QST NFL

Newsletter for the Northern Florida Section

Come join the FUN!

Volume 13 Issue 5 www.arrl-nfl.org **May 2026**

From the Shack of the Section Manager

Scott Roberts, KK4ECR (kk4ecr@gmail.com)

Field Day is coming, and it coincides with America 250 celebrations. And right now, most of your neighbors have no idea amateur radio exists, or what it really is.
That needs to change.

We spend enormous energy preparing for Field Day. We plan antenna configurations, organize operating shifts, stock the cooler, test the generators. But how much time do we spend making sure anyone outside our club actually shows up? This year, that has to be part of the plan.

Here's the reality. The general public sees ham radio as a hobby for people who talk into boxes in their garage. They don't know about emergency communications. They don't know that during disasters, when cell towers go down and the internet disappears, amateur radio operators are often the first and only link between isolated communities and the outside world. They don't know about the technical depth of what we do, the satellites we communicate through, the digital modes, the weak signal work, the sheer scope of what a licensed amateur can accomplish with 100 watts and a wire in a tree.

Field Day is your opportunity to show them. Not tell them. Show them.

WHY THIS YEAR IS DIFFERENT

The America 250 celebration changes the stakes. In 2026, the United States marks 250 years as a nation. Amateur radio has been part of American life for over a century. We served in wartime. We served in peacetime. We built the technical foundation that influenced everything from the internet to satellite communications. This anniversary is a genuine, credible reason to reach out to your local media and public officials and say: we have a story worth telling.

Don't waste it.

This is not the year to set up your Field Day site, work a few hundred contacts, pack up Sunday afternoon, and go home. This is the year you invite your city councilmember. Your county emergency manager. Your local TV news crew. Your state senator's district office. Your newspaper's community reporter. Your school principal. Your fire chief.

Invite all of them. Some will come. Some won't. But the ones who do will never forget it.

HOW TO REACH YOUR LOCAL MEDIA

Start with a list. Sit down right now and build a spreadsheet. Local TV stations, radio stations (yes, the irony is intentional), newspapers, community newsletters, social media pages for local news groups, and any digital publications covering your area. Include the name of a specific person at each outlet when you can. "City Desk" gets ignored. "Sarah Chen, Community Reporter" gets read. Send a personal email. Not a mass blast. An actual personal email with their name in the greeting. Keep it short. Three paragraphs. Here's a template to work from:

Continued on next page...

"Dear [Name],

Our club is participating in ARRL Field Day on [date] at [location], and this year we're also celebrating the America 250 anniversary along with amateur radio's contribution to this country. We'd love to have you out. I'm happy to arrange a personal walk-through, set up a live demonstration, or coordinate any interview you'd like. Amateur radio operators are often the unseen backbone of emergency communications in [your county/city], and this is a great opportunity to tell that story. I'll follow up in a few days. Thank you for your time."

That's it. No attachments. No multi-page press release in the first email. Just a human invitation from a real person. Then follow up. Call them. Reporters get dozens of emails a day. A polite phone call two days before the event, offering a specific interview time and a guaranteed good visual, will get attention. Mention the America 250 angle. It's real news.

YOUR PRESS RELEASE

A few days before Field Day, send a proper press release. Keep it to one page. Use a clear headline: "Local Amateur Radio Operators to Demonstrate Emergency Communications Skills During National Field Day Event." Include your club name, the location, dates and hours, a brief paragraph on what Field Day is, a brief paragraph on the America 250 significance, and a quote from your club president or a local emergency manager if you can get one.

Two quotes worth borrowing from history when you're writing your own materials:

"Amateur radio operators are a national treasure." That sentiment has been echoed by FEMA officials, state emergency managers, and members of Congress across decades of disaster response. Use that credibility.

And from a practical standpoint: when Hurricane Katrina overwhelmed communications infrastructure in 2005, amateur radio operators provided some of the only functioning communication links in affected areas for days. That story is real. It happened. Tell it.

INVITING PUBLIC OFFICIALS

Email is fine to start. A physical letter on your club's letterhead is better. A personal phone call after that is best.

Contact your mayor's office, your county commissioner or supervisor, your state representative's district office, and your city or county emergency management agency. Invite them to attend, to say a few words, to have their photo taken at the operating position. Politicians love community events. Many of them will come if you make it easy.

Prepare a one-page fact sheet they can keep. On it: what amateur radio is, how many licensed operators are in your county, what role your club plays in local emergency communications, and what Field Day demonstrates. Keep it clean. No jargon. Nothing about megahertz or digital modes. Write it for someone who has never heard of us.

If your emergency management coordinator or sheriff attends and says something positive on camera, that footage is worth more than any advertisement you could ever buy.

WHAT MAKES A GREAT FIELD DAY FOR OUTSIDE VISITORS

A few things to think about when you're planning your setup with visitors in mind.

Have someone assigned to greet guests. Not just anyone. Someone who is friendly, can explain what's happening without using technical jargon, and who genuinely enjoys talking to people who know nothing about ham radio. This is a specific skill. Put your best communicator on it.

Have a hands-on experience ready. Nothing gets a first-time visitor engaged faster than putting a microphone or a paddle in their hand and letting them make a contact. Even a supervised exchange on 2 meters with a nearby station makes an impression people remember for years.

Post clear, readable signs. "This is a solar-powered station." "We are communicating with a station 1,200 miles away right now." "This antenna was built by club members using only wire and aluminum." Context turns curiosity into genuine interest.

Have printed materials available. Your club's contact information, information about licensing, and something about the America 250 celebration. Let people take something home.

Set up a display about emergency communications. A map of your county with repeater locations, photos from past activations, a brief write-up on how your club has served the community. This is the thing that makes public officials stop and pay attention.

THE BIGGER PICTURE

There's a version of Field Day where your club sets up in a park, works 400 contacts, and goes home. It's a perfectly good radio event.

There's another version where your local TV station sends a crew, your county emergency manager shakes hands with your club president on camera, three city council members sign the guest log, and twenty people walk away asking how they get a license.

The second version requires about six extra hours of work spread across the weeks before Field Day. A few emails. A few phone calls. A press release. A printed fact sheet.

The question is not whether amateur radio deserves that kind of public recognition. It obviously does. The question is whether we're willing to do the work to earn it.

The America 250 celebration will not happen again. Field Day in the year this nation turns 250 is a singular moment. Local media are actively looking for community stories that connect to the anniversary. Public officials want to be seen supporting things that matter in their districts. We have a compelling story, real expertise, genuine community value, and a 100-year track record.

Go get the coverage. Your community is waiting to discover what we've been doing all along.

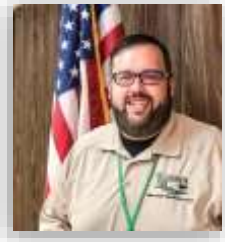
Get more Details, Rules & Resources, T-Shirts and Gear at https://www.arrl.org/field-day.

Also, be sure to log your Field Day Location in the ARRL Field Day Locator so people can find your site and visit - https://www.arrl.org/field-day-locator

73, and good luck in Field Day!

From the Section Emergency Coordinator

Arc Thames, W4CPD



April is volunteer month and I wanted to take a moment to thank each and every one of our volunteers for all they do. Whether it's providing communications for public event such as a bike race or staffing an EOC or shelter for a hurricane or exercise, our volunteers make it happen. Your service and dedication to the community does not go un-noticed.

As we grow every closer to hurricane season, I encourage you to pull out your go-kits and test your gear. We certainly lucked out last year for the first time in many years with no hurricanes impacting the state but we never know what this year will hold.

Monthly Radiogram Challenge

Want to practice using the national traffic system (NTS)? instructions on using the NTS on our website at arrl-nfl.org/nts/ For the month of May, please send me (W4CPD located in Pace, FL) a radiogram via the NTS with your answer to this question "What's a must have item in your go-kit?"

Thanks to the following hams for participating in last month's challenge:

Mark- KX4LEO
Mike-W4BZM
Susan- KG4VWI
Emmett-WA5EWN
Mike-W4BZM

Monthly EC Reports

Out of the 33 appointed ARES Emergency Coordinators we have in the section, we only received monthly reports for 12 last month. If you're an EC and are having trouble submitting your reports, please reach out to me. This information is so critical to knowing who of our teams are still out there and also hearing about the incredible work that's being done. Last month ARES volunteers provided 501 hours of service to our communities. Thanks to the following counties for providing their reports: Alachua, Bay, Citrus, Duval, Escambia, Gadsden, Gilchrist, Marion, Seminole, St. Johns, Sumter, Suwannee

	Number	Person-Hrs
Exercises this month:	5	20.50
Training events this month:	14	73.30
Public service events this month:	0	0.00
Community service events this month:	2	17.00
Emergency events this month:	0	0.00
SKYWARN events this month:	1	2.00
Meetings this month:	15	298.00
Unclassified events this month:	23	92.30

Call signs of DECs reporting:
K4BJS, K4SOP, KB4HAH, KC3DWY, KD4EZW, KD4IMA, KM4BTW, KO4YGV, KO4YOL, KX4LEO, W4UFL, WE4MJ

	Number	Person-Hrs
Exercises this month:	7	244.00
Training events this month:	19	356.00
Public service events this month:	1	80.00
Community service events this month:	2	67.00
Emergency events this month:	0	0.00
SKYWARN events this month:	16	4.80
Meetings this month:	14	265.50
Unclassified events this month:	19	76.00

Call signs of DECs reporting:
K4BJS, K4SOP, KB4HAH, KD4EZW, KD4IMA, KF4ZZ, KM4BTW, KM4QQO, KO4YGV, KO4YOL, KX4LEO, W4UFL, WE4MJ

NFL Officials

Section Manager
Scott Roberts KK4ECR

Assistant Section Managers
Kevin Bess KK4BFN
Helen Straughn WC4FSU
DJ Stewart KI4ZER
Joe Bassett, W1WCN

Section Emergency Coordinator
Arc Thames W4CPD

Section Public Info Coordinator
Jim Bledsoe, KI4KEA

Section Technical Coordinator
Frank Haas KB4T

Section Affiliated Club Coordinator

Section Traffic Manager
Helen Straughn WC4FSU

Section Official Observer Coordinator
Robert Leasko WB8PAF

Section State Government Liaison
Darrell Brock N4GOA

NFL Committees

Webmaster, www.arrl-nfl.org
Kari McClure, NW4R

Newsletter, *QST NFL*
Earl McDow, K4ZSW

QST NFL *is a monthly publication of the ARRL Northern Florida Section.* ***QST NFL*** is intended for wide distribution within the NFL Section, including club Leaders and all licensed Amateurs in Florida. A current issue of this publication can be found at the ARRL Southeastern Division web site, Northern Florida Section. www.***ARRL-NFL.org*** Opinions expressed by contributors are their own, and may not express the positions of the ARRL.

Submissions may be made to the editor: Earl McDow earl.mcdow@gmail.com.

All submissions are subject to editing prior to publication.

Looking for Something?

Gordon Gibby, KX4Z, has taken the time to index the articles from all the 2021 issues of ***QST NFL***!
https://arrl-nfl.org/wp-content/uploads/2021/12/2021QSTNFLIndex.pdf

What's Inside…

NFL Section Member of the Month!

We are always accepting nominations for the NFL Section Member of the Month. To submit a nomination, please email Section Manager Scott Roberts at kk4ecr@gmail.com. Include the nominee's name, call sign, county, reason for the nomination, and a photo of the nominee. Arc and I will review the nominations and contact you with any questions

Digital Library of Amateur Radio & Communications

Marty Brown, N4GL

Digital Library of Amateur Radio & Communications is now archiving ***QST NFL*** issues. DLARC is a project of the Internet Archive (the not-for-profit online library best known for The Wayback Machine.) DLARC is growing to be a massive online library of the past and present of ham radio and related communications. It is funded by a grant from Amateur Radio Digital Communications. You can see what we have so far at https://archive.org/details/dlarc .

Three years of QST NFL are now online, and I am working with the curator, Kaye Savetz, K6KJN, to eventually get all the issues that I have edited since 2014. DLARC can also scan paper issues. So if you have any stashed in your attic, let me know.

Loften High School

Bob Lightner W4GJ

Students at W.T. Loften ARC just concluded a two-day Florida QSO Party contest using our club's call K4WTL. Our total hours were only 12 out of the 20 max, but we managed to make 569 QSOs (all CW) earning us 145,664 contest points. Every year we participate in the Florida QSO Party, a huge on-the-air HAM Radio contest with all 67 Florida Counties. This year's event is April 25 & 26.

Our school has won 1st place as the highest school participating in this annual event for the past five years. Isabella (Bella), Chloe and their Club Trustee had quite a good time this year

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Log deadline: 2026-05-06 23:59:59 UTC
Received at: 2026-04-26 20:59:33 UTC

73, Contest Manager (k1to@arrl.net)

Your submitted log follows:

START-OF-LOG: 3.0
CONTEST: FCG-FQP
CATEGORY-OPERATOR: MULTI-OP
CATEGORY-ASSISTED: NON-ASSISTED
CATEGORY-OVERLAY: YOUTH
CATEGORY-POWER: LOW
CATEGORY-BAND: ALL
CATEGORY-MODE: CW
CATEGORY-TRANSMITTER: ONE
CATEGORY-STATION: SCHOOL
EMAIL: BOBW4GJ@GMAIL.COM
CREATED-BY: N3FJP's Florida QSO Party Contest Log 4.4.7
CALLSIGN: K4WTL
LOCATION: NFL
CATEGORY-TIME: 24-HOURS
CLUB: W.T. Loften High School ARC
CLAIMED-SCORE: 145664
OPERATORS: BELLA, CHLOE, AND BOB
NAME: Bob Lightner
ADDRESS: 3000 East University Avenue
ADDRESS-CITY: Gainesville
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Freshmen students holding last years #1 school in Florida plaque

MarkMySpot - A Pocket Tool for Fast Grid Squares

By Mark McDow, N4TEK
Alachua County ARES

If you have ever needed to send your location quickly for a contest exchange, POTA activation, satellite pass, APRS update, or EMCOMM spot report, you already know how useful a good grid square tool can be. MarkMySpot is my answer to that problem - a simple web app that reads your GPS location and displays it in the formats amateur radio operators actually use: up to 8-character Maidenhead grid locators, decimal degrees with up to 6 decimal places, and degrees/minutes/seconds.

The idea behind MarkMySpot is straightforward. Open the app on your phone, allow location access, and it shows your current position in a clean, field-friendly format. One tap copies all three coordinate formats to the clipboard, ready to paste into a log, message, or spot report. If you move to a new location, or if the GPS needs a fresh reading, you can simply refresh the display.

What makes this especially useful for ham radio is that it speaks our language. Grid squares are a compact and familiar way to describe location over the air, and that is exactly what MarkMySpot is built to provide. For field operators, the app automatically scales its precision to match the accuracy reported by the device, so it does not show false digits when the fix is only approximate. In good outdoor GPS conditions, that can mean an 8-character locator. If the signal is less precise, the display steps down to a 6- or 4-character locator instead.

I designed MarkMySpot for real-world use, not just desktop browsing. The interface uses a large grid display, a high-contrast dark theme, and a minimal layout so it is easy to read on a phone screen outdoors. It also works offline after the first load, since all calculations happen locally in the browser. There is no account, no backend, and no external API involved. That makes it a practical tool for portable operation, emergency communications, or any situation where connectivity is limited.

No false accuracy, digits scaled to match available precision

The privacy side is simple too. MarkMySpot does not send your location to a server, and it does not store your coordinates anywhere outside your device. For many operators, that matters just as much as convenience. You get the information you need without giving up control of your data.

MarkMySpot is also part of the ShackDesk suite of radio tools, which I am building around a simple idea - solve real operating problems for hams. This project is the third ShackDesk tool I started and the second I have published. My goal is to keep adding useful utilities for station workflow, field operating, and rig-side tasks as the suite grows.

For hams in the field, the value is not in complexity. It is in speed, clarity, and reliability. MarkMySpot gives you a fast way to get the right location format at the right precision, without typing conversions by hand or relying on a separate lookup tool. If that saves even a little time during an activation or event, it has done its job.

ShackDesk: https://shackdesk.com/markmyspot/
ORCID: 0009-0006-9145-2089

PARC & NOARC DJ Steward KI4ZER

HAMS! Yes, You! Okaloosa County Florida is perpetuating serios activity in person and on the waves! No Hihi here as the area takes off in 2026 with ZERO BEAT!

Building a Temp 80 Meter Loop in Steve & Cheryl's Back Yard

From the Desks of Mike Pickett W9MWP and Steve Purshock KQ4SMM

Several years ago, when I started visiting Fort Walton Beach for long periods of time after retirement, I decided to erect an antenna in the back yard of my hosts Cheryl and Steve KQ4SMM. When at home I regularly check in to the Badger Weather Net on 3.984 MHz and decided it would be great if I could occasionally check in with warm numbers while visiting Florida. I started out with a copy of the antenna I use at home which is known as "The Mystery Antenna" a variation on the G5RV, a multi band antenna with peak performance on 20 meters. Details on that antenna can be easily found on the internet by just simply searching for "mystery antenna". This antenna worked sometimes and sometimes not as is common with HF and propagation. I decided to look for something else that is a little more reliable and settled on an 80 M loop antenna mostly because it is often praised as a quiet antenna and void of noise.

Construction

The first step in any project is to sit down with pencil and paper and a calculator and draw out a sketch to see if the project is workable. I started with the calculation to determine the full wave length of the center of the band 3.750 MHz L=1005/F MHz The result of that calculation was 268 feet, divide that by 4 and it comes out to 67 feet on each side, a quick jaunt around the back yard with a 100 foot tape determined I could easily do a 67 foot square in the space provided. Steve already had 2 ten-foot sections of chain link fence top rail screwed to his fence forming a 20-foot mast for his VHF antenna with a rope and pulley on top. He had provided a duplicate mast for me to launch my Mystery Antenna for the last two years which now provided two of the for masts needed for my project, so it was off to Home Depot to acquire 4 more sections to complete my square.

After drilling and attaching 1/4" eye bolts and pulleys to the top of the two new 20-foot masts we screwed them to the fence on the other side of the property and waited for the wire to arrive from Amazon, which is another disappointing story I won't get into. Because the masts were not counter guyed against the strain of the antenna wire, I chose light 18 ga. magnet wire for the antenna radiator so that it didn't put excessive strain on the masts and would be easy to pull through the insulators on top of each mast. The plan worked well and once I had the wire I could easily string in through the insulators on each mast on the ground and we pulled the antenna up a little at a time until I felt the mast had reached its stress point. I purposely positioned the masts further apart than necessary to deploy the antenna so that there would be a little extra rope on each corner keeping the insulator away from the mast.

Testing

Connection to the antenna was a SO 239 soldered to each side of the insulator located in the corner near my operating point. After running the RG 8X into the shack I took a reading with my antenna analyzer and found the SWR null to be around the 3.650 MHz somewhat lower than my target and measured about 1.7 to 1. Connection to my Kenwood TS 570S showed a different scenario however with the SWR off the scale everywhere without the tuner on. I found I was able to get the SWR manageable and down to 1.3 with the tuner. I attributed this to the direct connection without the use of an un-un Oh well too late in the day to make any more changes, so I put it to bed for the day and decided to try for the Weather Net tomorrow.

Modifications

I was able to contact the Weather Net even with the antenna not showing the results I had intended. Now it was to make the necessary modifications to make the antenna perform as intended. With the SWR graph null lower in frequency than target I knew the wire was too long, so trimming was necessary. Considering how far it was off target and the ratio of the calculation for length I decided 15 feet would have to come off to get to 3.750, I cut 12 feet off thinking I can always cut more should my calculation be wrong. It came out to be about 3.7 MHz Center, so I was close. While trimming for length I also installed an unun I had in my antenna box at the feed point and after a little modifying of the enclosure and adding a couple of terminals I was able to connect the aforementioned unun with a couple of wire nuts that were living in the pocket of my jacket. I would suggest soldering the connection for a permanent installation, however. After examining the null on the analyzer graph though I found that it was not wide enough to cover the whole band with a decent SWR and maybe was 150 kc. on each side of center that was acceptable SWR with out the tuner. Since I was looking for the best performance on 3.984 MHz, I decided to cut another 10 feet off the radiator which brought the graph null in range at just under 4 MHz I measured an SWR of 1.99:1 at 3.984 the target frequency, close enough I figured for a temporary antenna.

Continued Next Page

The extra un-un laying around in my antenna box

End Result
The next morning, I was with the folks from the Badger Weather Net, and we were able to hear each other directly, reports from the net were mostly somewhat weak but able to copy with generally a 5-6 S meter reading while using my Kenwood TS 570S with 100 W. While the antenna is not perfect it gets the job done and is reliable, which is all I could ask for. I still am able send Winlink messages on the other end of the band with the aid of the radio's built-in tuner so it's a usable antenna across the band with the aid of a tuner. Many people consider the loop antenna to be a much quieter antenna than a conventional dipole. I cannot attest to that since there seems to be a high noise level of 80 M here at Cheryl and Steve's house. Overall, I felt this to be a fun and rewarding project that accomplished my goal and provided some useful information and antenna building experience for Steve and myself.

Respectfully submitted by Mike Pickett W9MWP and Steve Purshock KQ4SMM


POTA Hootenanny!
Parks on the Air (POTA) is an international radio sport award program that encourages licensed amateur radio operators to visit, enjoy, and operate portable equipment in parks and public lands worldwide. Founded as a non-profit in **January 2018** to continue the legacy of the ARRL's *National Parks on the Air* event, it promotes emergency awareness and communication skills while operators respect park regulations and other users.

The program involves two main roles: **activators**, who set up temporary stations in designated locations, and **hunters**, who search for and contact these stations from home or other locations. To count as a valid activation, an operator must make a minimum of **10 contacts (QSOs)** from a specific park within a single UTC Day, logging them onto the official website to earn awards based on bands, modes (voice, Morse code, or FT8), and total contacts!

Our Teammate KR4FWK continues to experiment, hunt and activate! Here is an example of him attempting to perform the above at Fred Gannon Park in Niceville Flori-


da! Thank you for sharing and keeping the key down!

The newest ham radio thing to geek out about right now is the **Pebble HF**, a community-driven, ultra-affordable QRP (low-power) HF radio kit developed by the Ham Radio Duo (Becky N4BKY and Mike N4FFF) in collaboration with Barb WB2CBA and Guido PE1NNZ. Priced at a target of **$50 USD** (with early backers paying slightly more), it's designed to be accessible even for first-time builders, featuring only **14 through-hole components** and pre-populated surface-mount parts. Its standout features include **USB-C power input** (allowing operation directly from a phone), a built-in straight key and microphone, and a compact, portable design ideal for **Parks on The Air (POTA)** activations. This device is coming to the market soon. Get in line now!

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PARC joined up with the FWB Jr. Bombers Market and showed off what Amateur Radio is! We set up vhf/uhf/hf and demonstrated our capabilities!

A Great Time at Mobile!

Some of Team PARC assembled to gather in Mobile at their Hamfest and boy howdy what a great time! We took time to sell, swap, trade, barter, see friends, make new ones, and experience the joy of our wonderful hobby! If you weren't there, you missed out on a great time! We sure made the best of it and took it all in! Made a few stops and saw some cool stuff along the way as well! Be sure to join in with PARC as we continue to explore the world of Amateur Radio! o, you want to k ow what's next?! Go the club calendar and see for yourself!

Notice of CSFL Nets on PARC Frequencies

PARC has come to an agreement to have the CSFL host their nets on specific dates and at times on the Playground Machines. Please review the list below. Calendar additions and net page updates will be made.

Net: CSFL Sunday Exercise Node 7 (Okaloosa South of Eglin) Net #41

Date: 26 April, 10, 31 May, 14, 28 Jun, 12, 26 Jul, 9, 23 Aug, 13, 27 Sep, 11, 25 Oct, 8, 22 Nov, 6 Dec.

Time: Start 3:40pm End 3:50pm

Frequency: 146.790, 0.6, -, 100Hz, W4ZBB

Saturday, in the Park, not on the 4th of July!

Team PARC united in droves for the Florida QSO Party despite the rain. Covering multiple bands and operating methods, the day featured plenty of mentoring, instruction, and live demonstrations. Public visitors, local officials, event coordinators, and passersby all got to experience the fun and energy of amateur radio firsthand! Be sure to watch the **Club Calendar** and participate with and at the Club and get your Ham On!

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NOARC

Fantastic time with Trail Life USA in Camp Okaloosa! We managed to dodge most of the raindrops and enjoyed the day showing the young campers our new NOARC trailer. Thanks to Mike W4BZM, Aaryn KR4JID, Robert KM4VKY, John N8JDD, Dave WB4EWS, and Mr. Rob KM4SPJ (also for pulling the trailer). Including Tim KN4WOO off site monitoring and talking to the boys via repeater. Great job Rob and Mike with the demos! Until next time 73, N8JDD!

It all started with an omelet! Then we arrived at the Crestview Triple B BBQ! Pals, buddies, friends, and hams united to show off the NOARC Trailer! Thanks to, N8JDD, KM4VKY, KQ4FRB, KK4VAX, N4DPM, WB4EWS, KI4ZER, K4HST, KN4UDS, KQ4WKC, KR4KXE, KR4ETE and his wife for showing up and making this a great time! Experiments on HF with the trailer as the anchor resulted in contacts from: PA, NJ, CT, VT, KY, VA, WV, FL, OK, TX, Costa Rica, Peru, and Spain!

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Encouraging the Next Generation

Hams sometime bemoan the lack of interest in amateur radio within the younger generations – but do we do anything about it? Well, recently a dedicated group from the North Okaloosa Amateur Radio Club (NOARC) attempted to promote the future of our hobby. Some adult leaders from the local Trail Life organization requested a demonstration of ham radio for their boys (ages 5-17) at their "Junction" campout in northern Okaloosa County. The leaders were particularly interested in an introduction to amateur radio, demonstrations of Parks On The Air and Amateur Radio Emergency Service, and possibly making radio contact with another Trail Life Junction being held in South Carolina.

NOARC members, under the leadership of John N8JDD, cheerfully accepted the challenge and planned a demonstration involving:

- VHF voice comm via a local repeater,
- HF voice comm via a POTA rig, and
- Digital HF message receptions and transmissions.

On Saturday 25 April, six intrepid members of NOARC (John N8JDD, Rob KM4SPJ, Mike W4BZM, Robert KM4VKY, Dave WB4EWS, and Aaryn KR4JID) braved a weather forecast calling for heavy rain and thunderstorms, as well as a rough road into Camp Okaloosa that challenged our NOARC club trailer's clearances, to set up the demonstration stations. Fortunately, the strong storms passed south, exposing us only to occasional drizzles.

The exercise started with a rousing introduction to amateur radio presented to the middle-school audience by Rob KM4SPJ. After that, the boys split up into small groups (three to five youth) which for the next couple of hours rotated through demonstrations at three stations, all operating from battery power and on portable antennae :

- A portable POTA-type HF voice station operated by John N8JDD. The intent was to make contact with the other Junction in South Carolina. Unfortunately, 20-meter propagation between the two locations did not support a QSO, and passing rain showers made us shut down this station for extended periods.
- A portable 2-meter voice station operated by Rob KM4SPJ. At this station, the boys made contact via a repeater to Tim KN4WOO, some 30 miles away. Over the radio, Tim educated the boys on the International Space Station as well as kept us in the loop on threatening weather. The younger boys were treated to having each of their names spelled out in phonetics.
- A digital HF station operated by Mike W4BZM. At this station, the boys learned about emergency communication modes (SARNET, National Traffic System, digital traffic modes), observed VarAC traffic on the computer, and were offered the opportunity to send a message via radio to an internet address. Three messages were sent, and one boy persevered in "hunt and peck" typing to complete a digital QSO with a patient and supportive ham in Indiana.

The young participants were surprised to learn that while they had to reach age 16 to drive a car or fly an airplane solo, there was no age requirement for an amateur radio license, and they needed only to be able to read in order to pass a simple test.

Did we generate any interest? We'll probably never know, because the seeds planted at this event may not take root for decades. However, the adult leaders mentioned that they might like to have us back for their next session in the Fall.

KM4SPJ with Leader and Youth Member

KM4SPJ with Leader and Youth Member

The North Okaloosa Amateur Radio Club (NOARC) has been actively boosting its community presence through a combination of technical training nights and volunteer support, designed to make amateur radio accessible to a wide range of individuals. NOARC emphasizes enhancing radio skills through tailored, practical training sessions. The club provides mentorship to help members and newcomers with gear programming and technical understanding. Activities include hands-on opportunities to learn about radio technology and improve operational capabilities. NOARC is scheduled to support several community events, including the Emerald Coast 5K, and a 250th Parade, providing communication and public service! The club encourages participation from all walks of life, including new people interested in the "awe and wonder" of amateur radio. NOARC actively encourages new volunteers to join to strengthen the local hobby and community. The club's efforts are geared toward strengthening local emergency response capabilities while also aiming to mentor those new to the hobby, guiding them through the licensing and operational process. If you are near Crestview, you need to join this active organization!

GARS: The Gainesville Amateur Radio Society Tailgate Event

Pete Winters W4GHP

The Gainesville Amateur Radio Society (GARS) annual Tailgate was held on Saturday, April 25th at Trinity United Methodist Church in northwest Gainesville from 8 am to 2 pm. The event was well attended by members of GARS, and members of various other amateur radio clubs, and individuals in the north central Florida area.

This writer believes that the distance award if one was to be given, would have been awarded to an amateur radio operator from Eustis, Florida. Amateur radio friendships were renewed at the event, along with new friendships being established within the amateur community. Mother nature cooperated with a day with no rain, however the smell of smoke from the area wildfires was present at times. The good weather allowed all tailgaters to display, sell, buy, or trade their various amateur radio equipment.

The Huge Benefits of Just Getting Out and DOING!

Gordon Gibby KX4Z—Alachua County ARES/North Florida Amateur Radio Club

Working-On-Her-License Dory stands at our greeting table

I'm often so impressed by the great hands-on activities of many other Florida clubs and groups. They just DO things -- and grow as a result! This month, thanks to two of our leaders, Ron Lewis KN4ZUJ, and Earl Sloan KI4OXD, the Alachua County ARES/NFARC group had a fantastic outing with lots of resulting benefits, during the Florida POTA Contest, Saturday April 18.

Two Enthusiastic Leaders

Ron headed up getting folks ready for the multi-station, multi-operator club effort to make a bunch of radio contacts from San Felasco Hammock State Park in Alachua, Florida. He's a gung-ho POTA enthusiast and it is contagious! Earl has a heart for creating public-friendly displays to invite more people into our great hobby and he's a huge servant to many in our group.

Both the Alachua Chronicle and the Mainstreet Daily News local newspapers printed press releases from our group explaining the opportunity and the event -- so we ended up having quite a number of outdoor enthusiasts and curious families drop by our day long event.

Great Involvement

We had such great involvement by so many from our group, including many of us die-hards, as well as people in our current General Class course, and even some folks not yet even licensed. (Ron, Earl, Jeff, Susan H., Craig W., me, Manish, Angela, Gary, Dory, Jim, *at least* two folks from our General Class, extremely helpful Charlie (whom I don't even know) and probably others I missed--) *We were knocking off the "rust" on our operating skills and our equipment, right and left, all day long!* There were SO many benefits --

Jeff W4UFL mentors new HF operator Angela AA4BV starting up on FT8. Delicious peanut butter snacks from Susan H. 4VWI

- A big emphasis on "antenna separation" had **noticeable improvements in our ability to operate up to five stations simultaneously on HF with considerable power** -- sometimes even on different ends of the same band! Not everyone was able to "space out" their antennas, but we had hundreds of feet separation on some.
- My "glue job" repairing a collar on a telescoping fiberglass mast revealed an unwelcome set of tubes stuck together! Ouch! Some sanding and lubrication and improvement in clearance will be in order to finish that repair, but at least it went higher than before!
- One of our folks brought out an entire setup in the back of their pickup -- and felt the bands were completely dead, no stations heard at all! Since others were busy working contacts, they were open to a "second opinion" and *a host of problems were subsequently solved*, leaving them with a newly working deployment solution! Software ports were matched up to audio sources, and a HUGE 20dB-over-S9 interference from an offending **laptop power supply** was discovered that had been blanketing the bands with noise. Success! Loud signals now!
- My supposedly-repaired generator quit yet again after 30 minutes. Darn! So a quick trip to/from home and its replacement was oiled up and put into action. Folks got to see the setup of a new engine. Another learning opportunity: turns out an **overly sensitive carbon monoxide sensor** on this brand of generators caused yet another shutdown. There are good fixes for THAT particular issue, so reliable power is in the offing!

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One of our newer members didn't have any experience on modern digital software, so she set to work practicing FLDGI and WSJT-X on a spare computer, and Jeff Capehart W4UFL was enlisted to tutor -- with the result that she was soon **able to get on FT8 and start making her very first HF contacts** ever! In fact, she got it so well figured out, that she was **able to coach not-yet-licensed Dory** -- who then filled TWO PAGES of our log sheets with mentored contacts! Hooray! Newly skilled operators able to compete right up there!

- Manish Sahni KZ4KC schooled me up on how to use the built-in FT8 capabilities of the sBitx when we couldn't get enough output power from my external soundcard system. Go Manish!
- I found a **bad center-pin contact on the SO-239 connector** on my go-box's common mode filter. Wiggle the plug and signals go in and out! That will get fixed! Meanwhile, using a replacement choke from our **recent 3D-printed filters** worked absolutely perfectly.
- I saw **rust being knocked off operator skills** as folks worked at getting the hang of timing their phone communications to jump into opportunities to answer CQ's. Mic Fright Conquered! It was great to see Ron Lewis mentoring folks into stronger voice skills! Meanwhile Earl was checking to the Florida ARES net and getting a whopping sixteen signoffs in his Taskbook!

- All throughout the day we were doing radio-sleuth detective work, figuring out interference sources and quashing them. This is SO important to making successful HF communications. The MIF23 industrial common-mode AC-line filters were incredibly successful on the inverter generators. We had one nagging every-60-kHz switching oscillator noise that we never found. But I have a suspicion it came from the solar panel MPPT controller on my travel trailer that I forgot to disable.....that will get tested and solved soon.

What the Public Saw

The visitors saw an entire pavilion full of enthusiastic ham radio emergency communications types busy practicing their craft and getting better and better at it! Several folks with some interest visited as a result of the newspaper articles and got a chance to sign up for more information and get first-hand experience watching the business of simulated emergency communications up close. Online and in person conversation about ham radio is great -- but I just don't think you can beat actually planning out a deployment, loading up the truck, setting up real antennas and stations and giving it a whirl with friends out in the great outdoors!

Ron Lewis, KN4ZUJ, went to the trouble of entering in all of our paper logs and came up with the required files for submitting not only to the FL POTA folks, but also to the Parks On The Air folks.

Final Club Score (NF4RC) 504 points
Earl KI4OXD -- 11
Angela AA4BV -- her first HF work -- new operator + mentored Dory -- combined 178
Manish - 29
Gordon - 37
Ron - 23

We won't be "competitive" but we had a great time and dusted off some rust in our capabilities! And I even got some great EXERCISE -- something that more and more research shows is critical for maintaining physical and mental faculties for oldsters like this 70-year old youngster-at-heart! I slept well that night! Great people, great fun, great growth!

Power & Antenna Needs For Successful Emergency HF Communications

Gordon Gibby KX4Z

THE QUESTION: What is the best trade-off of transmitter power and antenna configuration for ad-hoc deployed emergency HF communications? Presumably a deployed emergency position has somewhat limited battery or generator power/energy available, although the advent of LIFEPO4 batteries has made it easier to operate 100W transceivers for hours on end with an automobile-sized battery. Antennas may be full-sized dipoles, or smaller sized, with varying efficiency and polarization, and with differing ground losses and elevation patterns due to height above ground. In Florida, poor ground conductivity leads to significant losses when the antenna is at heights below, say 10 feet.

Different technologies have varying vulnerabilities to background noise, with single sideband voice requiring significant signal to noise ratios (e.g. 10dB S/N) for accurate comfortable copy, and PSK31, CW and JS8 requiring much less signal to noise ratio for success -- but with fewer volunteers with the required skill set.

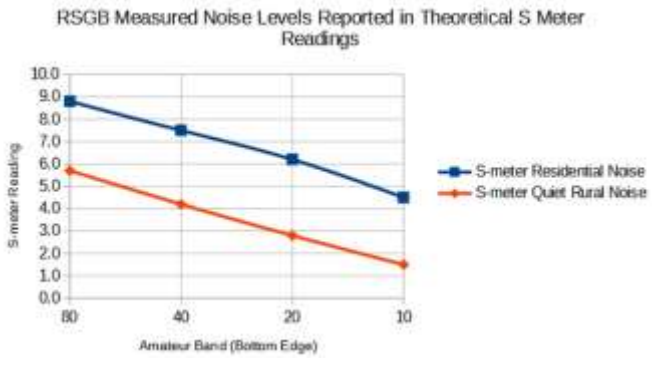
ACTUAL EXPERIMENTAL RESULTS: Several years back these issues were brought to the forefront in our minds, due to the results of a deployment exercise we held at an emergency communications conference. Participants at the conference were divided into multiple teams and sent out to establish "emergency HF stations" with their choose of power, transceiver, and antenna. Volunteers from the Florida Phone Traffic Net were on frequency and attempted to make voice contact with our various teams. NVIS-type frequencies were utilized since all participants were within Florida. There were significant failures and few successes. The clear message we got in comments from the Florida Phone Traffic Net volunteers were that our simulated disaster HF stations' signals were ***just too weak for effective communications.***

PARADOXICAL RECEIVING SUCCESS?? How does this correlate to the often-noted fact that you can HEAR HF signals with even very compromised antennas -- yet our volunteers couldn't transmit successfully to experienced phone traffic volunteers with their emergency transceiver power and antennas?

THE PHYSICS: HIGH FREQUENCY NOISE ISSUES

High Frequency bands are beset by much higher background noise levels than VHF/UHF bands, because the power distribution of lightning and typical man-made noise signatures puts much more noise into the lower frequencies, than the higher frequencies. At VHF/UHF the noise figure of the receiver and efficiency of the receiving antenna become far more important. At HF frequencies, the normal background noise level is so high, that even a limited antenna and poor receiver (even one that merely connects the antenna directly to a diode-ring mixer!) will be able to sense the background noise level, and thus any signal above that strength. This is NOT true at VHF/UHF.

The Radio Society of Great Britain did an extensive study of actual NOISE on HF bands from (noisy) residential settings, all the way to quiet rural settings, beginning in 2012. They have published this findings of noise levels by band. https://rsgb.org/main/files/2017/12/221216-Noise-leaflet-issue-2.pdf Their data were reported in electrical engineering units, rather than S-units, which are more familiar to radio amateurs in the USA. However with a bit of mathematical factors, their data can be reported out in "theoretical S-Units" based on a "perfect" S-meter that reports 70uV on 50 ohm antenna as S9 and 6dB per S-Unit below that.



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As you can see, on the bands most likely to be used for emergency intra-state NVIS communications (80 and 40 meters), the noise levels can easily be S5 or even up to S8 for the receiving station with a high efficiency full size dipole antenna. With this high value of normal background noise, copy-able signals must also be very strong! Thus even an inefficient receiving antenna will work just fine.....for receiving.

So the problem of RECEIVING signals at HF is easy to solve. Transmitting is quite different! In order to be heard over that strong background noise, your transmitter and antenna **must generate a signal above the noise level.** You must create such a powerful radiated signal that when it reaches the intended recipient, the E and H fields of the electromagnetic wave are sufficiently strong compared to the background noise (especially for voice SSB)!

In other words, ***yes! you can hear fixed stations calling you even with your severely compromised antenna so close to the ground and so small that its losses and inefficiencies are great*** But your are far less likely to be HEARD by your intended recipient unless you have significant radiated power to overcome those hindrances.

EXERCISING WORST CASE CONDITIONS

So when you test your communications abilities with intentionally limited power and/or intentionally limited antenna effectiveness, **you really aren't testing YOUR receiver**. What you are really testing is the intended Recipient's noise floor based on their setting and antenna system. If they have a great quiet rural setting and high antenna efficiency -- they are more likely to hear you, particularly if using high sensitivity techniques such as PSK31 or JS8. If they are located in an urban area with higher noise levels, HOA restrictions on full sized antennas, and you are using SSB voice -- you are less likely to get your message across to them.

FINDING THE MOST EXCEPTIONAL STATIONS

Transmitting with low power and intentionally marginal antennas will definitely allow you to identify the best, most exceptional stations with which to communicate, whether on voice, or WINLINK RMS stations. That would be a useful outcome of such testing.

But in a real communications emergency, handicapping yourself is obviously NOT what you would prefer. So in preparation for that situation you would want to find ways to MAXIMIZE your transmitted signal on NVIS type frequencies. Using the absolutely most effective antenna in such situation would allow you to make effective communications with potentially limited power due to battery or other considerations. Practice making very effective antennas!

CONCLUSIONS

- Horizontal antennas will produce much more power in the higher-angle elevation pattern that you need to make connections to intra-state disaster response partners, while vertical antennas will get you more DX contacts (if ground losses are minimized).
- 1/4wave or shorter vertical antennas needing a ground-image will fare poorly due to ground losses unless using either a slightly elevated radial system, or an extremely extensive buried ground system.
- Horizontal type antennas are much less dependent on ground conductivity, but in poor Florida ground conductivity, putting your antenna only single-digit feet above ground makes the ground act more like a "lossy dielectric" to your radiated signal, reducing your effective remaining radiated signal.
- Many authorities recommend a NVIS horizontal type antenna in the 0.15-0.25 wavelength above soil level.

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TECHNICAL APPENDIX FOR THE CURIOUS

Definition of Antenna Factor: This factor is used to convert between incident E field (in field strength units uV/m) to voltage measured at antenna termianls (uV)

AF = incident E field / voltage measured at terminals

dB AF = dB E field - dB voltage

Thus the voltage measured = incident E field / AF
In decibel terms: dB voltage = dB Efield - dB AF, where indident E field is in dBuV/m and voltage measured is in dBuV

The Antenna Factor for a full size half-wavelength dipole is well known. It can be shown to be numerically equalt to 7.6/(wavelength). The table below shows (non dB) Antenna Factors for typical halfwave amateur radio antennas by band.

Calculations to convert RSGB data to S meter readings: Antenna Factors for typical halfwave amateur radio antennas by band.

Band	Frequency	wavelength in meters = 300/MHz	Antenna Factor for half wavelength dipole
80	3.5	85.7 m	0.089
40	7.0	42.9 m	0.177
20	14.0	21.4 m	0.354
10	28.0	10.7 m	0.71

S-meter theoretical readings can be understood from this article: http://www.listenersguide.org.uk/swl/measuring-radio-signal-strength/#:~:text=S Meter Specification,have an ouput in EMF.
Calculations to convert RSGB data to S meter readings:

Band	80	40	20	10
RGSB Residential dBuV/m	12	10	8	4
AF	0.089	0.177	0.354	0.71
dB AF	-21.0	-15.0	-9.0	-3.0
dBuV=dBE – dBAF	33.0	25.0	17.0	7.0
S-meter	8.8	7.5	6.2	4.5
RSGB Quiet RuraldBuV/m	-7	-10	-12	-14
AF	0.089	0.177	0.354	0.71
db AF	-21.0	-15.0	-9.0	-3.0
dBuV=dBE – dBAF	14.0	5.0	-3.0	-11.0
S meter	5.7	4.2	2.8	1.5

Volunteer Radio Communicator Desirable Capabilities

Gordon Gibby KX4Z

We circulated this table around our Alachua County group, to try and define some desirable capabilities in a volunteer radio communicator. Do you see improvements?

No.	Check Off	Skillset, Experience, or Communications Asset	Reference	Opportunity to gain capability
1	1 point q	Can you program your VHF FM transceiver to a desired tone & tone squelch on a requested simplex channel? (CTCSS)	ARES(R) Intermediate Proficiency /Skill Alachua County Level I skill (EOC gobox) Florida AUXC 4a #3	Could be a Field Day educational session.
2	1 point q	Can you write and send an ICS213 message using your VHF FM voice transceiver?	ARES(R) Intermediate Proficiency /Skill Alachua County Level I skill	At any ARES(R) Net, Thursdays.
3	1 point q	Can you operate without need of utility power for 2 days of intermittent VHF FM communications?	Previous Florida ARES Taskbook, Level III (go kit) Not address in AUXC PTB	Purchase equipment at any time.
4	1 point q	Can you construct your own emergency antenna for the 2 meter band, with enough transmission line to allow you to place it outside your house and operate from inside, and verify its SWR on a desired frequency?	(Partial) Previous Florida ARES Taskbook Level III Florida AUXC 4a #2 ; 6a #2	LabNLunch's Could be a Field Day educational session; Previously part of our Technician License course.
5	1 point q	Can you receive an emergency bulletin addressed to you via WINLINK on VHF?	ARES(R) Advanced Proficiency/Skill Florida AUXC 4a #1	Tech Nite presentation (see our web page) Weekly EOC exercises Monthly EOC exercises Field Day Exercises Resources locally available 24/7/365
6	1 point q	Can you reach an HF voice net and deliver a formal message outbound (e.g reaching the Florida Phone Traffic Net and sending a formal message)?	Alachua County Level II skill (Somewhat assumed in AUXC 4a#1, which specifically only requires DIGITAL transmission)	Resources available multiple times every day.
7	1 point q	Can you operate without need of utility power for 2 days on an HF emergency frequency with continuous receiving and intermittent transmissions?	Previous Florida ARES Taskbook, Level III; (Not addressed in AUXC PTB)	Purchase resources at any time.

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8	1 point q	Given wire and materials and tools, can you create some sort of workable HF antenna for a desired frequency and place it outside your house and verify an SWR under 3:1 to reach an emergency HF frequency?	Previous Florida ARES Taskbook Level III Florida AUXC 4a #2; 6a#2	TechNites (see web page) LabNLunches Field Day setups
9	1 point q	Do you have the wire, materials, tools, transmission line, and measurement equipment to construct a workable HF antenna for a desired frequency and place it outside your house to reach an emergency frequency?	Not addressed in any of the position task books.	Purchase resources at any time.
10	1 point q	Can you, with your equipment and resources, receive an emergency bulletin transmitted in a common digital keyboard-to-keyboard format such as PSK31?	ARES(R) Advanced Proficiency/Skill Alachua County Level II skill	Technite training; Winter Field Day operation; Sunday evening PSK net.
11	1 point q	Can you, with your equipment and resources, receive and transmit an emergency message on HF using Wiinlink?	ARES(R) Advanced Proficiency/Skill Alachua County Level II skill	ARRL Field Day exercise Monthly EOC exercises Resources locally and nationally available for home practice 24/7/365
12	1 point q	Can you deploy a portable station, HF and VHF/UHF including antennas and power if needed?	Not addressed in position task books	ARES(R) POTA exercises; Florida QSO Party; Summer Field Day; Winter Field Day; individual POTA practice
13	1 point q	Do you have a portable generator, and are able to maintain and operate it safely?	Obliquely addressed in position tasks books.	ARRL Field Day; Winter Field Day

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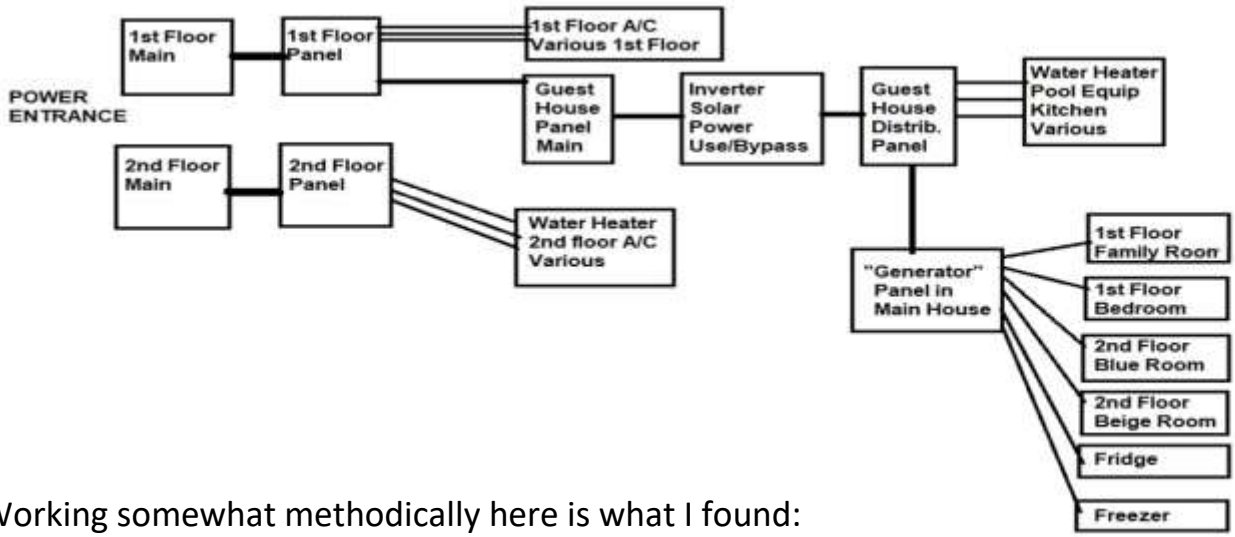
HF Noise Gordon Libby Kx4Z

Because I operate two Winlink HF RMS servers (one for hams, one for SHARES) I'm always concerned about HF noise that would reduce the RMS sensitivity to users trying to make connection. Recently I noticed a significant "uptick" in the HF noise on the ham server, which is monitored more easily. Then in a recent State/Federal weekly SHARES net practice, I had S7 noise on a frequency in the 7MHz region -- much more than usual, making connection to the desired net virtually impossible.

On a day when Nancy was gone, so I wouldn't bother her, I put the ICOM 7300 on the net frequency and powered it from a battery -- S5 or worse noise. Flipped off both main breakers to the house, and the noise disappeared. This is the standard way to diagnose if your noise is self-induced or comes from outside the house.

So now the hunt was on! The power distribution system in our house is convoluted, because originally we had a "generator panel" on the main 1st floor that allowed critical portions of the house to be powered from a transfer switched generator input. When the solar panel equipment was added, the only space was in the guest house garage -- so power to the "generator panel" was rewired to go circuitously from the 1st floor main --> guest house / solar power ---> back to the generator panel, and thence to the various critical locations (freezers, etc). This allowed the guest house as well as the other critical locations to be served by the solar panel power.



Working somewhat methodically here is what I found:

Step	Circuit Breaker	Noise?	Implication
1	Both main house breakers OFF	NO	inside my own house
2	2nd Floor Main ON	NO	from first floor panel
3	1st Floor Main ON	NOISE	
4	1st Floor Feed to Guest House OFF	NO	Guest house!!
5	Solar/Inverter system off and completely bypassed, Guest house panel otherwise ON	Still NOISE	Not from the inverter!! (Panels were already off)
6	Left side of Guest House breakers ON (convenience outlets)	NO	
7	Right side of Guest House breakers ON	NOISE	Only two breakers: kitchen and "old generator panel" back in main house

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8	Just KITCHEN ON	No Noise	
9	Old Generator Panel ON	NOISE	It is back in the main house!!
10	Only RIGHT side of generator panel on (freezers etc)	No Noise	
11	Family Room/Bedroom	No Noise	I was expecting THIS to be the problem, with TV's and chargers....but it wasn't!
12	Blue Room 2nd floor ON	No Noise	(ham RMS & 2 printers)
13	Beige Room 2nd floor ON	NOISE	(include the main radio room, SHARES RMS and VHF VARA RMS)
14	Unplug the SHARES RMS and VHF VARA RMS	STILL NOISE	At this point, the Ham RMS now has power and I'm noticing it too has excessive noise on 40 meters.
15	Finally notice the TDK 150watt power supply to the sBitx go-box is still ON -- turn it OFF	Noise goes away!	Noise in the ham RMS also goes away!!
16	I notice the TDK already has a power line filter installed (typical silver can 10A commercial line filter). ADD a Field Day prep -- filter with several turns of extension cord through FT-240-43	NOISE GOES AWAY	
17	Try just the FT240-43 line choke	Noise on SHARES gone	Noise on ham RMS still there (different frequency from SHARES)
18	Put both filters back in series	No Noise	No Noise on ham RMS either

Conclusion

A single item anywhere in your house with switching transistors or FETS in a power supply can use your entire house wiring as its "end-fed radiating antenna" and wreck havoc on amplitude-modulated receivers. I have even seen noise on 2 meter SSB. Your own house is much closer to your radios and antennas than just about any neighbor or even most power lines, so ruling out noise from your own house and appliances is key! In this case, an inexpensive DC power supply that wasn't manufactured to exacting noise-reduction standards, has caused me considerable grief. Because any "antenna" has different nodes and anti-nodes of current/radiation patterns, it can require some considerable brute force filtering to stop unwanted radiation from a noise maker! But it is well worth it!! The same problem bedevils many Field Day efforts from generators and solar panel gear -- so I learned a long time ago to build lots of types of AC line filters. Both commercially available ones (the little tin can ones, and the MIF23 industrial strength filter) and homebrew chokes using turns around an FT-240-43 or -31 core, can be very helpful!

UPDATE: Improved Construction of 1:1 HF Choke Balun

Gordon Gibby KX4Z

At one of our March 2026 LabNLunches, our ARES group (with two related clubs, NFARC https://www.nf4rc.club/ and the Alachua EOC Radio Club) created a large number of unun/baluns -- including 36:1, 9:1 and 1:1 "choke" baluns. My 3D printer ran for ***days*** creating all the ABS high-temperature plastic boxes for these wonderful and inexpensive devices!

All of the construction information, include the important 3D-printable .stl files, for the 1:1 choke Balun are now freely available at this repository: https://github.com/docvacuumtubes/1-1-Choke-Balun-HF- With any recent 3D printer (or even one at your local library) you should be able to print the enclosure -- but any kind of plastic box (even an electrical outlet box) should work fine, also.

A Big Improvement

While twisted pair wire has been used successfully before for these 1:1 choke baluns, I wasn't happy to see a rising SWR into a 50-ohm dummy load above the 20meter band. Some such baluns are built with coaxial cable, so I purchased some RG316 Teflon-insulated coax, with a minimum bend radius of 0.5 inches, and rebuilt my choke -- and the performance soared!

Using RG-316 coaxial cable for 11 turns, I got pass through-SWRs there were completely usable right through the 6meter band, and even into the 2meter band!

So I recommend an improvement to the original design, still using a FT-240-31 core (designed to create LOSS for unwanted common mode current) **but now using RG-316 coaxial cable instead of twisted pair wire.** Be gentle when winding the RG-316 -- don't pull hard to tighten turns, instead leave them a bit "loose." With its PTFE (Teflon) insulation, it is very easy to separate out the center and braid (shield) conductors at the end and solder the center conductor to the SO239. Use a ring crimp connector to connect the braid side to the the case of the SO-239.

The common-mode blocking impedance is LARGE -- larger than my MFJ-259B can measure on most HF frequencies, so this should definitely help reduce common mode currents. The power rating (into perfect SWR) of RG316 cable is immense -- better than 1kw -- so I suspect these will be fine in the 100-250 watt range, even into less-than-perfect SWR's.

Github repository	https://github.com/docvacuumtubes/1-1-Choke-Balun-HF-
Example of FT-240-31 core	https://www.amazon.com/dp/B0F6DG2H5S ($9)
Teflon RG316 cable	Available in multiple different lengths. Cheaper by the foot to buy longer lengths, such as: https://www.amazon.com/dp/B09B27L8VV You need 2.5-3 feet for each 1:1 unun
Teflon-insulated SO-239	https://www.amazon.com/dp/B089ZZZZDS

Real Value of ARES® Volunteers?

Gordon Gibby KX4Z

Emergency Managers may be tempted to conclude that the ARES® volunteer system of emergency communicators more resembles "smoke and mirrors" than solid resources offering real value in the age of Starlink rapid internet communications. Further, volunteers' reliability may be questioned when compared to county professional employees who have to serve in a disaster when needed, to continue to draw paychecks. The ongoing ARRL delays in even providing the Advanced EmComm training document (https://www.arrl.org/online-course-catalog Advanced Emcomm: *"On Hold Until Further Notice") provide further cause for doubt. What are the answers that local volunteer leaders can provide to these concerns? This proposed Executive Summary of an in-depth document is presented for your review & comment. You can read the entire article, both this executive summary and a larger discussion with details, at https://www.nf4rc.club/how-to-docs/county-ares-docs/draft-paper-value-of-aresr-volunteers-in-starlink-era/ Your critique and comments are welcome at: https://forms.gle/nzkpuZcpPLEKPpDq9*

Starlink offers impressive high-speed internet for many routine and moderate emergency needs, providing tens of Mbps connectivity at reasonable cost. It has become a go-to solution for rural areas, RVs, and even some government backup during disasters where terrestrial networks fail or overload.

However, Starlink is not a complete or resilient substitute for all emergency communications, particularly in catastrophic events. Its system depends on vulnerable ground stations, public network interconnections, and unhardened user terminals/electronics. In a severe electromagnetic pulse (EMP) attack—or similar widespread disruption possibly by hacking or kinetic attack—many components could fail due to high-energy pulses destroying unprotected semiconductors, especially those connected to long wires/antennas or part of the ground infrastructure. While some terminals might survive if shielded or powered off, full end-to-end connectivity (including to public safety dispatch or inter-agency networks) is unlikely to remain reliable across a broad area. Further, it provides little support for mobile public service fire and police units.

Historical and recent examples show that even minor communications gaps cause major problems—such as the 2025 incident where a state trooper responding to a real bomb call was chased, spiked, and handcuffed by local police due to a single missing piece of shared information, despite fully functional systems. In true disasters like Hurricane Katrina, loss of command-and-control channels led to chaos. The Dec. 25, 2020 Nashville ATT vehicle bombing demonstrates how large scale communications dependent on the internet are quite vulnerable to traditional kinetic attack, with 911 and many other services were widely affected -- even air traffic control.

Volunteer amateur radio operators (hams) fill critical gaps that Starlink cannot:

- Provide **EMP-resilient, local voice communications** using simple, short-antenna radios (e.g., handhelds/walkie-talkies) that survive high fields simply because of their small intercept size.
- Offer **technical expertise** for rapid repair, reconfiguration, or extension of systems like Florida's Mutual Aid Radio Communications (MARC) units—portable VHF/UHF repeaters and radio caches that deliver ~10-mile public safety coverage but need relay for larger counties.
- Enable **relay and extension** to distant areas, patching systems, or bridging to state/federal networks (e.g., via SHARES HF/VHF data/voice channels, which many Florida groups like Alachua County ARES train on weekly).
- Deploy **pre-positioned, EMP-mitigated gear** (Faraday-protected equipment, backup antennas, duplexers) and bring networking know-how (e.g., extending Starlink over microwave links if partial function remains).
- Operate independently of commercial power/internet, with personal resources, self-sufficiency planning, and experience from exercises like Field Day.

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Even after an EMP, it is now known that many vehicles will still operate (due to built-in electrostatic discharge protection). Technically-adept volunteers, who are already well-versed on many forms of communications disruption, are among the most likely to be still available and mobile and can additionally provide techniques for remote relays, connections and operations that can fill in and allow government professionals to maintain access to working communications systems, allowing coordination with state and other regional assistance.

In summary: Starlink enhances everyday and moderate-disaster connectivity, but volunteers provide unique redundancy, local resilience, repair capability, and long-distance reach in worst-case scenarios like EMP or targeted destruction of wired or fiber Internet systems by hacking or bombing—where professional resources may be overwhelmed, scarce, or unable to deploy. Integrating trained ham volunteers strengthens overall emergency communications posture at low cost, ensuring information flows when it matters most for public safety and command/control.

The full article, including the indepth discussion, can be found at:
https://www.nf4rc.club/how-to-docs/county-ares-docs/draft-paper-value-of-aresr-volunteers-in-starlink-era/

MERT

Marion County Sheriff's Office
Division of Emergency Management

COMMUNICATIONS UPDATE

May 2026

MERT's primary role is to support all open Evacuation Shelters throughout Marion County (FL) during declared Emergency events. We also support the Emergency Operations Center Incident Commander & staff, all cities in the county and other EMCOMM groups (CERT, HEC, ARES & MBA) with voice, image & data communications locally, statewide and across the United States.

"*Call MERT… When all else fails!*"

Next Bimonthly Meeting

Saturday, May 16th, 10:00 am at the EOC

All are Welcomed!

Meetings conducted in Jan, March, May, July, Sept. and Nov.

Harlan Cook (KN4VRM) MERT Coordinator

Coordinator's Corner – May Readiness & the Power of Staying Connected

As we move into May, our focus as a team shifts toward sharpening our readiness for the upcoming hurricane season. One of the simplest and most effective ways we stay prepared year‑round is through our weekly Thursday evening Training Nets. We have two (2) so every MERT member can participate, regardless of the type of radio each have. They have moved 30-minutes earlier in the evening targeted at making it easier for everyone to participate. The new times and detailed repeater information is:

* Thursday @ 7:00 PM MERT D-STAR Practice Net For everyone having D-Star radio or Dongle capability (KK4DFC, Frequency 146.790 Mhz.)
* Thursday @ 7:30 PM CERT-MERT Practice Net For everyone having basic Handi-Talkie (HT) and mobile radio capabilities (KJ4CLL, Frequency 145.330 MHz. Radio or antenna offline? Use your PC and join in via "Echolink"!

All area CERT/MERT/HEC/ARES/MBA and Guest Hams are invited to Check In to one or both Nets!

Every check-in exercises your equipment, confirms your radio is functioning properly, and keeps you familiar with the procedures we rely on when the Division of Emergency Management activates the emergency shelters. Just a few minutes on the air each week strengthens everyone's skills, their confidence, and our team work as volunteers. For newer members, the Net is the perfect low-pressure environment to learn and grow in being amateur radio operators.

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May is also the month when MERT becomes laser-focused on reviewing all aspects of our hurricane response capability. We complete SHREK Kit audits ensuring every SHREK kit is fully equipped and ready for deployment. We will test every radio in verifying each is programmed and operating correctly. We revisit our Shelter Operator Manuals confirming accuracy, refresh ourselves with best practices and current expectations by all entities we work with. And we review our **RED BOOK** guide detailing Pre-Activation, Activation and Post-Activation procedures so that when the Division of Emergency Management begins storm preparations, we respond with a proven process insuring clarity of operations and high confidence performance by all members.

Your participation — on the Net and in our May readiness efforts —ensures MERT remains a dependable communications resource for the Marion County Sheriff's Office Division of Emergency Management.

Thank you for everything you do to support MERT and our mission of serving our community when it needs us most. **Your presence matters. Your skills matter. Your voice matters.**
With sincere appreciation,

Harlan Cook KN4VRM
MERT Coordinator

From the Deputy Coordinator - Troubleshooting My VHF/UHF Antenna – Little Things Can Make a Difference!

After joining MERT, I was eager to get on the air at home on VHF/UHF so that I could begin taking part in our weekly Thursday evening practice nets. I bought an ICOM-7100 that at the time was on sale. For the antenna, I had to come up with a small footprint solution that would be acceptable in our HOA-restricted community. After reviewing options, I selected the famous Ed Fong-designed DBJ-1, a dual band half-wave vertical dipole that does not make use of ground radials. It is encapsulated in PVC pipe and
end-fed at the bottom of the antenna. A great antenna for $75. I mounted it outside in a "stealthy" area on a six-foot tripod about 20 feet from my base station.

A Comet CTC-50M Window Feed-Through Jumper routes the signal indoors through the window. I am fortunate that this side of my house has an almost unobstructed view from the northeast through east and to the southeast, which from southwest Marion County gives me great access to all of the D-Star and FM repeaters that we regularly use at MERT, including the Forest tower repeater.

I got on the air quickly and have had particularly good operating results over the past two and a half years.

When we added SWR testing to this year's school shelter testing, I realized that I had never measured the SWR on my own antenna system. In researching the DBJ-1, it is supposed to deliver 1.5 – 1.7 SWR's across the entire 144 -148 MHz VHF 2-Meter amateur band segment. I decided to check out one of MERT's RigExpert Antenna Analyzers and take it home to see what it would show.

Candidly, I was a little disappointed in the results. The center band reading was 2.3, with around 2.0 at 144 MHz and 2.6 at 148 MHz. Although this is certainly within a safe operating range for my radio, I decided to take a fresh look at everything to see if I could find any
culprits contributing to the higher-than-expected readings. I checked:

A) the connection at the antenna
B) the connections on both sides of the CTC-50M jumper (as well as the jumper itself)
C) the connection at the radio
D) the entire 35-foot length of RG-8X coax for any defects.

I looked for evidence of water intrusion and found none. After each item I checked, I re-ran the SWR scan, but there was no change.

"When we strive to become better than we are, everything around us becomes better too." - Paulo Coelho

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When I originally hooked up the coax run, I had about 15-feet of excess coax that I coiled up outside, about midway between the end-feed of the antenna and the indoor radio. Just for "kicks", I decided to uncoil it and re-run the SWR scan. **Bingo!** The RigExpert scan showed a mid-band SWR of 1.6, with a minimum of 1.3 at 144.72 MHz, and 1.8 at 148.0 MHz, which is in fairly close agreement to what was advertised for the antenna.

Although I am pleased with the new SWR readings, I am baffled about why the coiled coax was the issue. Perhaps it was too tight of a coil (about 6-inches in diameter) and may have created an unintended choking effect. I think it might be related to the design of the antenna, which uses no ground plane or radials. I have read where these types of antennas use the outer shield of the coax as a "counterpoise" to complete the circuit and thus are susceptible to any changes made to the cable (such as coiling it) that in turn causes the SWR to increase.

"Remember that t
Brown Jr.

I decided to remove the excess length of the cable, as there has been no reason to move the tripod farther away from where I set it up. As I am far from being an antenna expert, but this exercise has motivated me to gain a better understanding of not just antennas themselves, but how the coax feed-lines should be properly routed and deployed. That's why they call it an antenna "system".

Best regards to all!

Ray Woody WB6FKJ
Deputy Coordinator

Special Net Control Operator Acknowledgement

This is long overdue and the recognition richly deserved.

I sincerely thank the following members who serve as Net Control Operators (NCO) in leading our radio Training Nets week after week - all year long! They distinguish themselves for their commitment in helping us all remain skilled by organizing and conducting the weekly testing events ensuring all members learn the procedures, refresh existing skills and test their equipment. Their enthusiasm is unwavering and deserves recognition by all.On behalf of all members, we extend our sincerest thanks to each of you for your dedication and leadership supporting MERT's mission!


Bill Sobel
K1WLS


Nick Kiddey
W4NFK


Phil Lewis
W4EVV


Ray Woody
WB6FKJ


Gary Nicholas
KQ4HQD

Members – NCO positions are available along with classes to prepare you. Challenge yourself and learn something new! It is actually fun to be the NCO.

MERT NEEDS YOU!

Please renew your participation in MERT activities, practicing Winlink messages and weekly radio Nets.

Visit: **KG4NXO.com – Your resource for great MERT information. New resource ideas are always welcomed!**

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MERT 22 Update

Activity: **MERT 22 Special Event Training Exercise**
Date: **Saturday, April 18th**
Time: **7:00 am to 12:00 noon**
Location: EOC radio room and across the street in the open field area.

MERT conducts a special training exercise each year celebrating our creation by the Division of Emergency Management in 2004. While this years event was challenging from a combination of solar events making HF operations almost impossible before 10:00 am, those attending shared they enjoyed the event and team camaraderie.

New Safety Manager Announced

I am very pleased announcing **Nick Kiddey** (W4NFK) has accepted the appointment to the position of Safety Manager for MERT.

Nick brings a strong commitment to preparedness, professionalism, and operational awareness—qualities that are essential to maintaining a safe environment for all MERT activities, including deployments, training events, meetings, and exercises. Nick has regularly taken the lead ensuring the health and safety of all participants. In this new role, he is responsible for ensuring our team continues to stay keenly focused on upholding the highest standards of personal and organizational safe operations in our plans, activities and emergency activations.

Please join me in **Congratulating Nick** and welcoming him into this important new leadership position. He is counting on everyone's support to strengthen our team and mission safety.Ps: Nick has done a fabulous job since his appointment as our New Member Manager too!

New Member – Dave Rowson

New member Dave Rowson (KR4KMW) with his daughters Shaughnn Giracca and Carolyne Mason visiting the EOC.

We are very happy in welcoming **Dave Rowson KR4KMW** as MERT's newest member. In his first meeting, Dave shared his desire to contribute to the mission of a meaningful organization helping the local community and chose MERT.

As MERT members know, learning all the new emergency communications details can be daunting so thanks to everyone for pitching in and being great Elmers' helping Dave on his new learning path!

Dunnellon H.S. Emergency Shelter Testing Update

MERT successfully completed the annual shelter Audit-Communications Testing at Dunnellon H.S. on April 28th.

Ray Woody (WB6FKJ) Deputy Coordinator

(L-R) Officer Mahaela Looper (MCSO School Resource Officer) with MERT members Jeanne Herman, Dave Smith, Santos Pagan, and Fred Herman.

The expanded testing plan included radio operation tests using the SHREK kit over all MERT repeaters.

This is the final site tested in verifying the quality of the antenna and cable systems. Ray Woody (Deputy Coordinator) led the team and shared his thanks to members Jeanne & Fred Herman, Dave Smith, Santos Pagan and Nick Kiddey (who manned the EOC radio room) for their wonderful assistance in conducting these important annual tests.

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April 28th - Emergency Communications (EMCOMM) Network Activated!

On Tuesday, April 28th, MERT activated all five (5) repeaters in proactively supporting emergency communications (EMCOMM) messages should they be needed by the Division of Emergency Management. This action was to clear and monitor normal repeater traffic should MERT receive instructions to pass emergency traffic between regional 911 Centers or other important governmental agencies. Counties affected included Marion, Lake, Sumter and Apopka.

MERT activated its network resulting from a significant regional wide-area Fiber Outage affecting multiple Internet providers across north Florida that lasted up to nearly 10-hours (9.5 hours in Sumter Co.). The outage is believed to have been caused by a severed underground fiber-optic line, currently suspected in Lake County (Leesburg area) along a corridor of several national fiber optic carriers owned by AT&T, Verizon and Lumen Technologies (CenturyLink / Quantum Fiber) who have extensive long-haul fiber infrastructure in the area. The following members are recognized for their immediate willingness to activate in support on making regular announcements across all MERT repeaters and then be prepared to take emergency communications traffic should it have been requested by the Division of Emergency Management. All are sincerely thanked for their rapid support in this unexpected event!

Bill Sobel K1WLS

Nick Kiddey W4NFK

Ray Woody WB6FKJ

Harlan Cook KN4VRM

A brief summary - In a world where international tensions and cyber-attacks can disrupt critical infrastructure in an instant, MERT's continual readiness takes on even greater importance. Marion County depends on trained and knowledgeable radio operators who can step in with very short notice (within minutes) as global events (or local construction outages) create major local or regional impacts.

The willingness of our members to respond **without hesitation** is what ensures MERT remains connected, informed, and supporting the Division of Emergency Management when simple… and international issues… around us impacts critical EMCOMM services.

Hayden Kauffman N2HAY (Marion County ARES Coordinator) shared this announcement on the event "On Tuesday, April 28, 2026, at approximately 1600, Hayden Kaufman N2HAY, ARRL Emergency Coordinator for Marion County received a telephone call from Jeff Benway KC4YAO, ARRL Assistant Emergency Coordinator for Lake County regarding a telecom outage in Lake County. He inquired about the status of Marion County comms and was advised that there had been no reports of difficulties at that time. Benway stated that he had been in contact with Mark Newby KX4LEO, Assistant Emergency Coordinator for Sumter County, and that Sumter was experiencing a cascading degradation of both wireless as well as hardline communications in county.

Jamey McKinley W4CGX, ARRL Emergency Coordinator for Lake County requested that Marion provide a radio presence on the K4LAK repeater in The Villages. Kaufman acknowledged and then checked in on the repeater. Once establishing good comms with Lake and Sumter, a notification was made to **Harlan Cook KN4VRM, MERT Coordinator** in response to the request. Contacts were made to responsible operators, and a presence was maintained on all **MERT repeaters**, as well as the K4LAK repeater. While there were no requests for relay operations during the peak of the outage, Marion County ARES as well as **MERT** once again proved that cooperation during a potentially challenging operational period was not only possible, but achievable. Our nearly instantaneous response to a request from a partner agency (Lake Co. ARES on behalf of the Lake Co. Sheriff's Office) has shown that we are stronger together, and that the combination of our resources proved resiliency in nearly any communications task requested of us.

*"**I am only one, but I am one. I cannot do everything, but I can do something**." – Edward Everett Hale*

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This activity provided both of our organizations with an opportunity for training: it would be beneficial for our operators to have a copy of our partner counties' ICS-205 forms for reference so that we will be in a position to be better prepared for intercounty communications when expected resources may be compromised, impaired or unavailable."

Have an idea or recommendation on something that should be included in the MERT Communications Update? Send it to KG4NXO@marionso.com

For more information on the Marion County Emergency Radio Team (MERT), visit:

KG4NXO.com

All amateur radio operators and the general public are welcomed to attend all MERT meetings every Wednesday from 9:00 am till Noon at the

Emergency Operations Center (EOC)
692 NW 30th Ave., Ocala, FL.

"Volunteering is an act of heroism on a grand scale. And it matters profoundly." *– Unknown*

Alachua County ARES® Deploys For Florida QSO Party

Gordon Gibby KX4Z

Yet *Another* Event?

Jeff W4UFL on Phone, with Earl KI4OXD in the background in the Quonset Hut

April was a very busy month for our crew! We don't get to pick when other groups schedule their activities, just exactly like we don't get to pick when disasters will arrive -- and April was chock full of big events. The Florida POTA contest (April 18) gave us a chance to try our portable (deployed) operations and antennas and systems and knock some of the rust off our operating skills. Then the GARS club picked April 25 for their famous local "tailgate" event, the same date the Florida Contest Group had chosen for the Florida QSO Party. Many of us were involved in *all three* and learned a lot! Others already had pre-existing family or work commitments in such a busy month, but we still had enough team breadth to take advantage of the opportunities.

Deployment Opportunities

The key difference for our group, a volunteer emergency comms support service group, is to try and take these ham events and turn them into ***deployment*** exercises, not just armchair contests. Finding better and better ways to set up and operate anywhere, strengthens our capabilities.

We Got Bumped

We had planned to use the same outdoor pavilion that we arranged for the Florida POTA contest - but a local group working to stop human trafficking schedule a huge bike charity fund raising event, and the Park asked to to move to a different venue, which turned out to be even better. The San Felasco trail-maintenance volunteer group meets in a wonderful old Quonset Hut that is fully furnished with thick foamed insulation, air conditioning, a kitchen, tables, restroom and everything we could want. A perfect chance to try out another structure! (While we were there, one ranger even wondered if we would like to put a permanent station there!)

Much-improved horizontal multiband OCFD

How We Improved

We had some "glitches" at our Florida POTA event, learned some things, and tried some new ideas. There is no "digital" in the Florida QSO party, so it is a little harder to get newcomers immersed, and we would have one less band/mode to utilize -- and the sunspots haven't been cooperating recently, so we might not have 10 meters and even 15 meters. That made our ability to get two stations on 20 meters (one on CW, one on Phone) even more important.

1. **Improving our multiband OCFD Antenna:** *I wasn't happy with its performance at the POTA event. Other FT8 stations were consistently giving me lower S/N scores than I was giving them.* I think it was too low to the poor conductivity Florida soil and lost a lot of signal that way. So instead of just one support and an inverted Vee, at this event, I used two 30+ foot masts and made the long end horizontal, and the short end gently down-sloping to a ground-weight a good distance away. Further, I repaired the stuck telescoping section in the fiberglass mast that had robbed us of almost 10 feet elevation. The much-higher result was excellent, with strong signals and fast replies to my CW CQ's! **1st Antenna Improved**.

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2. **Improving our Vertical Antenna** -- We have great results with a cheap telescoping quarter-wave vertical available on Amazon. But **Earl Sloan KI4OXD** came up with a way to get it a few feet above ground, and thus elevate the radials also, which is supposed to get even stronger signals. He used a fiberglass Army tripod antenna support and it worked great! 2nd Antenna Improved. He brought an older but amazingly capable Ten Tech Orion rig.
3. **Computer Updates**. Gathering up our two "loaner" deployment computers from the EOC, I discovered they were way, way behind on Windows Updates....missing 2025 updates to the operating system and the crucial .NET support. A few hours of downloading and installing got done to fix that!
4. **Improving our Same Band Separation** -- We ran LMR400 150+ feet in one direction to put out the now-elevated horizontal antenna, and we ran RG8X 200 feet the opposite direction to put up the elevated vertical 1/4 wave -- and found that just by backing off the RG gain on the 7300 we wee able to operate both CW and Phone on 20 meters! This was key, as we found 20 was where all the action was in the only afternoon that we participated.
5. **Improving my own organization** -- For one reason or another, I end up bringing a huge amount of the equipment. With two loaned computers from **Earl McDow K4ZSW**, (which came already fully updated, thanks, Earl!) I had about 6 computers set up for a networked system with database N3FJP server. We tried slimming down our networking mesh to just using a single WIFI router since we would be in close quarters -- and the Starlink Mini includes exactly such a WIFI router, even in Standby Mode. So we tried that as our networking, and it worked perfectly! With antenna multiplexers, bandpass filters, coax, antenna, batteries, first aid etc., I still had over 40 items to deploy so for the 2nd time I actually made a table of where each item was placed to transport in the pickup truck. We skipped the RV travel trailer this time, and I packed the truck to the gills. The organized list worked perfectly, allowing others to help repack and demobilize in only 40 minutes at 6 PM on Saturday.
6. **Improving our training** -- **Jeff Capehart W4UFL** met a new guy at a local club meeting who wanted to get involved and had a modest amount of ICS experience with the Florida Forest Service. Arc Thames also alerted me of this fellow and we all invited him to join with our group at this event. **Scott KR4HMP** showed up with a fresh ARES Taskbook to get christened! We not only did that, but we actually got this Technician into the fray, first logging for Manish Sahni KZ4KC, and then got him on the air calling CQ. A great introduction to some of our skillset for a newcomer! **Manish Sahni KZ4KC** was everywhere -- helping the phone guys log, and then running phone for a long stretch while I took a break. He pushed us to re-learn how to "memorize a CW" on the ICOM 7300, and we succeeded!

Elevated 1/4 Wave Vertical

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7. **New Equipment** -- Earl Sloan's Ten Tech Orion was doing a great job, but we only had TWO transmitters on the air. We put out a call for MORE STATIONS and **Jeff Capehart W4UFL** mustered up some strength after displaying his wares (for free give-aways!) at the GARS tailgate, and brought over an ICOM 706 that I don't think had gotten must practice in recent years. We provided a battery and a coax cable from our multiplexer, and Jeff was on the air! Newcomer Scott worked with him also! The multiplexer allowed both Jeff on 20 meters with his ICOM 706 and me on 40 meter CW with my ICOM 7300. We had such great bandpass isolation that this actually worked out great, even though both were literally using the same coax feed and antenna. That gave Jeff a chance to practice voice comms and Scott as well while I was pounding out CQ's on 40, which began to work a little better as the sun lowered in the late afternoon. So this got us yet another HF piece of gear tested out successfully.

Earl the Younger's Orion on the air

All in all, we had six hams who were able to roust themselves on a beautiful Spring afternoon to join in, including **Mark McDow N4TEK** who also joined in the effort. The "phone guys" were having a tough time of it, with somewhat marginal contact rates, while I had finally gotten all my CW canned text working perfectly on N3FJP and CW was getting **lots of bites** on both 40 and 20 in the afternoon sun. Subsequnt AI research by Jeff Capehart and review of submitted scores to https://www.3830scores.com/ confirmed that there is plenty of "upside" to our phone capabilities, and that our CW is tolerable but not stellar. All together in 5 hours we got > 40 multipliers and 110 81 CW and 29 phone) contacts and called it a day at 6PM to demobilize and transition to Sonny's BBQ for a great time of reminiscing and camaraderie. Earl Sloan KI4OXD concluded, "*These small events are as important as field day to shake off the rust and get ready for whatever may come when deployed. I have seen where my equipment, and myself, need improvement. Those of us that have participated in these events are much better prepared.*"

It's About Time

Keeping Accurate Clocks in the Ham Shack

By Mark McDow, N4TEK | MyComputer.Guru

TL;DR — The Short Version

In amateur radio, time isn't just a courtesy — it's a technical requirement. Digital modes like FT8 and FT4 demand your computer clock be accurate to within about one second or they simply won't work. Logged contacts without correct UTC timestamps are unreliable for awards and records. Satellites and repeaters depend on synchronized schedules. This article walks you through why accurate time matters, how to check and correct your shack's clocks, and some surprisingly fun projects to keep everything ticking in perfect harmony.

Why Accurate Time Matters

Think of your shack's clock as the conductor of an orchestra. Every instrument — your radio, your logging software, your digital mode decoder — needs to be playing at exactly the same tempo. When the conductor is off, the music falls apart.

In practical terms, accurate time matters across several areas of amateur radio:

- FT8 and FT4: These popular digital weak-signal modes synchronize transmissions in precise 15-second (FT8) and 7.5-second (FT4) intervals. Every station on the planet starts transmitting at the same moment. If your clock is off by more than about one second, WSJT-X will fail to decode incoming signals — you'll see the waterfall but hear only silence. [1]
- Logging software: Programs like Log4OM, Ham Radio Deluxe, and N1MM Logger+ timestamp every contact. Inaccurate timestamps can cause problems when submitting logs for contests, applying for awards like DXCC or WAS, or sharing logs via tools like LoTW (Logbook of The World).
- Repeater systems: Many repeater controllers run timed announcements, courtesy tones, and auto-patches based on their internal clocks. Drift over time can cause these to fire at unexpected moments — much to the annoyance of users.
- Satellite operations: Working LEO (Low Earth Orbit) satellites like the AMSAT fleet requires knowing exactly when a pass begins and ends. Doppler correction software depends on accurate time to calculate the satellite's position and frequency shift.

UTC vs. Local Time — Speak the Universal Language

Amateur radio operators use Coordinated Universal Time (UTC) as the global standard for logging. UTC is essentially

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the same as Greenwich Mean Time (GMT), tied to the prime meridian at 0° longitude in England. It never changes for Daylight Saving Time.

Local time, by contrast, shifts based on your time zone and the season. In the United States, we observe Daylight Saving Time (DST) — clocks "spring forward" one hour in March and "fall back" in November. In most other countries, this is called Summer Time, and the specific dates may differ from U.S. practice. [2]

Why does this matter? Because if you log a contact at 7:00 PM Eastern Standard Time, that's actually 00:00 UTC the next day. Mix up your local time and UTC, and your log is technically wrong — the contact appears to have happened on a different date entirely.

Pro Tip: Always log in UTC. Most logging software can display both local time and UTC simultaneously. Set your computer clock to the correct local time and let the software handle the UTC conversion automatically.

Time Notation and the Midnight Problem

Here's a tricky one: What time is midnight? It depends on how you write it.

In logging and technical contexts, midnight is most precisely expressed as 0000 (the start of a day) or 2400 (the end of that same day). These are technically the same moment, but the date associated with each is different:

- 0000 UTC on March 15 = the very beginning of March 15
- 2400 UTC on March 14 = the very end of March 14 (same instant)

Most operators use 0000 as the standard for the start of a UTC day. For date formats, stick with YYYY-MM-DD (ISO 8601) or DD-Mon-YYYY to avoid international confusion. The format 03/04/2025 could mean March 4th in the U.S. or April 3rd in Europe. Clarity prevents contest log rejections!

Detecting Clock Problems

How do you know if your shack clock has drifted? Watch for these telltale signs:

- FT8 decode failures: You can see signals on the waterfall in WSJT-X, but no contacts are being decoded. This is the classic symptom of a clock that's more than a second off.
- One-sided QSOs: You can hear stations and send CQ, but nobody responds. Your transmissions may be landing in the wrong time slot, making you invisible to other operators.
- Incorrect log timestamps: If your logging software shows times that don't match the clock on your phone, there's a problem. This is easy to catch if you glance at both simultaneously during a QSO.
- Software warnings: WSJT-X will sometimes display a time sync warning message at the bottom of its window when it detects clock drift beyond safe limits.

How to Check the Accurate Time

Before fixing your clock, you need a reliable reference. Here are several options, ranked roughly from easiest to most precise:

Online Time References

- Smartphone clock: Your phone automatically synchronizes with cellular network time, which is typically accurate to well within one second. A quick side-by-side comparison with your computer clock is a fast sanity check.

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- time.gov: The official U.S. government time website, maintained by NIST and the U.S. Naval Observatory. Visit https://time.gov in any modern browser. It displays the current UTC time with a graphic interface. Note: the animated clock requires a browser that supports modern JavaScript — most current versions of Chrome, Firefox, Edge, and Safari work fine. [3]
- NIST Telephone Time Service: Call (303) 499-7111 from anywhere in the U.S. This is NIST's Boulder, Colorado time service. You'll hear an automated voice announcing the current UTC time every 10 seconds. It's free, and it works when your internet is down.
- GPS receiver: A GPS unit that has a current position fix is synchronized to GPS satellite time, which is accurate to within microseconds. More on this in a moment.

Internet Time Synchronization — NTP Explained

Network Time Protocol (NTP) is the mechanism by which computers synchronize their clocks over the internet. It's been around since the 1980s and is elegantly designed to work accurately even over variable network connections.

Understanding Stratum Levels

NTP uses a hierarchical system called stratum levels to describe how far a clock is from the original time source:

- Stratum 0: The actual reference clocks — atomic clocks, GPS receivers, and radio time signals. These are the grandmasters of timekeeping.
- Stratum 1: Servers directly connected to Stratum 0 devices. These are run by NIST, universities, and major internet organizations. They're highly accurate.
- Stratum 2: Servers that synchronize to Stratum 1 servers. This is what most home and business computers use.
- Stratum 3 and beyond: Each hop adds a tiny bit of potential error, but even Stratum 3 or 4 servers are accurate to well within one second for our purposes.

Think of stratum levels like a game of telephone — but an extremely reliable, mathematically verified version. Each level passes the time signal down with only tiny degradation.

NTP Pool Project

The NTP Pool Project (https://www.ntppool.org) is a global network of volunteer-run time servers. Rather than hammering a single server, your computer can be pointed to a geographically local pool:

- pool.ntp.org — global pool
- north-america.pool.ntp.org — regional
- us.pool.ntp.org — United States specific

Using a geographically nearby pool server reduces network latency and improves accuracy. Most modern operating systems configure NTP automatically. Windows uses the Windows Time service (w32tm), Linux typically uses systemd-timesyncd, chrony, or ntpd, and macOS uses its own NTP daemon. [4]

Offline Time Sources

What if you're operating from a portable location without internet? Or preparing for emergency communications where infrastructure may be unavailable? You have options.

- GPS receiver: Any GPS receiver with a current fix knows the time to within microseconds. Even an old handheld GPS unit can serve as a time reference. Connect it to a computer via USB or serial and use it to discipline your system clock.

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- Local NTP server: Set up a small computer on your local network to act as an NTP server using a GPS input. This allows all your shack computers to synchronize without internet.
- Real-Time Clock (RTC) module: These battery-backed hardware chips keep time even when power is removed. They drift over weeks or months, but with occasional calibration they're reliable for portable operations.

Best Solution: A Raspberry Pi with a GPS receiver HAT (Hardware Attached on Top) makes an outstanding offline time server for an emergency communications kit.

Raspberry Pi Time Server Projects

The Raspberry Pi is a favorite tinkering platform in the ham community, and for good reason — it's inexpensive, runs Linux, and has an enormous support community.

Raspberry Pi GPS Time Server

GPS Receiver	Raspberry Pi	Shack PCs
USB or HAT module	Running ntpd or chrony	All devices NTP-synced

GPS → Raspberry Pi (NTP Server) → All shack computers

Figure 3 — A Raspberry Pi with a GPS HAT acts as a local Stratum 1 NTP server for your entire shack.

A Raspberry Pi running NTP server software (ntpd or chrony) can serve time to your entire shack over your local network. Add a GPS HAT module and you have a Stratum 1 reference for your home station.

Want to add hardware reliability? A DS3231 or PCF8523 Real-Time Clock module connects to the Pi's GPIO pins and costs just a few dollars. It keeps time through power outages and can be battery-backed for portable use.

A Note on Raspberry Pi OS

Raspberry Pi OS is based on Debian Linux. This is worth knowing because the vast majority of NTP configuration tutorials online are written for Debian or Ubuntu — and they work directly on the Raspberry Pi without modification. When you find a tutorial that says "sudo apt install chrony", it will work on a Raspberry Pi.

Setting Time on Your Radio

Many modern transceivers have built-in clocks that display UTC or local time. These are handy for quick logging reference, but they drift like any quartz clock and need periodic adjustment.

Common Radios and Their Clock Settings

- Icom IC-7300: Press MENU → Set → Clock/Timer → Date/Time. You can set date, time, and UTC offset. The IC-7300 also accepts time input from external software via the CI-V interface.
- Yaesu FT-991A: Press MENU → scroll to "DATE" and "TIME" items. Adjust using the main dial. The FT-991A displays UTC offset as well.
- Kenwood TS-590SG: Connect via USB and use the ARCP-590G software, which can set the clock automatically. Alternatively, navigate the front panel menu to set time manually.

Reminder: Radio rig clocks are primarily for convenience displays — your logging software should sync to your computer's clock, not the rig's clock. Keep the rig clock reasonably accurate, but focus your precision efforts on the computer.

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Understanding Clock Drift

All quartz crystal oscillators drift over time. The rate of drift depends on the quality of the crystal, temperature, and age. A typical computer's built-in clock might drift 1 to 20 seconds per day without synchronization — that sounds small, but it adds up.

Here's the key thing to understand about units of time:

- 1 second = 1,000 milliseconds (ms)
- FT8's tolerance = approximately 1,000 ms (1 second)
- A typical well-maintained PC clock drift = 300 ms or less per synchronization cycle

So a 300 ms drift is only 30% of FT8's tolerance window — you're safe. But if your computer hasn't synchronized in days or weeks and has drifted 3 or 4 seconds, every FT8 decode will fail.

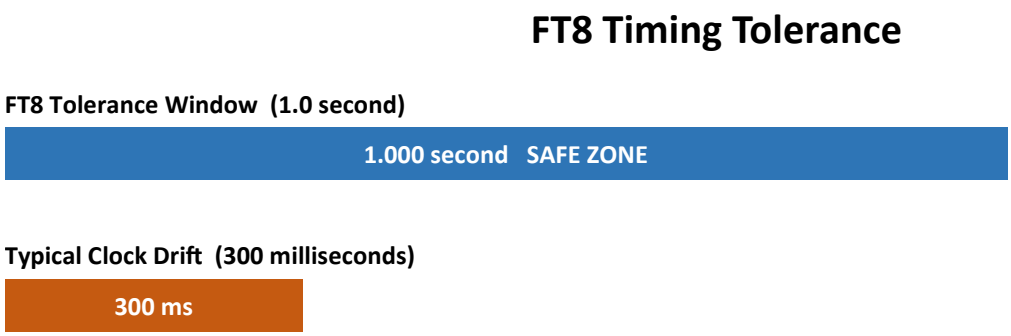

Figure 2 — A 300ms clock drift (orange) sits well within FT8's 1-second tolerance window (blue). Drift beyond 1 second causes decode failures.

GPS Week Number Rollover — The Y2K of GPS

Here's a fascinating footnote in the history of GPS technology. The GPS system transmits time using a 10-bit "week number" counter. Since 10 bits can only count to 1,023, the counter rolls over to zero every 1,024 weeks — roughly every 19.7 years.

The first rollover occurred on August 21-22, 1999. The second happened on April 6, 2019. The next is expected sometime in 2038.

Many older GPS receivers were not programmed to handle this rollover gracefully. When 2019 arrived, some older Garmin and TomTom navigation units began reporting incorrect dates — sometimes years off. Some manufacturers released firmware updates to correct the issue; others didn't, leaving users to cope with a device that showed the wrong date.

Interestingly, some older devices received community-developed firmware fixes from enthusiastic owners who reverse-engineered the update process. This is the ham spirit applied to consumer electronics!

Older Car GPS Units

If you have an older portable car GPS navigator from the mid-2000s gathering dust in a drawer, it may now show an incorrect date due to the 2019 rollover. For routing and navigation it may still work fine, but you wouldn't want to use it as a precision time reference for amateur radio purposes. [6]

Repeater Systems and Time

The repeater sitting on the hilltop above your city has a clock too. Repeater controllers range from sophisticated Linux-

based systems to simple embedded microcontrollers. Depending on the hardware and the repeater trustee's setup, the controller's clock might be:

- Synchronized via NTP over an internet connection
- Set manually by the repeater trustee during site visits
- Running on an embedded real-time clock that drifts over months
- Connected to a GPS receiver for precise timing

If you've ever noticed a repeater's time announcement being off by several minutes — now you know why. If you maintain a repeater, it's worth adding NTP synchronization if your controller supports it. Many modern controllers running Linux (such as IRLP and Allstar nodes) handle NTP automatically.

Computer Default Time Zones

A quick practical note: when you set up a new computer, the operating system usually attempts to detect your time zone automatically based on your internet location or asks you during setup.

- Windows: Typically defaults to your region's time zone and enables automatic DST adjustment. Check by right-clicking the taskbar clock → Adjust date/time → Time zone.
- Mac: macOS usually auto-detects the time zone and keeps it updated. Check in System Preferences (or System Settings on newer versions) → Date & Time.

One gotcha to watch for: if you're running a Linux virtual machine or dual-boot system alongside Windows, there can be a conflict over how the two systems interpret the hardware clock — one may expect it in UTC, the other in local time. This can cause your clock to be wrong by your UTC offset whenever you switch between systems.

Additional Tools and Diagnostics

Want to go deeper? Here are some tools worth knowing about:

- w32tm /query /status (Windows Command Prompt): Shows your current NTP server, last sync time, and clock offset. Great for quick diagnosis.
- PowerShell scripts: The author's GitHub repository (see below) includes PowerShell utilities for checking NTP status, forcing resynchronization, and logging clock performance over time.
- chrony tracking (Linux): The command chronyc tracking gives you detailed information about your NTP synchronization accuracy on Linux systems.
- Online NTP testers: Websites like https://www.ntppool.org/use.html provide tools to test whether your server is responding correctly.

The Big Picture

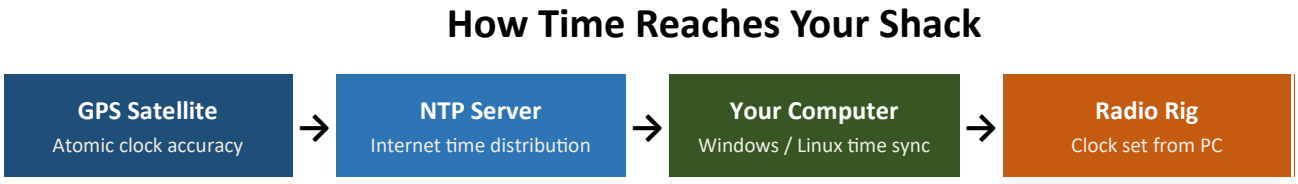

Figure 1 — Time travels from GPS satellites through NTP servers to your computer, then to your radio.

References and Footnotes

Continued Next Page

[1] **WSJT-X User Guide**

The official WSJT-X documentation explains FT8 timing requirements and synchronization. Available at: https://wsjt.sourceforge.io/wsjtx-doc/wsjtx-main-2.6.1.html

[2] **Daylight Saving Time**

NIST has published guidance on DST and UTC: https://www.nist.gov/pml/time-and-frequency-division/time-realization/daylight-saving-time

[3] **Official U.S. Time**

The official U.S. time website, maintained jointly by NIST and USNO: https://time.gov

[4] **NTP Pool Project**

The global volunteer NTP pool, with usage instructions and server lists: https://www.ntppool.org

[5] **Raspberry Pi NTP Server**

The Raspberry Pi Foundation documentation on using GPS for time keeping: https://www.raspberrypi.org — search for GPS NTP server tutorials applicable to Debian/Raspberry Pi OS.

[6] **GPS Week Rollover**

Detailed documentation on GPS week rollover, affected devices, and firmware status is included in the author's GitHub repository at https://github.com/Computer-Tsu/Time.

Additional Resource: GitHub Repository

The author maintains a GitHub repository with supporting materials for this article and related time synchronization research:

github.com/Computer-Tsu/Time

The repository includes:

- Time synchronization research notes and references
- NTP configuration scripts for Windows (PowerShell) and Linux (Bash)
- GPS week number rollover documentation and affected device lists
- PowerShell utilities for monitoring and reporting clock health

About the Author

Mark McDow, N4TEK

Mark McDow (N4TEK) is an IT consultant and Microsoft-certified systems professional with extensive experience managing Windows, Linux, and macOS environments. Through his business MyComputer.Guru, Mark manages computers and IT systems for a diverse range of clients — from home users to small businesses — bringing the same systematic approach to troubleshooting technology that he applies to his amateur radio operations.

Mark is a licensed amateur radio operator and has a particular interest in the intersection of technology and radio communications. He enjoys helping fellow hams understand and solve the technical challenges that modern digital radio operations present.

Website: https://MyComputer.Guru **Email:** Contact via website or QRZ.com/db/N4TEK

GitHub: github.com/Computer-Tsu
https://orcid.org/0009-0006-9145-2089

FCC Testing Information

Daytona Beach Amateur Radio Assn (DBARA)
- Monthly, third Monday, 5:30 PM, prior to meeting
- Lehman Building, Embry-Riddle Aeronautical University
- Registration Required
- Info: https://dbara.org/testing/

Hog County Amateur Radio Association, Bushnell FL
- First Saturday, 11:00 AM
- Cross Connection Church, 1451 West County Road 476, Bushnell, FL 33513
- Info: sumterVE@gmail.com

Lake ARA, Leesburg FL
- Monthly on the 3rd Saturday, prior to meeting. (Except December)
- 8:00 AM
- LARA Clubhouse (11146 Springdale Ave, Leesburg – off of CR 473)
- For more information and registration, contact: Dave Templeton N4NG, 386-804-2806 n4ng@icloud.com in advance of the meeting.

Lake Monroe ARS FCC Testing, Sanford FL (LMARS)
- Third Saturday of every month
- Seminole County Sheriff's Office, 100 Eslinger Way, 1st Floor, Sanford, FL
- Registration Required
- For more information and registration, contact Bob Cumming, W2BZY, 407-333-0690 or w2bzy@cfl.rr.com

Milton Amateur Radio Club, Milton FL
- Check date at miltonarc.org
- Walk-in
- Bagdad United Methodist Church
- Info: Chuck, N4QEP, merlinman3@yahoo.com

Orlando Amateur Radio Club
- First Wednesday
- 5:30 PM, Walk-ins allowed
- ARRL/VEC
- William Beardall Senior Center 800 S Delaney Ave Orlando FL 32801.
- Info: testing@OARC.org Robert Cumming, 407-333-0690

Santa Rosa County FL ARES® Testing (Walk-in)
- Information and dates can be found at srcares.org

Testing information is subject to change. Check with the testing venue to confirm the testing session and requirements.

Seminole County
- Every month on the third Saturday
- 9:15 AM
- Seminole County Sheriff's Office off SR 17-92, on 100 Eslinger Way in Sanford, FL
- Info: Bob Cumming, W2BZY, w2bzy@cfl.rr.com

Silver Springs Radio Club, Ocala FL (SSRC)
- Go to http://k4gso.us/class/ to signup for classes
- Go to http://k4gso.us/test-signup/ for testing. Testing is held on the 2nd Tuesday of odd months at 7 PM.
- Note http://k4gso.us/ncvec605/ is requested to be filled out before you show for testing. It is best to download the form and open it as a PDF so you can fill in the blanks.

Tallahassee Amateur Radio Society (TARS)
The Tallahassee Amateur Radio Society (TARS) has begun limited License testing. Please refer to the following for the updated testing dates and requirements for individuals wishing to take exams. https://www.k4tlh.org/getting-started/license-testing

West Volusia Amateur Radio Society
- Second Saturday of each odd numbered month
- 6:00 AM
- St. Johns Lodge #37, 2557 N. Spring Garden Ave, Deland FL
- Info: https://westvars.org/testing

Gainesville Amateur Radio Society
- 1st Saturday of even numbered months
- Tech day two weeks after testing
- https://gars.club/Testing.html

Hernando County Amateur Radio Association (HCARA)
2nd Thursday of each month at 6:00 PM
For details and to register—http://www.hamstudy.org and go to **Find A Session**
Exam cost is free. FCC charges do apply

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