts 2100 UTC Saturday

Ends 0259 UTC Monday

160, 80, 40, 20, 15 and 10 meter bands

<http://www.arrl.org/sweepstakes>

December 10-11, 2016

ARRL 10 Meter Contest - Phone & CW

Starts 0000 UTC Saturday

Ends 2359 UTC Sunday

<http://www.arrl.org/10-meter>

December 19, 2016

HARC Christmas Party

Starts at 6:30 PM

Hurst Brookside Center

1224 Brookside Drive



January 20 & 21, 2017

Cowtown Hamfest and

ARRL North Texas Section Convention

Forest Hill Civic and Convention Center

6901 Wichita Street

Forest Hill, TX

<http://cowtownhamfest.com>

A properly crimped contact contains the wire completely inside the pin and will not spread the connector apart. Check the recommended gauge(s) of wire for a contact. Use a crimp tool specifically designed for Powerpole connectors

that will crimp the contact without being flattened. A properly crimped contact should have a minimum hold on the wire for more than 25 pounds. If you frequently install Powerpole connectors, purchasing a proper crimping tool is a good investment. But, if you only occasionally install them, you might find a club member who has one you can borrow.

When soldering the contact pins, be careful not to use too much solder. Keep the solder inside where the wire goes. Extra solder on the outside of the connector body may cause trouble putting the contact into the housing. If solder gets on the contact surface area, it may not make a good contact.

Put the connector housings together before putting the connector pins in as shown in figure 2. This makes insertion of the contacts easier, especially when using heavy paired wire. The plastic housings are held together with dovetail joints. Always slide these joints together! They will be damaged if you try to snap them together or apart. They only slide together in one direction, which should be obvious by looking at them carefully.

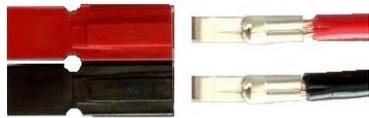


Figure 2

Normally, the dovetail joints in the housings hold together well. However, if you find it necessary to secure them together, do not use a roll pin. Roll pins can and will fall out, and knowing Murphy, they will fall right in to your new radio causing a short. Anderson recommends using cyanoacrylate glue, such as Super Glue®, to hold the connector bodies permanently together. All it takes is a very small drop of cyanoacrylate glue in the seam between the red and black bodies. However, be sure you have the housings assembled correctly before you glue, as they will be permanently bonded together.

The contacts go in the housings in only one way. Insert the contacts with their sharp edge down against the flat spring that is in the housing

as shown in figure 3. They should slide in and click. If you do not hear a click or they are not fully seated, and you need to fix them. When they are inserted fully you should notice that the contact and its wire "floats" slightly inside its housing. If it feels tight it may not be snapped in fully or you have made the contact wider than it originally was during crimping or soldering.



Cutaway View of a Powerpole Connector
Figure 3

Owing to the popularity with the ham radio and RC model communities, an entire support industry has grown up around this connector system, with all manner of adapter cables, mounting accessories, and power distribution systems commercially available. Several manufacturers now offer DC power supplies with Powerpole output connectors.

If you are not already using Powerpoles as your power connector of choice, you may want to consider adopting them to share a level of equipment interoperability with your fellow hams.

Volunteer Opportunity

For many years, the Hurst Amateur Radio Club has provided community service to the Hurst Police Department and Simon Mall Security through the program we have come to know as Mall Watch.

During Mall Watch activities, radio amateurs are stationed as observers at various locations outside of the Northeast Mall to report suspicious activities as well as parking lot and traffic conditions. In years past, the Hurst Police Department has noted a decrease in outdoor crimes whenever HARC observers were present.

Again this year, HARC will provide support for Mall Watch, beginning the day following Thanksgiving and ending on Christmas Eve. Except for Black Friday, positions will be open only on the weekends.

Sign up for positions, both at Northeast Mall and net control at the Hurst EOC, is now open online at www.w5hrc.org/mallwatch.

This year's Mall Watch briefing Tech Talk will be at 9:00 AM on Saturday, November 12, 2016 at the upstairs training room at Hurst Fire Station #2. Everyone is welcome and encouraged to attend. The Hurst PD mall liaison officer will be on hand to answer questions and communicate this year's expectation. Please help us support this valuable community service.

Jamboree-on-the-Air

Jamboree-on-the-Air, or JOTA, is the largest Scouting event in the world. It is held annually the third full weekend in October. JOTA uses amateur radio to link Scouts and hams around the world, around the nation, and in the local community. Scouting experiences are exchanged and ideas are shared via radio waves. Since 1958 when the first Jamboree-on-the-Air



was held, millions of Scouts have met each other through this event.

This year, on October 15, HARC set up portable ham radio equipment at the

First United Methodist Church of Hurst in support of JOTA.

David Holiman, KD5YDU, organized support for the event and reported: "...we had 29 scouts come out to visit and we made contacts on HF voice to Chicago and West Virginia, VHF on local repeaters, and DMR to various stations. We also observed the Irving scout HQ W2BSA/5 station on 20m PSK. We had a lot of fun and enjoyed visiting with the Scouts who came out

and Chris & I appreciate all our HARC guys and gals who came out to help as well. We're already looking forward to next year!"

Fire Department Open House

Hurst Amateur Radio Club and Hurst RACES were well represented at the 2016 Hurst Fire Department Open House on Saturday, September 24.

HARC had a table set up with an operating digital station as well as brochures and a drawing for a NOAA weather alert radio.



Hurst firefighters conducted demonstrations of Jaws of Life extractions and High Angle Rescue. Hurst Fire Department apparatus and Northeast Fire Department Association equipment were on display and there was



a landing and tour of an air ambulance helicopter. Attendees enjoyed face painting, fire safety information, and free hot dogs and hamburgers.

Emergency

Hurst, TX, 8:20 AM, October 22, 2016: A powerful severe thunderstorm with a history of producing tornados was observed passing through the North Texas area and was expected



to travel directly through NE Tarrant County and the HEB area. Tarrant County and Hurst RACES had both been activated and the Hurst EOC was on-line. The

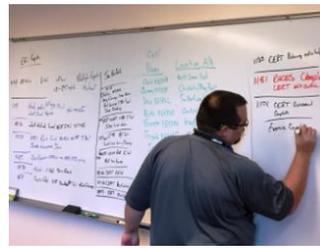
Hurst EOC began dispatching amateur radio operators as storm spotters to various locations in the city to monitor weather conditions. The storm was approximately two hours away and showed no sign of weakening as it was forecasted to enter the DFW metro area.

That was the mock scenario for the RACES/CERT Simulated Emergency Test exercise held in Hurst.

The exercise included dispatching amateur radio operators ahead of the storm for weather reports, a simulated tornado touchdown near Tarrant Community College, and loss of the primary repeater. Post-storm observations reported damage and city emergency management activated and dispatched CERT volunteers. Ham radio operators supported the CERT teams with liaison communications to the EOC. This was the first joint training exercise specifically structured to include both Hurst RACES and Hurst CERT personnel.



The exercise, with 15 RACES participants and 9 CERT participants concluded at 11:55 AM and all met at the Hurst Fire Station #2 training room



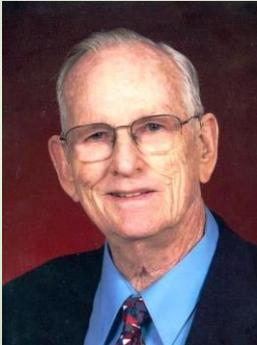
for an after-action "eating meeting" debriefing with lunch provided by Ron, N5THL.

The predominate comments from participants said that this was a very good learning experience. Numerous successes were identified, included the ad-hoc deployment of a Red Cross shelter. Several opportunities for improvement were identified as well.

Another simulated emergency test exercise is planned for early Spring 2017, prior to the beginning of the Texas storm season.

The *Newsletter* is a publication of and for members of the Hurst Amateur Radio Club. Members are **welcome** and **encouraged** to submit articles and information for publication. Please submit in MSWord format to Mike Haefner, N5YM, by email at n5ym@juno.com. Deadline for submissions for the next issue is **December 19, 2016**.

~ In Memoriam ~
 Remembering our friends who became Silent Keys in 2016

		
Gene Clardy W5KXC	Pappy Dorsey K5DSP	Minta McDuff N5ELB