QST NFL

Newsletter for the Northern Florida Section

Come join the FUN!

Volume 12 Issue 7 | www.arrl-nfl.org | **July 2025**

From the Shack of the Section Manager

Scott Roberts, KK4ECR (kk4ecr@gmail.com)

ARRL Field Day 2025 -- Celebrating Success

What an incredible success Field Day 2025 turned out to be! I am thrilled to report that this year's event brought together amateur radio operators, families, and community members in a celebration of communication, camaraderie, and preparedness. A heartfelt thank you to all participants and those who invited the public to join us in this exciting experience!

Highlights of the Event

Field Day 2025 was filled with engaging activities, licensing sessions, informative workshops, and inspiring demonstrations. From the moment the event kicked off, the energy was palpable. We witnessed:

- Great Participation: This year, we saw a great number of participants, showcasing the growing interest in amateur radio and its vital role in emergency communications.

- Community Engagement: Many local organizations and individuals stepped up to invite the public, fostering a spirit of inclusivity and education. Your efforts made a significant impact!

- Licensing Sessions: Reports are coming in on an amazing number of people who became new Hams, or upgraded their licenses at various Field Day events.

Informative Sessions: Attendees had the opportunity to learn about the importance of amateur radio in emergency situations, including hurricane preparedness. The workshops provided valuable insights into how amateur radio can serve as a lifeline during disasters.

Thank You for Your Support

I want to extend my gratitude to everyone who contributed to the success of Field Day 2025. Your enthusiasm and dedication made this event a memorable one. I am excited to read the articles and posts that capture the highlights and experiences from the day. Sharing these stories helps to inspire others and spread awareness about the importance of amateur radio.

Continued on next page...

The Importance of Hurricane Preparedness

As we reflect on the success of Field Day, we want to emphasize the critical role that amateur radio plays in hurricane preparedness. With hurricane season upon us, it is essential to be ready. Amateur radio operators are often the first to provide communication when traditional systems fail. We encourage everyone to stay informed, participate in training, and be prepared to assist in times of need.

Thank you once again for making Field Day 2025 a resounding success! I look forward to seeing you at future events and continuing to strengthen our community through communication and preparedness. Stay tuned for more updates, and let's keep the spirit of amateur radio alive!

Together, we can make a difference!

From the Section Emergency Coordinator

Arc Thames, W4CPD

How has field day already come and gone? This year is certainly going by quickly, as they seem to do as we get older. I hope everyone had a fun filled field day and accomplished all of the goals you hoped to. I'm certainly looking forward to reading all of your articles in the newsletter this month!

For this year's field day, we (Santa Rosa County) ventured down to the southernmost point in our county, Navarre Beach. We didn't get quite as much foot traffic out of this location as we had hoped but many of our new amateur radio operators were able to participate and learn how to put up antennas and many made their first HF contacts.

Each year, we use this as an opportunity to assist the county with testing various equipment of theirs such as their mobile command post and generators. We're very appreciative of the opportunity to be able to utilize this equipment and do our best to take care of it and return it in better shape than we found it.

I had invested in a few new battery boxes for this year's event, so I definitely had the solar panels out in force. We did end up facing several challenges with thunderstorms, as is normal this time of the year for us, but overall we had a great event. I was also thankful for our partnership with our served agency as we were able to have an EMS unit on standby for us at our site during the hottest part of the setup and main event day.

As we are now in hurricane season, please remember that floridaemergency.net is your place to find any information regarding the activations throughout our state.

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 July, please send me (W4CPD located in Pace, FL) a radiogram via the NTS with your answer to this question "What did you enjoy most about field day this year?" I've gotten very little participation (1-2) radiograms out of this challenge so far. Please let me know if you're even interested in participating.

Website updates

If you find information that is out of date on the section website (arrl-nfl.org), please fill out the online form and one of the team will take care of it as soon as possible.

Monthly EC Reports

Out of the 34 appointed ARES Emergency Coordinators we have in the section, we only received monthly reports for 17 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 over 1,488 hours of service to our communities. Thanks to the following counties for providing their reports: Alachua, Bay, Citrus, Duval, Escambia, Gadsden, Gilchrist, Leon, Marion, Okaloosa, Seminole, St. Johns, Santa Rosa, Sumter, Suwanee, Volusia, Washington.

	Number	Person-Hrs
8. Exercises this month:	12	227.00
9. Training events this month:	23	465.50
10. Public service events this month:	6	102.00
11. Community service events this month:	6	106.00
12. Emergency events this month:	0	0.00
13. SKYWARN events this month:	2	7.50
14. Meetings this month:	19	293.50
15. Unclassified events this month:	42	286.50

Call signs of DECs/ECs reporting:
K4BJS, K4SOP, KB4HAH, KC4NVU, KD4EZW, KD4IMA, KM4BTW, KM4QQO, KO4YGV, KO4YOL, KX4LEO, N2HAY, W4KKJ, W4UFL, WA4MN, WE4MJ

NFL Officials

Section Manager
Scott Roberts KK4ECR

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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.

David Fox, NN4DF SK 2025

David began his ham career as KA8CXQ after he finished graduate school in 1978. Many thanks to his Elmer and great friend WD8ABP, who also happens to be his brother-in-law. His days and evenings as a Novice were spent operating deep in his cozy basement station, which consisted of a Viking Valiant II transmitter and Collins A3 receiver. The peak of the sunspot cycle gave him the opportunity to Work All States as a Novice and many countries, all on CW and a dipole. He filled a logbook that cold winter in northeast Ohio.

By the time the Dayton Hamfest rolled around with the Ohio spring thaw, he upgraded to General and traded his Viking for a Halicrafters HT-32 transmitter so he could operate SSB. More logbooks filled …

Since his college degree was in forestry, he ended up moving to Florida, the "wood basket" of the southeast. He spent 15 years in the Fort Myers area (south Florida) and became very active in the local radio club. He upgraded to Advanced in 1988 and later became KQ4HY to reflect his southern adoption. His station changed to a pair of Drake B-line twins and a TH6DXX at 45 feet. Later he traded in his Drakes for a TEN-TEC Paragon. The Super Station was born! He operated many different modes besides CW and SSB such as 10m FM, VHF Packet (had the first VHF/HF packet gateway in SW Florida), 2m SSB and CW, some Mode A satellite operations, RTTY, and AMTOR. He would fill up a log page and then change modes for another page.

Later he moved to Gainesville where he upgraded to Extra in 2000. Alas, the lot, house, and tree configuration did not allow for a tower and beam so, since about 1998, he experimented with various wire and vertical antennas. Among the busyness of life, work, and play, he managed to find time to earn his PhD in Forestry from the University of Florida in 2015 - at the age of 60! As a graduation gift to himself, he retired the 20+ year old Ten-Tec Paragon and bought the **Elecraft K3s and P3** kits at the Orlando Hamcation in 2016. For eight years he was a lecturer in the forestry school and really enjoyed teaching the next generation of natural resource professionals. He retired from teaching in the Spring of 2025. However, he was still involved with W4DFU, the Gator Amateur Radio Club on campus. – QRZ.com
David was married for 41 years.

I did not know David that well but the few interactions that I had were extraordinarily positive.

He really mentored two of us for quite a bit on how to do CW contesting. That was basically the first time that someone showed us the ins and outs of how to do this. It was extraordinarily helpful. He was the person who introduced us to the amazing Winkeyer and how it could reduce your workload.

Later in that same field day he had people transmitting so close to him that it made reception on his end impossible. But instead of getting all riled up, he just patiently explained the problem, and I learned a lot from him.

One other time we were doing a POTA outing with the ARES®'s team and David joined us and set himself up and was busy doing all kinds of contest and you could just learn from seeing what he was doing and how he did it.

He was a huge help to the ARES group. He taught us how to do fast paced CW. He Elmered a couple of us as we watched and learned from him for an hour or more. Over and over he made comments to improve our planning. Really great guy.

David was a big part of helping/serving us when we needed a lot of help and mentoring, and he started some really good things; we will miss him

David was one of those who positively impacted other people's lives. I think that puts him in the greatest people category. – Gordon Gibby KX4Z

When we accidently bought 50 acres, we had a steep learning curve with owning a large chunk of land. Dave was the only licensed forester that we were able to get to come out to such a small plot of land. He did not even bat in eye when he showed up to not only find us waiting, but several friends and multiple toy poodles that wanted to experience what foresters did. It was quite an experience. He wrote to us a very professional assessment of our trees after we all tracked through the woods (and swamp). We learned so much. We were forever grateful for his expertise. – Susan K9PDL & Jeff W4UFL

David Fox's memorial
July 19, 11am
North Central Baptist Church
8001 NW 23rd Ave

RON DESANTIS
GOVERNOR

AMATEUR RADIO WEEK IN FLORIDA

WHEREAS, for more than a century, Florida amateur radio operators have been broadcasting over the airwaves; and

WHEREAS, in the event of a disaster, amateur radio is an essential communication link to provide situational awareness to emergency managers during and after disasters; and

WHEREAS, amateur radio continues to provide a bridge between people, societies and countries by creating friendships and sharing ideas; and

WHEREAS, Amateur Radio Operators provide countless hours of community services both in emergencies and to other local organizations; and

WHEREAS, the state recognizes the services that amateur radio has provided to our many Emergency Response Organizations; and

WHEREAS, amateur radio operators also serve as weather spotters in the Skywarn program of the U.S. Government Weather Bureau in Florida; and

WHEREAS, the American Radio Relay League is the largest organization for amateur radio in the United States of America; and

WHEREAS, as the largest organization for amateur radio in the United States, the American Radio Relay League will host the American Radio Relay League Amateur Radio Field Day exercise on June 27-28, 2020; and

WHEREAS, this 24-hour emergency preparedness exercise serves as a demonstration of the radio amateurs' skills and readiness to provide self-supporting communications without further infrastructure being required; and

WHEREAS, the Florida Division of Emergency Management values the partnerships amateur radio operators have provided during past hurricane seasons by allowing the state to maintain constant communication with impacted counties; and

WHEREAS, the Florida Division of Emergency Management looks forward to further developing these partnerships by providing additional training for amateur radio operators, which better prepares the state for responding to emergencies; and

WHEREAS, Amateur Radio Week in Florida is an opportunity to honor and recognize the valuable work of those operators who provide communication and information to people all over the world.

NOW, THEREFORE, I, Ron DeSantis, Governor of the State of Florida, do hereby extend greetings and best wishes to all observing June 22-28, 2020, as *Amateur Radio Week in Florida*.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the State of Florida to be affixed at Tallahassee, the Capital, this 22nd day of June, in the year two thousand twenty.

Governor

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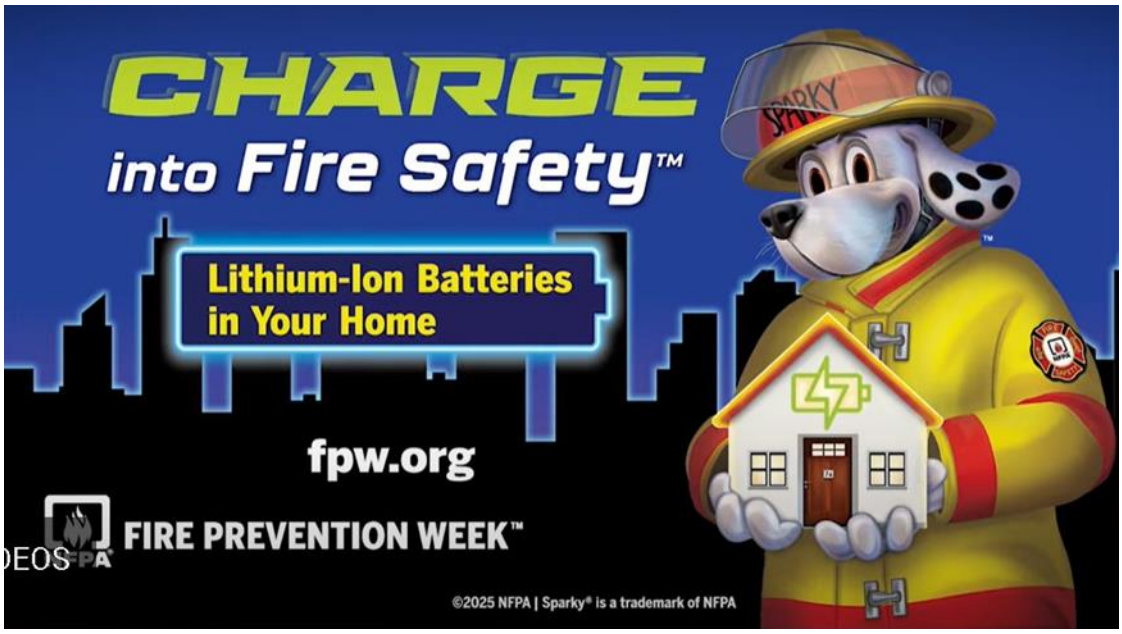
W.T. Loften High School Report

Bob Lightner W4GJ

The students are on their Summer Break. A few of them signed up for Field Day at the Alachua County EOC. In the interim, we are applying for an ARDC Grant to replace our aging 35-foot Rohn 6 "experimental tower" with a 100-foot Aluma tower, which was donated to the school by the Florida State Fire College a few years ago. Last year we applied for an ARRL Grant, but it was not funded. They said our Grant request "had merit" though 😢. Prayers are being accepted that the ARDC will come through!

We will have 25-30 new freshmen students coming to our school on August 12th. We have to get them ready for our National Fire Prevention Week activities, October 5-11. The theme this year is Lithium Batteries. Our school is in charger of the HAM Radio component of NFPW and we will again be using the Special Event call sign N4F. Eleven other stations across all ARRL Call areas and a station in London Ontario, Canada will be participating. For more information on this annual event, go to: hamfire.com



Emergency Preparedness Seminar: A Ready Disposition – Equipping You for Life's Challenges

Karyn Shander KQ4JBR

Alachua, FL – June 9, 2025 – The North Central Florida Baptist Association is proud to host the Emergency Preparedness Seminar: A Ready Disposition on Saturday, July 12, 2025, from 9:00 AM to 4:00 PM at Forest Grove Baptist Church 22575 NW 94th Ave, Alachua, FL. This comprehensive event is designed to empower individuals with the knowledge, skills, and mindset to navigate emergencies and life's uncertainties with confidence and resilience.

Featuring keynote speaker W. Craig Fugate, former FEMA Administrator (2009–2017) and former Director of the Florida Division of Emergency Mgt. (2001–2009), the seminar kicks off with a critical session on "Getting Emergency Information During Disasters Without Internet or Cell Phones." Fugate, renowned for leading FEMA through major disasters like Hurricane Sandy and the 2004–2005 Florida hurricane seasons, will share expert insights on staying informed when communication networks fail.

Attendees will engage in a full day of practical workshops and breakout sessions, covering topics such as:

- Generator Safety, Downed Power Lines, and Storm Logistics (Todd Martin, Clay Electric)
- Common Sense Personal Disaster Preparedness (David Peaton, Alachua County Emergency Management)
- Satellite Phones and Starlink (Mark Weible)
- General Mobile Radio Service & Family Radio Service for Emergency Communications (Karyn Shander)
- The Essential Go-Bag (Tim Parker)
- Firearm Safety and Training (Bill Quirk)
- Wild Edibles and Foraging (Brandon Carmel)
- Water Collection and Disinfection (Reid Tillery)
- Hurricane Helene: How Ham Radios Helped in North Carolina (Brett Wallace)
- Beekeeping (Archie Matthews)
- Integrating Aquatics into Your Food Garden (Garrett Schendowich)
- Compact Gardening (James & Kathleen Dailey)
- Traditional Poultry and Fish Processing (Emily Wallace)

Creative Bartering (Dr. Jeffrey Haglund, lunch session video)

The seminar also includes exhibit tables featuring organizations like Alachua County Emergency Management, Alachua County Crime Stoppers, Gainesville Amateur Radio Society, Clay Electric, Sam's Club, Burch Well & Pump, The Gideons International, AmRRON (American Redoubt Radio Operator's Network) and Shoot GTR, offering resources, drawings, and freebies. The included lunch session will provide networking opportunities and a chance to explore innovative bartering strategies.

"This seminar goes beyond preparing for emergencies—it's about cultivating a ready disposition to face life's challenges with mental fortitude and practical skills," said Event Coordinator Karyn Shander. "With expert-led sessions and hands-on learning, attendees will leave better equipped to handle whatever comes their way."

Early registration is $20 per person + $3.18 ticket processing fee until July 1, 2025, with limited seating. Register online at: https://bit.ly/3HTM9tC.

For updates, follow the event on Facebook at https://www.facebook.com/share/1AgmPh8JzN/.

Join us for a day of learning, connection, and empowerment to build a more resilient future.

Media Contact: Bennett Latimer, Operations Manager, Shoot GTR, 352-339-6914, bennett@shootgtr.com

Powerful X-class solar flare erupts from the Sun, knocking out radio signals across the Pacific

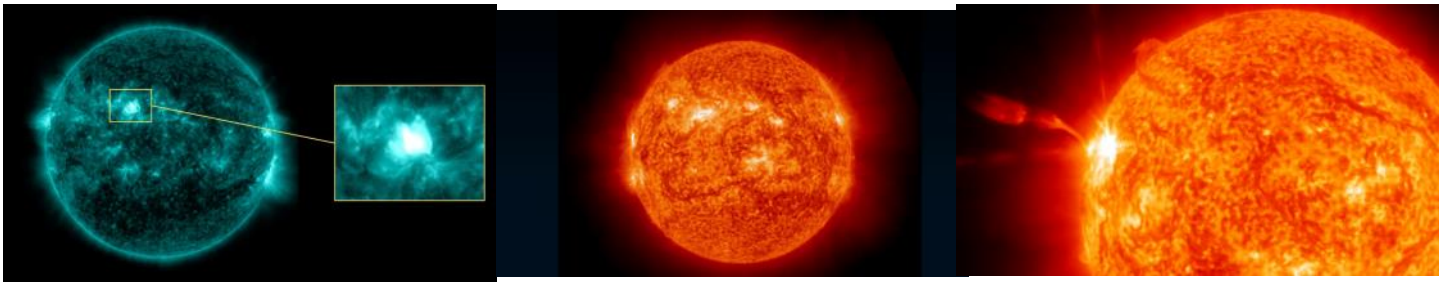
Daisy Dobrijevic

Sunspot region 4114 has done it again! This time unleashing a colossal X1.9 solar flare.

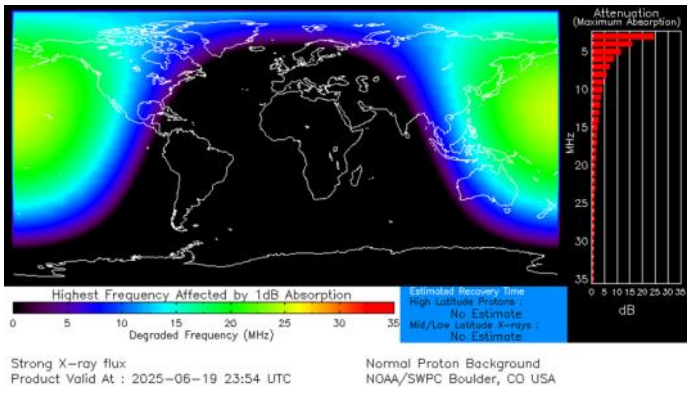
Sunspot region 4114 has unleashed its most powerful solar flare yet — an X1.9 class that erupted late June 19, triggering shortwave radio blackouts across the Pacific Ocean, including parts of Hawaii.

The solar flare peaked at 9:50 p.m. EDT on June 19 (0150 a.m. GMT June 20) according to Space Weather Live. While this event delivered a strong burst of electromagnetic radiation, it did not launch a coronal mass ejection (CME), meaning aurora hunters will be disappointed — at least for now.

Intense enough to ionize Earth's upper atmosphere, the eruption caused a shortwave radio blackout centered over the Pacific Ocean. Ham radio operators — especially those in Hawaii — may have noticed a sudden loss of signal on frequencies below 25 MHz shortly after the flare erupted, according to spaceweather.com. The flare also appears to have destabilized a large magnetic filament located in the sun's southern hemisphere.



Powerful solar flare erupts from Sun triggering radio blackouts across North America (video)



Short wave radio blackouts occurred over the Pacific Ocean on June 19. (Image credit: NOAA Space Weather Prediction Center)

Short wave radio blackouts are common during intense solar activity and occur when solar flares release X-rays and extreme ultraviolet radiation into space.

Traveling at the speed of light, this radiation reaches Earth almost instantly, ionizing the upper atmosphere. The increased ionization alters atmospheric density, impacting high-frequency shortwave radio signals used for long-distance communication. As these signals pass through the charged atmospheric layers, energy loss from collisions with electrons can weaken or even fully absorb transmissions, leading to radio blackouts.

X-class flares are the most energetic class of solar flares, with each step up in number representing a tenfold increase in power. At X1.9, this flare ranks among the stronger eruptions of the current solar cycle, and it's further evidence that sunspot region 4114 is a highly active and magnetically complex zone worth watching. Just a few days ago, the same sunspot region erupted with another X-class solar flare, measuring X1.2. The prolific flare factory doesn't look like stopping anytime soon.

If future flares do launch CMEs toward Earth, they could trigger geomagnetic storms and even auroras. Stay up to date with the latest space weather news and forecasts on our aurora forecast live blog and NOAA's 3-day geomagnetic outlook.

Filtering Solar Panel MPPT Charger with Industrial Filter: Five Months' Experience

Gordon Gibby KX4Z

Solar power systems almost always use some kind of switching system, whether PWM (pulse width modulation) or MPPT (maximum power point tracking). Switching power supplies generate large amounts of harmonic signals, due to the harmonics inside an abrupt level change. They are basically the modern version of a "spark gap transmitter" -- which also relied on abrupt current changes by sparking, to provide signals over very wide frequencies. The fast switching reduces heat dissipation and increases efficiency, **but increases harmonic generation**. The MPPT (maximum power point target) solar panel chargers not only use switching power supplies, but they *vary the switching parameters often*, tracking the maximum power transfer point as the solar radiation on the panels changes minute by minute. So their noise can move all around our ham bands.

The Interference Antenna

Their switching transients are directly coupled to the long feed wires that go back up to the solar panels. They use those wires as a common-mode, end-fed antenna! This gives them excellent transmission of wide-band interference, showing up as strong signals at every harmonic of their switching frequency -- often every 15-30 kHz up and down HF ham bands. **They are a significant part of the high frequency 3-30 MHz (HF) undesired radiations produced by solar power systems.**

In the February issue of this Section Newsletter (https://arrl-nfl.org/wp-content/uploads/2025/02/01-QST-NFL-February-2025-1.pdf) I reported on adding a 50-amp industrial filter to my home solar system in Black Mountain, North Carolina. The industrial filter was designed to stop wideband noise from industrial machines using similar power systems. The industrial filter: https://www.mouser.com/ProductDetail/TE-Connectivity-PB/50FC10B?qs=3sBZtWOgbifJ3hS9Momjeg%3D%3D is readily available from mouser and other suppliers.

This was installed in the wiring from a standard Outback FM-80 MPPT controller (48V battery-based system) and its 4kw of solar panels on the roof two stories above. The solar panel system operates at up to 90 VDC and up to 40A of direct current. Since the initial prototype report in NFL-QST, I have installed the filter permanently in a secure protective electrical box and allowed it to operate full-time for months in my solar panel system.

Two big concerns:

Will it cause any damage to the Outback FM-80 switching controller?

Or, will it experience its own failure due to the switching transients?

Successful Long-Term Usage

I'm happy to report that it has worked FINE and there have been no problems on its end. (However, due to flood damage to the wiring I did have to reconstruct a connection to a circuit breaker because the resistance of the connection was increased without any observable signs -- and it overheated during the spring high power months and failed! It is impressive when an AWG #6 connection fails!)

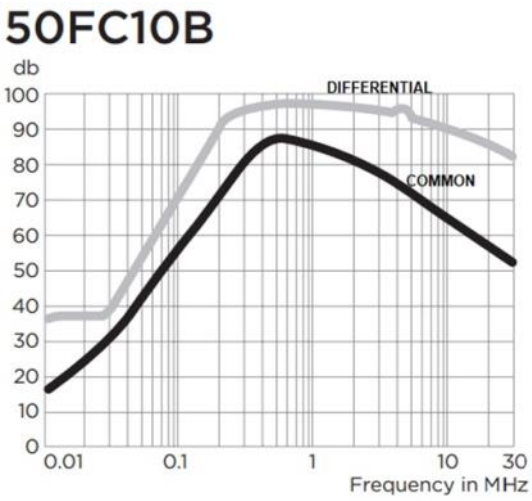
I was very impressed to feel the temperature of the metal-encased **50-Amp rated filter** when it was handling 3+ kW of DC power and find that it was **only barely perceptibly warm**. It appears to be very conservatively rated for my application. And no observable issues with the Outback FM-80 controller either, despite the significant impedance change on its input circuitry from the filter.

Continued on next page...

Worst-Case Antenna Situation

The solar panels are on a roof just about 20 feet from the end-fed half-wave antenna that I use when in Black Mountain, so this is a disastrous installation for RFI problems. But one of my only options in the back yard. During the day, the solar panel system can create HUGE interference on multiple bands. The ability of the RFI filter to mitigate the problem is limited by the effective impedance of the "antenna" formed by the power wiring to the panels -- this is NOT a nice 50-ohm environment. Commercial filter are tested in a 50-ohm test setup, not the wildly varying end-fed impedance of the typical solar power wiring. Nevertheless, I reported in February that it **completely eliminated my RFI problems on 20 meters** and made approximately 20dB improvement on 40 meters, but no significant improvement on 80 meters. That leaves 80m and 40m significantly less than perfect during the day -- but their usage is more likely at night anyway. And at night, the solar panel interference goes away because there isn't any input power.

Approx Frequency	Background Noise without solar (measurement from bottom of received signal display)	Noise from MPPT controller with solar	Noise from MPPT controller with filtered solar	Improvement due to Filter (dB)
3.5 MHz	40-50 dB	90-110 dB	90-110 dB	**minimal improvement**
7 MHz	20-30 dB	80-90 dB	60-70 dB	~ 20 dB improvement
14 MHz	10-20 dB	30-40 dB	10-20 dB	~ 20 dB improvement



These data indicate that such a filter could be a big help to anyone with a home solar power system, or to a deployed HF station during either a disaster or in Field Day, by significantly reducing the RFI caused by a local solar power system.

Published noise rejection of the industrial filter in a 50-ohm test environment:

Building a "Poor-Man's" Amateur Radio Satellite Ground Station
Part II: Inexpensive Manual/Computer-Controlled Rotator Controller

Gordon Gibby KX4Z

Others have pointed out that you just "don't have enough hands" to adjust everything simultaneously as a satellite arcs overhead in a 3D orbit, with constantly changing Doppler effects as well. A really helpful improvement for my poor-man's satellite ground station efforts was developing computer-controlled aiming of my antenna system. There are commercially available options. These include a Yaesu G-232B controller box retailing upwards of $649.99 (https://www.dxengineering.com/parts/ysu-gs-232b) , and a really slick multi-function system by CSN Technologies for much less, $275. (See: https://www.dxengineering.com/parts/atn-sat-tracker) Many hobbyists have been successful using off-the-shelf commercial systems.

Much Cheaper HomeBrew System

However, Anthony Good K3NG many years ago wrote Arduino code to interface between freely-available satellite tracking software, and almost any manner of rotator, from commercial to any number of homebrew rotators. His somewhat confusing but highly advanced software handles one- or two-axis control and a vast array of potential motors and sensors.

When I considered using his well-developed software, I found good examples of others who had done so, but **no currently available printed circuit board to make this easier**. I dislike "bailing-wire" contraptions; I prefer to have a solid printed circuit board project if possible. So I enlarged his basic Arduino schematic to utilize a Nano (which requires careful choices of software due to its memory limitations), built-in manual push-buttons, and potential pulse-width modulation and control of off-the-shelf relay boards to reverse direction.

This resulted in Gerbers for an inexpensive interface board that turned out to be quite successful. The schematic and a photo of a working prototype board are presented below. The printed circuit design is an offshoot of earlier circuits I've built, and places the Nano and components on one side of the board, and uses the reverse side for the 2-line LCD display and user-interface buttons. This reduces the size and cost of the board.

This project has been "shared" on pcbway.com and can be accessed easily: https://www.pcbway.com/project/shareproject/K3NG_Rotator_Dual_Axis_Controller_Board_fd759cc2.html Zipped GERBER files suitable for submission to pcbway.com are also available at: https://www.nf4rc.club/how-to-docs/gerber-files-for-k3ng-rotator-printed-circuit-board/

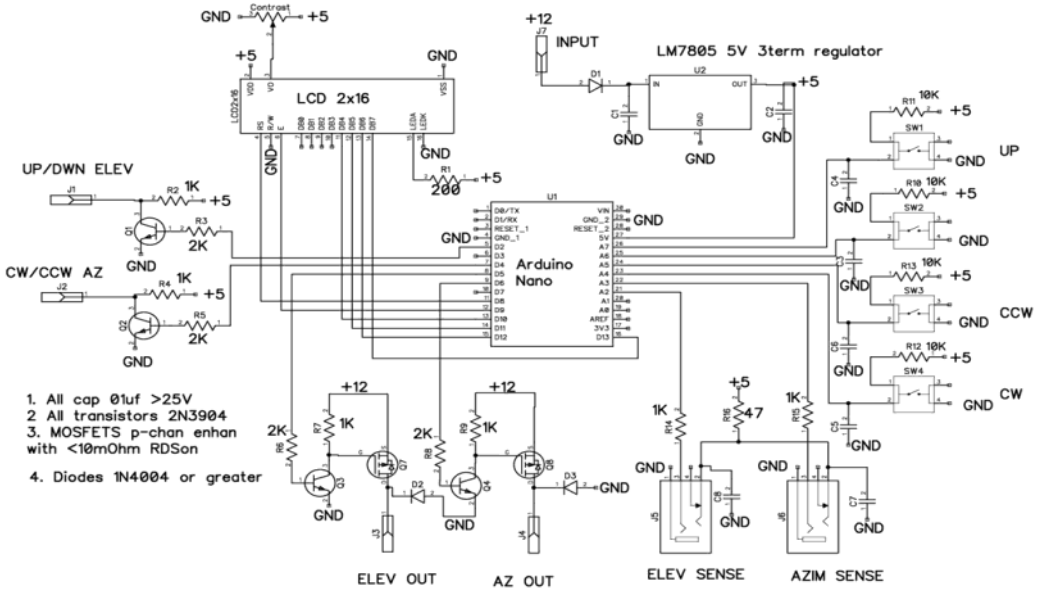


Figure 1: Schematic Diagram for the Rotator Controller

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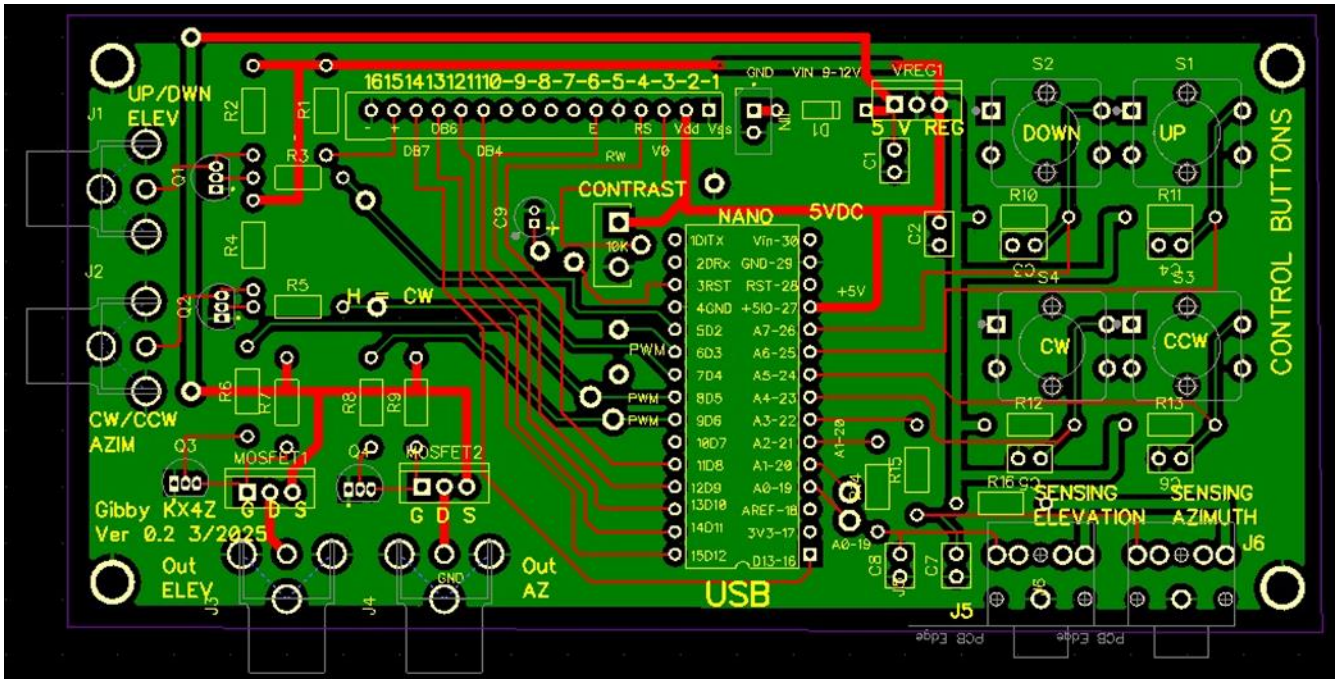

Figure 2: Screenshot of board (top traces RED, bottom traces GREEN) from DipTrace software.

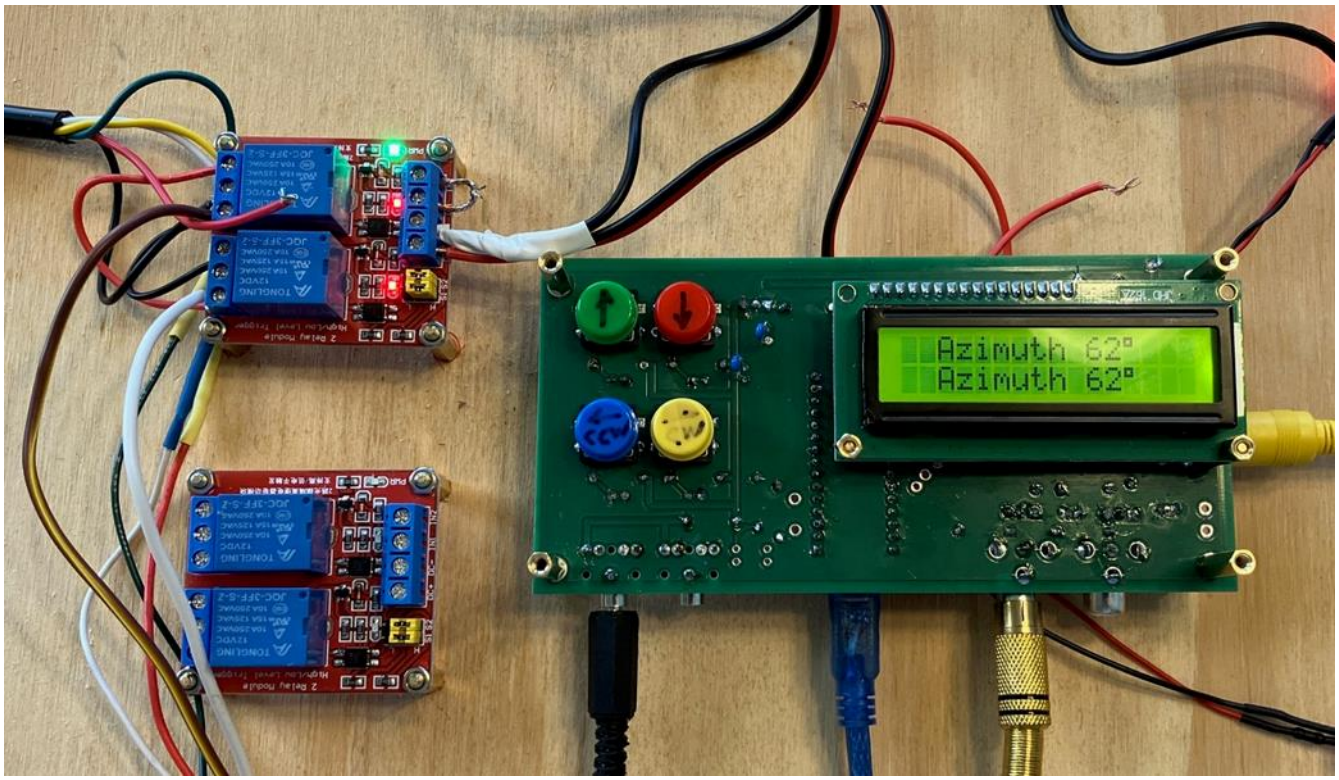

Figure 3: Photo of prototype build, on simple plywood.

4 buttons for up/down left/right are shown. The component side is downwards, where connectors are also mounted. The two orange wires are to connect a 10uF anti-erase capacitor which seems to be unnecessary. In this photo, the elevation inputs and outputs have not yet been added, so the controller displays only azimuth rotation.

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SOFTWARE To Drive Board

With minor alterations to the basic K3NG software (available at: https://github.com/k3ng/k3ng_rotator_controller), this board works quite well, providing both manual and computer-controlled operation of one or two rotators. It can be used directly with Yaesu commercially available DC-motor rotators such as the G-450ADC. In fact it can simply replace the manual rotator that comes in such rotator packages, with the addition of a DC power supply.

The K3NG source code and alterations, settings will be discussed in a future article. The modified source code for my implementation will be provided in that article. A solution for 2-axis rotator control will also be provided in a subsequent article, as will information on homebrew antennas. This is truly a low-cost way to get into satellite communications!

BILL OF MATERIALS

Designation	Specification	Notes
U1	Arduino Nano, 30-pin DIP package headers installed	
U2	LM7805 5V 3terminal 1A regulator	
D1, D2, D3	1N4004, 1N4005, 1N4006 or 1N4007 1-Amp silicon diode	
Q1, Q2, Q3, Q4	2N3904 NPN transistor (or any similar small signal transistor, hfe>50	
Q7, Q7	P channel enhancement MOSFET, Vds >=50V, Rdson <=10milli-ohm	
C1, C2, C3, C4, C5, D6, C7	0.1 uF ceramic capacitor, 50V or higher.	0.01uF may also be used.
R1	200 ohms, 1/4W	Sets the brightness of the LED back light of the LCD display
Contrast	10K trimmer potentiometer, 1/4 watt	
R2,R4, R7, R9, R14, R15	1K 1/4 watt resistor	
R3, R5, R6, R8	2K 1/4 watt resistor	
R10, R11, R12, R13	10K 1/4 watt resistor	pull up resistors for manual buttons
R16	47 ohm 1/4W resistor	Serves as a current limit and "fuse" for the potentiometer sensing system as a protection against short circuits
External relay board	2 SPDT relays, each independently controllable by 0/5V logic voltages	Both relays on each board are driven in sync so that the + and - leads to the DC rotator motor can be reverse in polarity to reverse direction. The board relays are powered by 12V (same as the rotators) while their logic inputs are optically isolated and controlled by 0V/5V logic LOW/HI inputs (very convenient for the Arduino Nano outputs).

Continued on next page...

External relay board	2 SPDT relays, each independently controllable by 0/5V logic voltages	(If necessary these could be used to make proper connections to reverse direction of an AC motor) https://www.amazon.com/dp/B085N49S79?ref_=ppx_hzsearch_conn_dt_b_fed_asin_title_1&th=1
External Relay Board	Amazon https://www.amazon.com/dp/B085N49S79	See photo and schematic for wiring details
RCA Phono jack	Mouser part number: 490-RCJ-012 https://www.mouser.com/ProductDetail/Same-Sky/RCJ-012?qs=WyjlAZoYn53isKUFZudEAg%3D%3D	Printed circuit board is made for this part.
3.5mm stereo jack	Mouser part number: 490-SJ1-3545N https://www.mouser.com/ProductDetail/Same-Sky/SJ1-3545N?qs=WyjlAZoYn53N5dGhOxE1Xw%3D%3D	Printed circuit board is made for this part
Pushbuttons	12x12x7.3 mm printed circuit board mounted pushbuttons, package of 25. https://www.amazon.com/dp/B01E38OS7K	Plenty for your club!
2x16 LCD display with header	(package of 2) https://www.amazon.com/gp/product/B00HJ6AFW6 Extra long header pins: https://www.amazon.com/gp/product/B09G5RF3H6	Remember that this mounts on the "BACK" side of the board, which faces the user, while the microcontroller and components end up on the "bottom" I supported the far end of the LCD with a small standoff so it wouldn't be exposed to bending stress.
Arduino Nano	(Package of 3 -- you can find individuals also) https://www.amazon.com/gp/product/B07G99NNXL	Be very careful soldering this in. Use slender solder as the pins are very close!
Optional LED indicators (12V)	OPTIONAL https://www.amazon.com/dp/B0757YNM1D	See discussion Just to help me observe what is happening, or to impress onlookers
Optional USB adapter	Accepts normal "printer" type B USB plug and adapts to the Mini USB on the Nano. https://www.amazon.com/dp/B0DDHDQK4B	Optional but you may prefer the sturdier USB B for the external connection

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External Relay Boards

Rather than create more custom printed circuit board circuitry, I elected to use 3rd party logic-controlled relays for the final polarity control to the rotators. The power signal is optionally pulse-width modulated by power MOSFETS, which dissipate very little power because they are either OFF or fully ON, but the polarity reversal is accomplished by the external relay boards. That makes it easier to replace the relays if they should ever fail, and reduced the amount of custom construction.

Use one relay board if you are only controlling azimuth; use two if you are controlling azimuth and elevation; each board controls the polarity of the DC power signal sent to a single rotator DC motor.

The board requires +12VDC and GROUND power input. This powers the relays and also the "black box" internal control logic. The control logic can be set to respond to either HI (5VDC) or LOW (0VDC) logic inputs. Both inputs are connected together and driven by the same Arduino output, either CW/CCW (for azimuth) or UP/DWN (for elevation).

Each relay has normally open (NO), normally closed (NC) and common (COM) output terminals. The relays are wired so that they can pass or invert the polarity of the power signal coming from the controller board MOSFETs.
If you end up with a rotator moving "backwards" to what you wanted, just swap the COM outputs going to the DC motor on the rotator, to fix your problem!

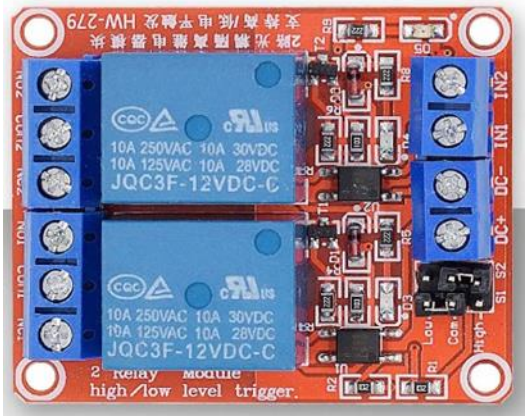

Figure 4: 3rd party logic-controlled relay

If you are controlling both azimuth and elevation (as I am) you will need TWO of these. If you have an AC-based rotator, you can use these to provide the proper connections; wiring for that not discussed in this article.

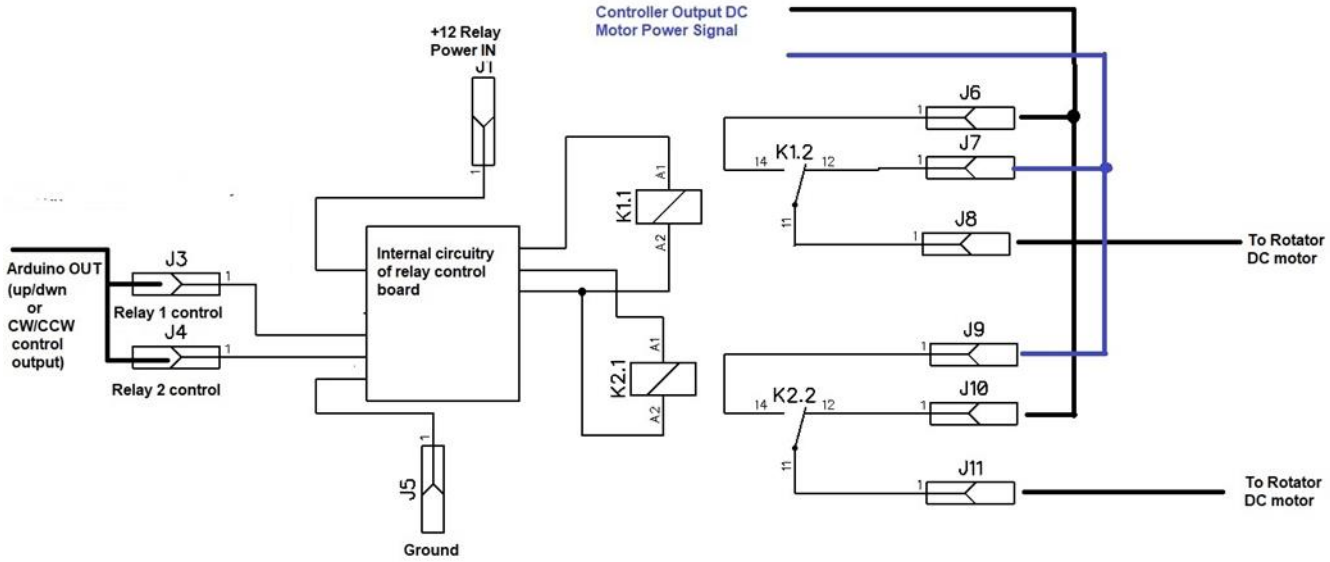

Figure 5: Schematic of how ONE external relay board is integrated with the controller board to allow polarity reversal to the rotator DC motor.

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Optional LED Indicator Lamps

Some time back I purchased a gaggle of 12-V LED indicator lamps and never really used them. These already include the dropping resistor, so they need 12V or so to properly illuminate, and they were too dim for the original plan. However, they ended up working quite well as optional indicators on this project. I simply soldered them to any connector for which I wanted a visual indication of voltage. For example, I added one to the power-input connector so I could verity input power. I added one to the "AZ OUT" azimuth rotator power output, and it makes it obvious when power is going to the rotator (in either direction). These are cheap and you can add them wherever you wish.

Power Requirements

I was very surprised to find that even the Yaesu G-450ADC rotator draws relatively little power-- I see only a small needle movement on my MFJ 25-Ampere ham power supply. A 2-ampere power supply would probably work quite well. You could use a spare 12V laptop power supply for example. This drives the Yaesu G-450ADC at a slower, but acceptable speed. I get one full rotation in about 90 seconds. Be cautious about upping the voltage -- the 3terminal regulator will need a heatsink and the linear actuator that I used, is rated for 12V.

Building a "Poor-Man's" Amateur Radio Satellite Ground Station
Part III: Inexpensive Antenna Rotator

Gordon Gibby KX4Z

This series presents the trek toward building an inexpensive amateur radio satellite ground station.
Part I provided an overview of what is generally required: https://www.nf4rc.club/how-to-docs/satellite-system-part-i-overview/

Part II explained how to take advantage of K3NG Arduino publicly available software and build a very simple computer controlled rotator controller capable of running Yaesu and some other rotators: https://www.nf4rc.club/how-to-docs/satellite-system-part-ii-rotator-control-board/

In this part, I'll discuss how to get automated, computer-controlled antenna rotation. Unless you use an omnidirectional antenna (and thus give up some potential gain) you're going to need some sort of "pointing system." It doesn't have to be very sophisticated. Many users report doing very well by simply using a camera tripod and using it to manually rotate their antenna (s). Others set their elevation to approximately 15^{o} and then arrange an azimuthal rotator system to track at least the azimuth heading of the satellite they wish to hit. The typical Yagi antenna's beamwidth is broad enough that exact pointing isn't absolutely required. It is very easy to take the antenna controller explained in Part II, and have it computer controlled, and us it to control a Yaesu or other rotator.

My goal wasn't for a weather-proof permanent satellite installation. All I needed was a system that could be used occasionally outside, and allow me to get some experience making satellite-relayed contacts. So I didn't want to put in a huge amount of capital, and I didn't need it to be battleship-stout. Nevertheless, with the use of pressure-treated wood, a bit more aluminum, and some carefully chosen plastic rain-shields, the system I built would like be useful in moderate weather for some time.

There are multiple commercial systems and homebrew designs out there to create a dual-axis controlled rotator. **The go-to commercial off the shelf standard seems to be the Yaesu G5500 dual rotator assembly**, which is upwards of $700 Given what it does, that price isn't unreasonable. That fancy G5500 can be controlled by the CSN S.A.T. controller which handles almost everything (even including Doppler-correction CAT commands) ! http://www.csntechnologies.net/sat (It probably has a small microcontroller running Linux and potentially a K3NG software derivative.) One-stop shopping! It is just that your wallet will be a bit lighter afterwards and you won't have had the satisfaction of "rolling your own." Other rotator solutions include:

- Winradio dual axis rotation system (with available controller) https://winradio.com/home/arp-elaz-100.htm (appears to be high cost)
- Lightweight pan and tilt camera mount system to handle light antennas: https://k3rrr.com/el-cheapo-az-el-satellite-antenna/ (appears to be very low cost)
- Green Heron system (expensive): https://www.greenheronengineering.com/product/alfa-spid-ras-with-rt-21-az-el-controller/
- The (discontinued) SARCNET School Amateur Radio Club Network design: https://www.sarcnet.org/sarctrac-mk2.html (although discontinued, the ideas can be harvested)
- SATRAN print-it-at-home rotator system: https://satran.danaco.se/

Going More Of The Homebrew Route

I chose to purchase a used Yaesu G450ADC (dc motor) rotator for the azimuth control. I have previously rebuilt a Yaesu rotator so I have a good feel for what is inside. It can handle quite a bit of axial load. That allows for very simple homebrew elevation control construction. I mounted the Yaesu rotator on a piece of plywood using the provided bolts through the plywood and up into the threaded holes in the bottom of the rotator. Then I added some longer lumber extensions to the plywood to make it more stable and usually I put a weight on the plywood for additional anti-tipping weight.

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into the Yaesu rotator, I put a simple wood mast extending vertically and using simple deck screws, mounted a horizontal platform out of 2x6 lumber, and attached a vertical "back" again out of 2x6 lumber using deck screws to connect. This made a very stout platform on which I could mount mechanical pieces. My first attempt used a very-geared-down DC motor and a 90° gear box. https://www.amazon.com/dp/B0C64XM1NG The gear box, with 10mm shafts coming out of three sides, worked well -- the gears in the very-geared-down DC motor stripped within a few days. Not a good solution.

This I watched this fellow's solution using a **linear actuator** to control an off-center connection to a rotating boom. https://www.youtube.com/watch?v=oRMzorrm-bA&t=686s His technique looks so simple! Powered by 12VDC, the linear actuator must have a worm gear or similar system inside -- it looks like the spring/gas piston that slows down the closing of your screen door, but under power it can either extend or retract mechanically. They are made with lots of different extension lengths. I chose a small one that extends / retracts only 2 inches, at a cost of $40 (It might have been easier to have a bit more movement). https://www.amazon.com/dp/B00NM8H5TG The actuator is plenty powerful!

I then fabricated a U-bracket that could be screwed to connect to a rotating shaft, and also accept the linear actuators arm with a pin to allow movement. This can be made out of some steel from one of the Home Depot thin tie-plates. (e.g. https://www.homedepot.com/p/Simpson-Strong-Tie-LSTA-1-1-4-in-x-12-in-20-Gauge-Galvanized-Strap-Tie-LSTA12/100375120) Choose the thickness of metal suitable for your ability to saw/cut and the heft that you need to swing your antenna load. To make solid connection to the shaft possible, I used an aluminum shaft from Amazon, slightly flattened one segment and drilled a hole to allow the bracket to be connected with a screw. This worked very well. With a bit of geometry, I figure out the size of the bracket to cause the 2" stroke to make the shaft move 90 degrees. The linear actuator has to be mounted in pins on both ends, so that it can adjust its angle, but to a first approximation to allow 90 degrees of rotation, the 2 inch stroke should be close to 1/4 of the circumference of the circle inscribed by the pin in the bracket. With the pin approximately 1" from the center of the shaft, the circumference is 2pi*1" = 6.28" and 1/4 of the circumference is a bit less than 2". So I arranged the pin-hole to be about 1" from the center of the shaft that the bracket attaches to. The linear actuator comes with some brackets for each end. With a bit of trial-and-error, I figured out where the "base" of the linear actuator needed to be, and with some woodwork provided a surface to which to screw the base bracket. Wood construction makes this very easy!

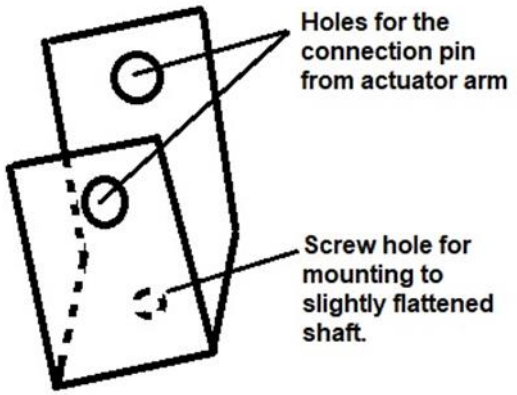

Figure 1:
Drawing of the U bracket construction for the extending rod to connect to the rotating shaft. Adjust dimensions for your particular actuator arm.

The linear actuator comes with built-in limit switches at both full extension and full retraction, so it isn't going to wreck anything as long as your rotation system is able to move freely. This also makes the wiring even simpler.

The use of the 90° gearbox wasn't necessary in this case, but it made it easy to connect a potentiometer to the end of the driven shaft to give a measurement of the elevation angle. A bit of trial and error and the proper coefficients were entered into the K3NG code to match properly the movement to the potentiometer readings, using the control board described in Part II.

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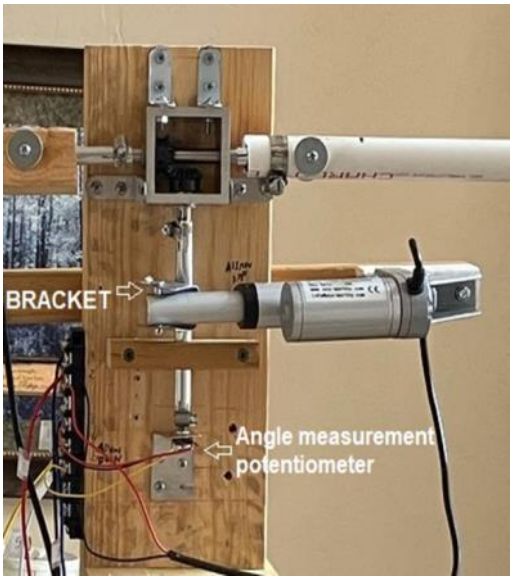
Figure 2: Positioning of Linear Actuator, and Bracket Connection to Shaft.



This proved to be a very simple elevation system, much simpler than the previous geared-motor design, and also quite robust! The biggest problems I had were getting solid connections between my "booms" and the 10mm shafts coming from the gearbox. Those shafts are stainless steel and I wasn't able to drill any holes through them for pins. However, cutting a few slits in the PVC, using rubber tubing inside (to make up for diameter discrepancies), and then using an automotive hose clamp proved to be a reasonably successful way to keep the angles fixed.

The horizontal boom rotates under the control of the linear actuator, to adjust elevation. It is useful to be able to get down to at least approximately 15 degrees above the horizon, and up to at least 75 degrees. I did not attempt to deal with elevations beyond 90^{o} (on the "back side"). Because the beam-width of the Yagi's are not going to be "pinpoint", these are generally adequate and I was able to get more than this amount of rotation easily.

Control connections for the elevator rotator are through a 5-wire #18 gauge cable back to the homebrew antenna controller board previously described. You could provide a connector if you want it more easily connected; I just used a terminal block.

It is important to understand that the ENTIRE top assembly is rotated in the horizontal plane (azimuth) by the bottom rotator. The Yaesu G450ADC easily handles all of this weight and easily spins it around the compass directions. It has its own internal potentiometer to measure azimuthal rotation and its own connector for all its signals I simply soldered up a cable and the connector to handle the azimuthal control. With my homemade circular polarization Yagi's attached, the entire assembly worked very well!

Figure 3 dual axis antenna rotator system with antennas

Alachua County Powering Into Field Day!

Gordon Gibby KX4Z

NFL Section Manager **Scott Roberts, KK4ECR**, had another great encouragement article in the June issue of the section newsletter! (page 1, https://arrl-nfl.org/wp-content/uploads/2025/06/01-QST-NFL-June-2025.pdf) He encouraged Florida teams to recognize Field Day's importance, to start planning EARLY, and to build a great team by reaching out widely into the local hams. He also encouraged lots of *promotion* of their efforts and of ham radio, while emphasizing safety amidst all the training. Making Field Day fun would serve the group well, while leveraging all kinds of simplifying technology would make it easier to schedule and plan. Finally, he encouraged holding some form of review (a "hotwash") and using that to improve year over year. It was a great article and very encouraging to those of us in the North Florida Amateur Radio Club, serving ARES® in Alachua County – way to go, Scott!

Much of our June has been dedicated right along the lines Scott drew. Noting the tremendous work that **Bob Lightner W4GJ** has done at the Alachua County Loften magnet school with an incredibly contest-savvy ham radio club, we decided to support his efforts by offering an online "Zoom" technician license class, using the https://www.hamradioschool.com/ materials promoted by our own R**eid Tillery K9RFT**. Unsure of how many high schoolers would join in a 13-night zoom course, we also promoted the course in the Section Newsletter, and through Alachua County government, as well as talking it up locally. We used an online Google Form for signup (these work great and are free!) and were astonished to have about 15 sign up! The course was scheduled every night at 7PM using our Zoom channel, beginning June 4th, skipping Wednesday evenings, and finishing with a Ham Radio Test on June 26, right in time for Field Day.

There is always some "leakage" as folks with high ambitions end up not quite making it into the course. We ended up with about 10 students, some of whom were already licensed but looking for a great review of recent technology. A couple have dropped out and one had a death in their extended family requiring a far trip. Both Bob Lightner and we were somewhat discouraged to find that there was *very little involvement from the high schooler*s…..but we picked up fire-fighters from as far away as Ocala, and are also serving one fellow sent to us by **Brad Swartz N5CBP**, Columbia County EC.

The course has been going WELL and our great crew of volunteer teachers, including **Brett Wallace NH2KW, Hugh Minnich KN4IIM, Leland Gallup AA3YB** and myself are finding the hamradioschool.com slide sets and quiz questions to be very easy to use and already quite complete. The videos and audio do seem to require Microsoft Power Point, while most of the other slide sets work fine with free Libre Office.

The GARS VE team rose to the occasion, led by **Alan West W4JD**, and will offer testing at the Alachua County EOC at 7PM on Thursday evening June 26th. Way to go Alan & Crew!!

Proclamation

We got a great Amateur Radio Week Proclamation passed by our County Commission -- and two Commissioners expressed interest in taking one of our classes! https://pub-alachuacounty.escribemeetings.com/filestream.ashx?DocumentId=41797

(L-->R) Leland Gallup, David Huckstep, Rosemary Jones, Brett Wallace, Emily Wallace, their son, and Commissioner Anna Prizzia, who presented the Proclamation

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Big Growth For Our Team

Networking Gear

Remote MESH

ARRL FIELD DAY has just been a tremendous boost to our club's growth every year. Our EOC has significant antenna, coaxial cable, and space limitations. But those limitations have driven our group to develop high-technology solutions, growing our radio assets and skills every year! Our scores have grown to match, moving from around 200 QSO's our first year, to over 1600 last year! Our networking crew, led by **Earl McDow K4ZSW** and including **Mark McDow N4TEC** and **Susan Halbert KG4VWI**, have developed a fantastic high speed 2.4 GHz digital private net system based on Ubiquity transceivers and AREDN ham radio software. We have learned the "hard way" to keep the radios separated from high power HF antennas – and every year Earl's team does the data flow better and better! We also developed our own GPS-satellite-based Network Time Protocol server (NTP) using a simple Raspberry Pi, free software, and a cheap $15 GPS dongle. https://www.nf4rc.club/how-to-docs/ntp-server/gps-pi-ntp-server/ Earl added a huge battery system and a beautiful "go box" and we are completely Internet-free for ALL our data movement and precise timing, making digital comms (including FT8) a cinch for our group!

Newcomers Love FT8

Digital (FT8, and now, spurred by **Mike Hasselbeck WB2FKO,** FT4 also) has been huge for us. Newcomers very quickly latch onto this powerful mode and are racking up big-time scores in Field Day using it. Mic Fright doesn't apply to clicking on stations answering your CQ!! Contacts are *automagically logged* thanks to Earl's team and hams learn to be quick to try and keep up with our CW team!

We tried 4A….once! Last year, trying to get more coax lines (than just ONE at our EOC!) and antenna opportunities, we set up our first 4A effort at Cuscowilla county park. It was an enormous effort for us old codgers, and in our Hotwash, we all indicated we were completely wasted and never wanted to do another 4A in out life. Everyone begged to go back to the EOC where at least TWO stations and multiple antennas are "already set up." In our AARIP (https://www.nf4rc.club/historical-exercises/2024-field-day-aarip/) we calculated that it would reduce the number of individual items we would have to transport from 181 to only 139….a big difference for us! So although we ended up at the top 6.5 percentile of the 4A entrants in 2024, we decided to go back to our EOC and F-classification for 2025. But it did get me to discover and fix the diesel's fuel pump problem!

While VOICE has been one of our mainstays, our situation includes a long length of coax and losses, and our team until recently hasn't had any gain antennas. That made voice more challenging yet our team, especially **David Huckstep W4JIR** and **Dan D'Andrea WX1P**, still succeeded year after year. This year we discovered a way to sneak shorter coax lines out the steel back doors of our EOC and we think we can shorten the coax lines by 125 feet – and also bring in our trailer-mounted 3-element Yagi, that EC Jeff Capehart had kept for a decade or more, zip-tied to his back fence! Hooray!

Our CW team really lit up the airwaves as I got my speed back up into the 25 wpm range, and discovered the joys of CQ-strings on 20 meter CW!! We had hours of competition between the digital guys and the CW efforts, with CW definitely holding its own! Competitive to his core, Mike Hasselbeck WB2FKO forsook his VHF/UHF first-love and even ditched FT4 to convert to the "dark side" of CW operations!! This year we hope to have a ton of fun trying to keep ahead of the digital and phone flanks of our attack!

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Elusive Satellites

Ron (L) and Jeff (R) trying for the FM birds

What fun! And if that were not enough, **Ron Lewis KN4ZUJ** had valiantly led our Satellite Effort and was really having a rough time of it trying to hit the FM birds using handheld Arrow antennas and multiple transceivers, with help from **Jeff Capehart W4UFL**. They were the wizards of high-tech pass discovery but it was really slow-going for them, because their signals were always quashed by others.

Susan pursuing contacts!

So we upped the ante and I came up with a homebrew dual-axis, dual-antenna "rinky-dink" Yagi system driven by a strange collection of rotator equipment and an Arduino controller! Then **Jim Carr KC4MHH** took note of our effort and made a true satellite transceiver available at a mouth-watering price and I bit! Add in a cheap preamplifier and a lot of determination and I made my first-ever satellite contact! **Susan Halbert KG4VGI** got all this started when she just walked over to our EOC's VHF packet station and effortlessly made our first packet connection to the International Space Station using 300 feet of coax and a vertical antenna! Can it really be that easy? We're going to try!

This year **Earl Sloan KI4OXD** has stepped up to the Chief Nutritionist slot and plans to wow us with fantastic on-site smoked vittles! **Leland Gallup AA3YB** and his carbon fiber POTA masts is handling our GOTA station after we found yet another under-the-door-gap and think we can sneak coax out the front door of the EOC also! Leland also volunteered to do solar charging of batteries for us, so we can get the alternate power bonus points – and **Mannish Sahni KZ4KC**, one of our highest scorers, is working on the ARRL bulletin along with highly-competitive VHF/UHF guru (turned CW fiend!) **Mike Hasselbeck WB2FKO**. Mannish spent the Section SET working SHARES RMS stations for Winlink messaging, so he volunteered to hand our Section Manager and Radiogram bonus points.

We have even managed to recruit some of the newer members on our Google Document to sign up for operating time – and Manish's daughter will be finishing up her Tech license, so perhaps we can get her on the GOTA station, along with others! And, based on the issues we had with our 10m and 15m bandpass filters, we made several improvements and even built a few more filters to be even better prepared for multi-transmitter disaster or contest sites, this year.

All in all, FIELD DAY has been one of the "deadlines" that has helped our group grow in skillsets and radio assets by leaps and bounds. We highly recommend other NFL teams to jump into the fray and set your sights high – *we can't let those Columbia County guys beat us this year*

Making Packet (AX.25) Contacts via the International Space Station (ISS)

Gordon Gibby KX4Z

DISCLAIMER: I simply can't claim to be any "expert" at making packet connections via the International Space Station APRS digipeater at all, but one of our experienced "packeteers" in our group wanted to me to share what I've managed to figure out; thus this document.

This is one of the easier ways to make a satellite-based contact, on passes other than on Field Day. Many hams already have all the equipment necessary! A 2-meter FM transceiver, equipped with an external or internal soundcard, with some sort of a computer and some simple software, and an external antenna are pretty much all that is needed. The Russian 2-meter transceiver (RS0ISS) provides simplex 1200 baud packet on 145.825 MHz

The ISS is approximately 400km above the earth. The free-space loss for that distance is 128 dB, based on the calculator at pasternack.com. https://www.pasternack.com/t-calculator-fspl.aspx
A 40-watt transmitter puts out 46dBm; a typical 2-meter receiver sensitivity would be -120 dBm. Assuming minor losses in cabling/antenna, the path budget would still result in approximately -90 dBm signal for the receiver, resulting in a strong, clear signal, as long as the ISS is above local obstructions.

Many 2-meter FM home stations intended for local communications with friends have vertically polarized antennas, often omnidirectional with a main lobe oriented at or slightly above the horizon. Unless the antenna is a huge collinear, this lobe is fairly wide. That makes it ideal for the majority of passes of the International Space Station passing somewhat laterally to the station, and therefore with a peak elevation at or below 30°. Getting the home antenna "in the clear" of trees/obstructions will result in the best situation. At our Alachua County EOC, due to building constraints, we have several hundred feed of coaxial cable to reach our antennas up on a tower, and Susan KG4VWI demonstrated that we could get easy communication with the ISS.

First You Have To Know the Passes

Of course, you need to know when the International Space Station is going to make a pass that includes your territory in its "footprint." There are multiple software programs that make finding passes easy. Likely the easiest by far is just to use the amsat online web page that allows you to enter your location and see upcoming passes:

https://www.amsat.org/track/?lang=en&satellite=ISS&count=10&loc=fn42jk&lat=42.4375&latdir=+&lng=71.2083&longdir=+&ele=0&doPredict=+Predict+&saveme=1

SATPC32 software (shareware, with a suggested donation, benefits AMSAT) and free GPREDICT (download: https://sourceforge.net/projects/gpredict/ Manual: https://sourceforge.net/projects/gpredict/files/Gpredict/2.2.1/gpredict-user-manual-2.2.pdf/download Early manual: http://sites.science.oregonstate.edu/~hetheriw/whiki/psp/main/base/files/gpredict-user-manual-1.3.pdf) also do a fine job, but require a bit of learning curve.

Other Packet Satellites

In addition to the ISS, another packet satellite is SONATE-2. It is also on 145.825. Information can be found here: https://www.informatik.uni-wuerzburg.de/en/space-technology/projects/active/sonate-2/information-for-radio-amateurs/Currently (June 2025) this is functional and being heard by observers (see: https://www.amsat.org/status/ to check the status of any satellite). There are additional digital satellites, many of which are faster 9600 packet. A list can be found here: https://dashboard.satnogs.org/d/4JMeIMeIz/digipeater-overview?orgId=1&from=now-7d&to=now&timezone=utc

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Using the 2-meter, 1200-baud packet satellite digipeaters is an easy way to start for two reasons: 1200 baud packet is easy to do with almost ANY 2-meter transceiver that can transmit analog FM voice, and the amount of Doppler Shift that occurs on the ISS on 2 meters is not large compared with the bandwidth of your 2-meter FM signals—so Doppler Corrections (which are required on SSB or CW) can be generally ignored on 2 meters! Makes it very easy!!

So what is the issue? From my point of view, the issue is that the ISS digipeater is engineered for APRS messages, which are *un-connected (UI, "unnumbered information") ,* while we are more used to *connected* contacts, such as those for making WINLINK connections which use connected I (Information) frames. AX-25 is an amateur radio adaptation of X.25. Transmissions in unconnected (connection-less) mode are simply sent "in the blind" with no proof of receipt. Once two stations are "connected," connected (I) transmissions require an acknowledgement, or the packet is retransmitted a number of times until either acknowledged or the connection is broken. (Ref: https://www.ax25.net/AX25.2.2-Jul 98-2.pdf) Older information on packet communications via the ISS assumed the user had a hardware TNC, on which one issued the UNPROTO command to send UI transmissions, such as UNPROTO CQ VIA ARISS. (Ref: http://www.ariss.org/uploads/1/9/6/8/19681527/k9jkm_2012_symposium_ver2.pdf)

There are several references to using UISS software to make connectionless contacts through the ISS. See for example: https://www.amsat.org/wordpress/wp-content/uploads/2014/01/AMSAT_Journal_ISS_Packet.pdf from 2014; https://www.qsl.net/on6mu/uiss.htm and http://www.ne.jp/asahi/hamradio/je9pel/ui32uiss.htm

The ISS packet digipeater has only one channel, one frequency. Multiple users' stations cannot hear each other because they are so far apart. *That makes the AX.25 "listen before transmit" only stop QRM to the satellite itself – not to simultaneous packets from other users!*

While 1200 baud packets are pretty quick, and more than one person can be conversing during the pass, if the input frequency is swamped, packets will simply QRM other packets and few of them will be correctly received. As a result, the system experiences a terrible bottleneck. The "linear" transponders have many kHz of space for SSB/CW signals and can accommodate multiple stations much more easily. On the ISS packet digipeater, **you should be polite and NOT "spam" the receiver with a ton of transmissions.**

FIRST – learn to listen (audibly) to the packets read their text and be able to immediately spot who is replying to whom, and their data payload so you'll recognize replies to your station. You can see this directly in the sound modem dialog box.

A YouTube using the popular Kenwood TH D74 (that makes it easy): https://www.youtube.com/watch?v=GWU9x60wpb0 Although he doesn't succeed in getting his packets digipeated, you can see the "payload" from several hams and how it appears on this popular transceiver.

My initial experience with the ISS digipeater was with our familiar UZ7HO packet software: **easyterm** (term.exe) packet software, connected to s**oundmodem.exe** which acts like a TNC when connected to a soundcard. This software doesn't seem optimized for UI APRS communications. See: http://uz7.ho.ua/packetradio.htm where software and manuals may be found. There are many alternative packages, including UISS for user interface, and direwolf for the soundcard portion. I don't have experience with those systems.

To check your success, you can read actual signals sent by the ISS packet station at the bottom of this page: http://www.ariss.net/ (Note this isn't an https:// connection.) **This is invaluable in observing your progress.** Using that as well as my own receiver, I've been able observe stations replying to me. You can read about some of my learning process:

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https://groups.io/g/NF4RC/message/8340
https://groups.io/g/NF4RC/message/8339
https://groups.io/g/NF4RC/message/8338

In order to transmit to be digipeated by the ISS you do NOT click the "connect" button in the menu bar of term.exe. (I also am not using the "beacon" facility – to avoid cluttering up the limited time-space of the digipeater!) Instead into the transmit pane you simply type:

Fm KX4Z To ALL VIA RS0ISS <then add your message here> <CR>

(Note: the 0 is zero, not O) The <then add your message here> is the "data payload" part of the APRS message. That is where you put in everything you want to say! You can address other stations by beginning with their callsign inside colons, like :KJERJ-15: (and follow with more information). http://aprsisce.wikidot.com/doc:aprs-messaging-explained Your message needs to be SHORT! Some radios can only display 45 characters! This seems to be the limiting factor, rather than the AX.25 specification itself. So put in VERY LITTLE superfluous information! https://aprssig.tapr-0rg.narkive.com/RvluLeRy/what-sets-the-max-packet-length-for-aprs

You can likely use CQ instead of ALL. You can likely use ARISS instead of RS0ISS

In order to make a normal contact, you might send your locator and refer to a station you are in contact with a MESSAGE packet like this:

Fm KX4Z to ALL VIA RS0ISS :K1AAA : EL86RQ
Good signal Jim 73

where the callsign has been padded to 9 characters.

For Field Day you might want everyone to see our MESSAGE, so it would address ALL, again padding to 9 characters followed by the ending colon and the message.

Fm NF4AC To CQ VIA ARISS :ALL :4A NFL 4A NFL

There is so little time during a normal pass (approximately 10 minutes), you may wish to have some of these communications or headers available in a Notepad or other software to just copy and paste. There are some special items to communicate with some users using certain systems, so putting the other station's callsign inside colons may be needed. A document that explains the various types of APRS packets and how to leverage them: https://www.aprs.org/iss-aprs/issicons.html

Here is a line from the web transcript demonstrating that another station hear me via the ISS (which will have an * after its callsign when digipeating your station):

00:00:05:21 : WB8JAY]
APRS,RS0ISS*,qAO,KE8SRG-10::KX4Z :Heard you via ISS de Dan

AMSAT has a page that goes over some of the details of making a Field Day contact via satellites. https://www.amsat.org/field-day/ In particular, they discuss what is a true, valid "contact," such as:

W6NWG de KK5DO 2A STX
KK5DO de W6NWG QSL 5A SDG
W6NWG de KK5DO QSL

Notice the confirmations in both directions, and the entire exchange in both directions. This can be quite difficult!

It is very likely that there are easier ways to do this!! I have not investigated UISS or other APRS-centric software which might be easier to use.

This is a skill that gets much better with PRACTICE.
You are using a resource that is valued by many users all over the world who want also to have access. **Before trying this in Field Day,** for politeness to others, I strongly suggest practicing on several passes before Field Day and listening to others on the digipeater and observing the transcript on http://www.ariss.net/ First learn to spot the payloads of other stations. Then learn how to get your signal digipeated by the satellite and verify for the ISS with ariss.net transcript. At that point, you'll probably start making real contacts! Give it a whirl!

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Howdy all of you wonderful Radio Operators and Communications Enthusiasts!

DJ Stewart KI4ZER

June is here and so is the Heat. Stay Hydrated and stay safe!

What in the world has been happening in the world of Amateur Radio in Okaloosa County?! Antennas and more! That is very exciting as people are exploring options and learning that not all antennas are created equally! Ok we knew that but guess what? Did you know that the effectiveness of a ham radio antenna is a multifaceted issue influenced by design, radio conditions, and environmental factors? In recent experiments members of area organizations have been building, testing, adjusting, tuning, and repairing antennas. From Dipoles to Verticals and Loops to Log-Periodic and Quad-Antennas, and even the obscure item such as a Skeleton Slot Antenna, the experiments abound and the information is shared with all! Do you have an antenna idea? Share it! You never know what or who you will inspire to communicate over the proverbial coat hanger!

Speaking of antennas and communication, guess who is making strides for improvement?! Give up? Ok I'll tell ya! EARS! Who? EARS, the Eglin Amateur Radio Society, that's who. Actually, they are a what. Not a Club per say, more of a group of Professionals that maintain two repeaters and an APRS on / near Eglin. The Eglin Amateur Radio Society is an amateur radio group associated with Eglin Air Force Base in Florida. While detailed current information about the society is limited, some historical context and activities can be outlined.

The Eglin Amateur Radio Society has been known to operate from the base, as evidenced by a 1969 illustrated QSL card mailed by the society from Eglin Air Force Base to New York. QSL cards are confirmation cards exchanged by amateur radio operators to confirm two-way radio communications, indicating that the society was active in amateur radio communications at least as far back as the late 1960s.

Amateur Radio societies like the Eglin Amateur Radio Society typically consist of licensed amateur radio operators who engage in radio communication as a hobby and public service. These societies often provide a platform for experimentation, emergency communication support, and community engagement within the amateur radio community. Given Eglin Air Force Base's technical and military environment, the society likely supports both recreational and operational communication interests of personnel on base.

The Eglin Amateur Radio Society is a historic amateur radio group based at Eglin Air Force Base, known for its participation in amateur radio communications since at least the 1960s. It serves as a community for radio enthusiasts at the base, supporting both hobbyist and potentially operational communication activities linked to the Air Force environment.
In more recent history, the Eglin Amateur Radio Society received an anonymous donation to replace aging antenna systems to keep W4NN and its APRS W4NN-1 on the air. Its current team are highly skilled professionals within the Amateur Radio Hobby and technology along with professionals at/near the Eglin Military Complex.

Repeater Teams Assemble! Some of the same people that are professionals at/near Eglin are also one in the same that help maintain other area Repeaters. Such is evidenced by a W4ZBB/K4FWB Repeater site visit and familiarization tour for Rey and Mike! This team along with others are actively maintaining the area repeaters helping to keep you on the air!

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Guess what's been going on at the North Okaloosa Amateur Radio Club?!

DJ Stewart KI4ZER

Classes have been getting taught, new Hams have been getting Licensed, Organizations such as the USDA and the Live Oak Baptist Church have benefited from Volunteer Services, Planning for Field Day, Planning for the October Hamfest, mentoring, Elmering, and oh so much more! Interested in more from NOARC? Here is a wonderful write up that outlines the Organization!

The North Okaloosa Amateur Radio Club (NOARC) is a club located in Crestview, Florida, serving the amateur radio community in Okaloosa County and surrounding areas. NOARC's purpose is to promote unity, fellowship, and activities within the amateur radio community, as well as to develop radio communication skills for emergency operations and community events. NOARC is based in Crestview, Florida, with members from Okaloosa, Santa Rosa, Walton Counties in Florida and Covington County, Alabama. Meetings: Meet on the 2nd and 4th Thursday of the month at 7:00 PM at Live Oak Baptist Church in Crestview, Florida. Contact Information: Email: info@w4aaz.org Website: www.w4aaz.org. NOARC also has a Facebook page and an Instagram page.

NOARC plays a vital role in providing emergency and volunteer communications in Okaloosa County during hurricane season, they provide radio operators for Crestview storm shelters and information coordination.

NOARC offers services such as Entry-level and general or higher license classes, Hamfest, License test sessions, Mentoring, On-the-air bulletins, and Repeater services

NOARC hosts an annual Ham Radio Field Day, which is a world-wide exercise to ensure radio operators and equipment are ready for emergencies. They also organize an annual Hamfest, which is a popular gathering for amateur radio enthusiasts

NOARC is full of Elmers, Mentors, and Top-Notch World Class Operators who are ready to share ideas, methods, practices, and experiment right along with you! So, if you are looking to learn, develop, promote, volunteer in the community, train via technical events, and enhance your skillset, check out the North Okaloosa Amateur Radio Club! In Crestview Florida on the second and fourth Thursdays of the Month at 7pm! You will not be disappointed with your decision! 4565 Live Oak Church Road Crestview Florida.

Field day 2025 Okaloosa County Proves reliable communications!

From CW to Voice and Digital to World-wide capabilities, The teams at NOARC and PARC prove that simple operations, and portable gear paves the way for the future of our beloved Amateur Radio Hobby!
NOARC met at Spanish Trail Park in Crestview Florida and showed off old school and new school techniques for making contacts in a simulated deployment effort!

NOARC

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PARC met at Fred Gannon State Park in Niceville Florida and utilized back pack radio kits to communicate in multi-mode operations while teaching young and old hams the tricks to making the most of their time and mentoring others as to how to set-up, tune, and troubleshoot any issues that would prevent a barrier to communications!

Both clubs preliminary reports are that the events were enjoyed bay all operators, visitors and guests! If you are looking for quality radio time, free training, and people that just purely enjoy each other's company, NOARC and PARC offer chances for you to participate in the North and South of Okaloosa County Florida!

Pictures from NOARC!












GARS had a very successful Summer Field Day at the EOC in Waldo City Square.

Mike Martell KK4KRZ

Last year we had 22 sign-in and this year we had 36 sign-in total. Our scheduled presentations were completed and well attended. Some visitors came just to attend the presentations and stayed to learn more about Ham radio, the EOC and get on the air.

Reid Tillery gave a very extensive briefing a WIN LINK and also provided a demonstration using the Waldo EOC equipment.

Lorilyn Roberts provided a presentation on “Alternate Power”. This included batteries, solar and much more. Lorilyn shared her experiences and brought many batteries and solar panels of all types. She also addressed the cost and best place to buy alternate power items.

Jim Carr demonstrated how to tune a repeater capacitor “Can” and explained repeater operation.

Terry Gordon provided a tour of the EOC and explained the stations, antennas and software. Terry also included one on one operation of digital modes.

Lunch was well attended requiring us to move chairs from the EOC to the education room so all could sit down and eat together. Besides the Pulled Pork Sandwiches and drinks provided by GARS attendees brought cake, pies, brownies, salads, cookies, baked beans, sub sandwiches and more. No one left hungry.

On Sunday we only did operating but did introduce new hams to phone and digital modes. Getting at least one new technician to make his first contact on HF. Misty Webb (TV20 reporter) also made a contact on 15 meters (assisted by Barbara Mathews) during the taping of GARS summer field day. Terry Gordon followed up with the station in Rhode Island to informed them they were contacting a TV news reporter with that contact.

Per feed back we will continue to provide presentations and activities during Summer Field Day. I hope we can get a youth activity. I just hope we will have enough room (maybe open up a second class room for youth activity (any ideas?).

More on the point results later. Enjoy the pictures.

Thanks to everyone who gave their time to make this Summer field day the best ever.

Bill (New Tech) making first contact with Barbara Mathews KO4TWZ

Misty TV20, Barbara, Lorilyn Roberts KO4LBS

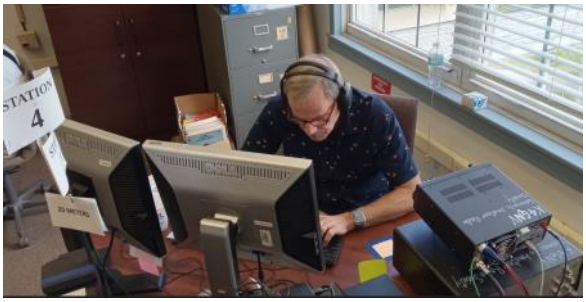
Continued on next page...

Lorilyn Roberts KO4LBS Demo Alternate Power

Lunch

Misty TV20 Barbara Mathews KO4TWZ

Reid Tillery K9RFT Presentation on WinLink



Cy Stanway K2CYS Working CW

We Let The Magic Smoke Out -- AGAIN!"

Alachua County ARES/NFARC/Alachua EOC Radio Club SUMMER FIELD DAY 2025

"***Do you smell smoke, like I do?***" seems to be *the defining phrase* for our group's Field Day effort, year after year -- but we made fantastic progress for many in our group and for the public this year! Once again, we managed to "smoke" 3KV capacitors, this time in TWO bandpass filters....it is our patented technique to flush out those capacitors with elevated "equivalent series resistance" during Exercises, instead of during Disasters! (That's our Story and we're stickin' to it!)

Leland Gallup AA3YB giving "the tour" to fascinated visitors

Smoke Brings Out The Best In Us

The 15m filter gave up the ghost (or smoke) early in the game, with W4JIR quickly noting the odor as well as the SWR change....but not to worry, we had built a SPARE FILTER and moved it into position. The 80m filter followed in the middle of the night (not sure if that was David again or not....). That was when some of our new leaders rose to the occasion and worked out an innovative solution! This year we had also figured out how to snake *additional coax* out under a rear security door -- and for the first time at the EOC, we had **three HF coaxes**. (Big disaster response triumph!) So they rearranged 3 of our stations on the three working HF antennas. Those three antennas were not far enough apart for adequate signal separation, so they used remaining bandpass filters to provide *filter separation*! Way to go, **David Huckstep W4JIR, Manish Sahni KZ4KC, Mike Hasselbeck WB2FKO, and Leland Gallup W4JIR**! Humble Mike commented, "It was a team troubleshooting effort that was largely the work of Leland and Manish. *I mostly watched in awe as Leland systematically and quickly isolated the problem.*" Leland responded, "*It was Huckstep who figured it out!*"

Fixes Coming: These are tiny little blue ceramic capacitors with huge voltage ratings, but sometimes not up to the task of passing big RF circulating currents, so we use several in parallel to make the required capacitance....so snip, snip, new 20-cent blue capacitors go in, and these bandpass filters will be good as new (maybe better?). Knock on wood!

Touching Lives For Good: Six Huge Improvements This Year

Jeff Capehart W4UFL working on a "Satellite Tower"

1. Coaching People UP!

While we had many great technology improvements and *funny-later-on* exploits, I think we grew even more in developing our volunteers, our most precious commodity. All year long we held classes, trainings, soldering-labs and oodles of chances for people to grow. But these in-depth Exercises allow newcomers to really experience the thrills of ham radio and realize their potentials. Leland's POTA-turned-GOTA station was HUGE for so many visitors -- but we also worked to move peripheral already-licensed hams to more enjoyment. We had great success this year!

- One highly-skilled software guy never wanted to get on the air He was coaxed into getting onto 20-meter phone -- and got over his mic fright and made a great entry into the world of HF Phone! 18 contacts!
- A Technician-licensed ham with too much time on VHF phone to fit the GOTA was cajoled into trying 10m FT8 -- he loved it! 33 contacts!

We held 13 nights of TECHNICIAN CLASS just before Field Day in an attempt to help some local high school students finish out and get their ham license -- and they basically didn't show up. However, we did get three new Technician licensees as a result, and a LOT of visitors/GOTA participants!

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2. Out Of This World Dining!

Earl Sloan KI4OXD took on the task of correcting our nutritional discrepancies and brought along two great friends, unlicensed Gary and Dory. And two cooker/grills with canopy! The result was literally out of this world -- better than ANY sit-down restaurant. The BBQ chicken was the best I've had in my entire life; the breakfast short-order cook would do anything you wanted right in front of you and the salads, baked beans, hamburgers, hotdogs -- well, we sure got all those calories from our hard work replaced in abundance! **This was world-class!** I can't overemphasize what these three did! *We lost his 175 contacts last year*....but wow, did we dine well!

3. POTA Skills Move Right Into GOTA

Several in our group have followed the lead of **Ron Lewis KN4ZUJ** with POTA involvement -- and it shows! **Leland Gallup AA3YB** used his POTA skills to set up the most amazing GOTA station right in the entrance foyer of the EOC -- and more than 17 visitors made 203 digital contacts, literally our 4th highest scorer! This was ***so*** far beyond anything we've ever done before. We were able to use it to explain "radio texting" and also high-insight understanding of spectrum usage by signals -- **the visitors loved the colors of the different texts, and the waterfall.** Tour after tour, new people everywhere; we had a 7th grader make scores and scores of contacts; his parents/grandparents were so impressed with our operation that they asked to just leave him in our care for several hours! This young man has a very bright future! But we also got previously-inactive hams, college students, the EOC Intern, and many, many older persons on the air! We had people asking if we would be open for tours the next day, too! What was the draw? Polling these persons suggested that the **Alachua Chronicle press** (https://alachuachronicle.com/alachua-county-hams-host-thrilling-24-hour-radio-showdown-with-high-tech-twists/) was one key in such increased participation- thanks to **Jeff Capehart's (W4UFL)** AI juicy re-write! But Leland's station & his great personality were huge!

4. Rock Solid Networking

In previous years, our high speed MESH 2.4GHz database network has had fits and starts -- but **Earl McDow K4ZSW, Mark McDow N4TEK and Susan H. KG4VWI** did extensive testing, adjusted some features on the database computer, used a lot of shielded cable, and ***wow!*** We had much better performance this year. Just a small number of delays to our far-trailer 700+feet away, and zero database failures! Huge improvement!

5. The 6-Hour Trailer Tower Debacle

Perhaps our most sweaty improvement was putting up the trailer tower to 35 feet, that **Stewart Reissener KK4DXF** built for us -- **six times!** We have never shoe-horned that trailer into the EOC environment before, not to mention the 25-foot-wide HF beam -- but we did it this year! Even early, on Friday. **Huge advance for emergency comms out of that EOC and even more, it allowed all of Emergency Management personnel and all of the 911 Combined Communications staff to have a 35 foot tall visual to far better understand what we need for effective backup comms.** But.....perfect SWR, *until we rotated and raised the tower* (350 turns on the worm gear hand winch) -- horrible SWR. Down it went (350 turns), fix this/fix that, perfect SWR, up it went (350 turns) -- terrible SWR! *We did that over and over*, and finally with an ohmmeter proved that there was something badly wrong with the "gift LMR400" we had inherited this year. Broken inner conductor shorting out? Replaced that 175-foot length and everything worked perfectly. *Better to find out NOW, than in a disaster!*

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6 Notable Growth

Take a look at how many of our participants showed very significant growth in their communications capabilities in the face of a 24-hour effort:

Participant	2024 QSO's	2025 QSO's show big growth!	Comment
David Huckstep W4JIR	190	271	Works most of the 24 hours
Leland Gallup AA3YB	48	52 + shepherded 203 GOTA QSO's	Huge new GOTA career!
Jeff Capehart W4UFL	51	129	Big improvement!
Ron Lewis KN4ZUJ	0	88	An HF operator as well as FM satellite guru!
Craig White KO4ZRZ	0	57	Big new involvement and a huge help with the Tower!
Brian Joy KQ4BWH	0	34	Relatively new member, getting right into the thick of it!
Mark McDow N4TEK	0	18	Conquered his "mic fright"!

Once again, **Dan D'Andrea WX1P** pulled the night shift low-bands voice challenge-- **and he is a master at it.** Many of our participants never knew of his service to our group in the wee hours.

Our Scores

The nitty-gritty and comparison to last year:

Area	2024 Contacts	2025 Contacts
Phone	116	133
CW	374	417
Digital	1153	908
GOTA	0	203 (all digital)
TOTAL	1643	1661
Bonus Points	Missed Elected Official Missed Satellite Missed GOTA Coach Missed Youth Participation Missed Field Day Site Responsibilities	Missed Satellite Missed Field Day Site Responsibilities
Total operators	13	15
GOTA Visitors	0	17+

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Conclusions

- We successfully converted Mike H WB2FKO from FT8/FT4 guru to the **Dark Side** (CW), doubling our CW crew -- he's fantastic! (And he also coached everyone up on FT4!)
- We definitely **lost some points** by diverting **Earl Sloan KI4OXD** into Nutrition Chief... but we also provided fantastic meals not only to our crew, *but also to all of the 911 Combined Communications operators for a weekend*, and that will bring big dividends in better understanding and awareness of our backup communications needs and abilities in more portions of Alachua County government. **A lot of discussion & relationship-building around the sumptuous meals!**
- We had **far higher group usage of much-faster FT4** this year-- and that helped make up for redeployed former high-scorers. Our crew is very comfortable with advanced digital techniques.
- We put a lot of preparation time into developing satellite techniques -- but were too tight for people and time to succeed during Field Day (so far!). The new knowledge and expertise gained may show up later.
- Our **lead-up Technician Class** not only got our community 3 new local hams, but it **resulted in lots of in-person visitors to our Field Day effort**, which helps provide even better education and build relationships.
- During setup, operational, tear-down and cleanup times, we had abundant opportunities for discussions with Alachua County Emergency Management personnel. **These strongly built and strengthened relationships and understanding** -- for example, they had no idea that we were so hard-core that several were sleeping on the carpet Saturday evening!

We found weaknesses in some of our equipment, and we need to put more phone calls and personal interaction into our media outreach, despite some significant successes in print media. We need to move these new members into full-fledged qualified volunteers to deploy and serve our community during disaster -- service is our specialty as an ARES(R) group, not just entertainment and personal growth. We have built up significant strengths in computer assets, radios, monitors, multiplexers, filters, transmission lines, and deployable antennas of multiple types, as well as mobile trailers, solar power and even a fuel-sipping RF-quiet diesel generator. As our long-term members gain age, we have to provide for our community by moving newer members into skills and commitments that continue the response capabilities.

MERT

Marion County Sheriff's Office
Division of Emergency Management

COMMUNICATIONS UPDATE

July 2025

MERT's primary role is to support all open Evacuation Shelters throughout Marion County during declared Emergency events. We also support EOC and emergency personnel along with Community Emergency Response Teams (CERT) with voice, image and data communications resources.
"*Call MERT… When all else fails*!"

Next Bimonthly Meeting

July 19th @ 10:00 am at the EOC
All Amateur Radio Operators are Welcomed!
Meetings conducted in Jan, March, May, July, Sept, & Nov

Since MERT was created in 2004 by the Marion County Sheriff's Office Division of Emergency Management, MERT's leaders and members have worked together with the Sheriff's staff in developing an organization focused on the mission of providing reliable emergency communications (EMCOMM) service primarily at the evacuation shelters and the Emergency Operations Center (EOC) during hurricane activations.

Those early years were focused on the significant work of adding the basic hardware and systems of a robust amateur radio communications system while creating the mobile systems (Go Kits) packaged for rapid deployments to the shelters. As we know, it is not easy building something from nothing. It takes guts, grit, and a whole lot of vision. Building something from the ground up means wearing ten hats at once, solving problems as they come (and sometimes before they even show up), and constantly pushing forward even when the road gets bumpy (like when COVID hit). I, and all our current members, have a tremendous respect for MERT's past leaders and members who accomplished so much!

But, after twenty years, radio and repeater electronics, communications hardware and basic systems get old, worn out and break (or struck by lightning)… and require significant attention. As a result, MERT has embarked on a major effort in addressing these challenges. I offer we have made remarkable strides in strengthening our communications infrastructure to better serve the Marion County Division of Emergency Management and its emergency response partners over the last four-years. With a steadfast commitment to resilience, quality and innovation, we've implemented significant upgrades and system enhancements across our entire network while challenging ourselves to raise our personal skills and knowledge about current governmental procedures, new challenges not dreamed about 20-years ago (cyber-attacks) and the ever-expanding EMCOMM service to our served agency.

From the replacement of our aging repeaters to the full-scale rebuild of the EOC tower, every project reflects our focus on durability, reliability and insuring robust EMCOMM coverage locally, state-wide and across the U.S. We're also preparing to launch a new Ocala National Forest repeater, which will expand our reach into previously unserved county areas in the NE and East. Our recent move of MERT's radio systems to a state-of-the-art communications hut at the Sheriff's Complex was another step forward - ensuring better coverage, long-term reliability and easier access for maintenance. Additionally, we moved our power connection onto the expanded UPS unit at the Marion Transfer site in further safeguarding our systems with robust power continuity, while at the EOC we have a hurricane rated lift-tower supporting our OCF HF antenna which is designed to allow 24x7 access for repairs or replacements.

"Volunteers don't get paid, not because they're worthless, but because they're priceless." —Sherry Anderson

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Working together with multiple Marion County agencies, these upgrades across multiple systems mark a new chapter for MERT, one built on reliability, responsiveness, and readiness for whatever comes next. We have also rededicated our effort in raising our own personal skills and knowledge in our drive for excellence. We do not know what our future assignments may be, but we know this… MERT is prepared to tackle whatever assignment it is given. Because we are ready! Our moto is our guide…. ***"When all else fails. Call MERT!"***

Thank you, members, for your participation and support!

HRCook

2025 Hurricane Preparations

Preparations for this year's hurricane season are nearing completion. They have included:

Significant revisions to the Shelter Manual and adding the new Shelter Support Team Resource Manual. MERT has never been better prepared in having all the information it needs to be as prepared and effective as possible at every shelter location! A huge Thank You to **Ray Woody (WB6FKJ), Shelter Manager** for his major commitment to collect, update, catalog and publish this new comprehensive resource for MERT.

Shelter repairs:

We are scheduled to help the MCPS staff make repairs to the radio cable their staff moved at Forest High School. A meeting is scheduled at the school on July 2nd to help them find the cable problem (s). A report on our visit and the results will be included in next month's newsletter.

Upgrading radio coverage for Marion County

- ◊ MERT has done an awesome job providing and supporting local 2 Meter and 70 cm radio coverage across most of Marion County with its D-Star repeater upgrades and FM repeater for KJ4CLL. However, there is always room for improvements and enhancements.
- ◊ With the future addition of the Forest Tower repeater, radio coverage will now be possible in the NE and Eastern portions of Marion County, including the Ocala National Forest. The new repeater should also open a line of communications into Flagler and Volusia Counties.
- ◊ Another huge Thank You to **Phil Lewis (WB4EVV), D-Star Manager** for his major commitment to test, configure and program the new D-Star repeaters for MERT along with supporting this new site repeater move.

High Frequency (HF) Antenna Options

While MERT will be expanding its County EMCOMM capabilities (see above), an analysis has determined our HF resources are very limited and do not have "backup" resources should failure (s) occur.

- ◊ We must address this resource gap and find other antenna designs and capabilities to better "harden" our operations against single or multiple antenna failures.
- ◊ Another opportunity includes a fresh look at our NVIS capability.
- ◊ We also need to add HF antenna resources for SHARES operations providing MERT direct communications with multiple agencies and departments of the U.S. government.

SHARES Operations

- ◊ MERT has barely "scratched the surface" in adding this important HF EMCOMM resource to our radio operations
- ◊ and training activities.
- ◊ Discussions have centered on where we are at and where we must grow our knowledge, training and future
- ◊ capabilities using this license.
- ◊ We also need to add antennas for full-time SHARES radio messaging information transmitted hourly to all stations.

MERT's members have accomplished much in 2025… ***but,*** more lies ahead of us. I know we can address these challenges and achieve great results with everyone's participation.

Life's most persistent and urgent question is, what are you doing for others?" - Martin Luther King, Jr

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MERT Guest Update

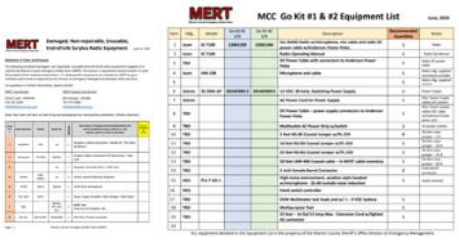
On June 25th, Preston Bowlin - Director of Emergency Management provided a tour of the Sheriff's facilities to Kathy Dugan, Editor-in-Chief of "**352 Today**", a part of the North Central Florida Media group. The tour included a stop at the MERT Radio Room where Coordinator Harlan Cook (KN4VRM) provided a brief overview of the responsibilities and operations in service to the Division of Emergency Management. Joining in the discussion was ARES Coordinator More information about "352 Today" at: **352today.com**

(L-R) Kathy Dugan, "352 Today" Editor-in-Chief and Preston Bowlin, Director of Emergency Management.

Great Teamwork!

Some delayed projects were completed in June thanks to several members leadership and team participation.

- ◊ Cindy Sheffield (K9LRX) led a team in completing the Surplus Equipment Inventory audit in moving some old unused hardware to the recycle bin.
- ◊ Royce Hagerman (KG7SNN) led another team who tackled the creation of the new inventory list for MCC GO KITS #1 and #2. Future efforts will focus on finalizing the transport cases which will store the radios and hardware for these new MERT GO KITS.



Cindy and Royce – Thank You for the leadership in completing both these projects!

MERT Leadership Update – July 5th to 17th

With Coordinator Harlan Cook and Bill Gillespie out of state beginning July 5th, Ray Woody (WB6FKJ) has accepted responsibility for being the acting Coordinator on Duty. Supporting Ray as Deputy Coordinators will be Cindy Sheffield (K9LRX) and Nick Kiddey (W4NFK). If any questions arise, they can be contacted at:
Ray Woody 770-328-5459 Cindy Sheffield 979-574-7725 Nick Kiddey 256-653-1290

Hello!

MERT members say **Hi**! and invite everyone to attend the Wednesday "Check In" meetings. We've covered the new HT radio plan documented on the updated ICS-205, a "Think Tank" session on future plans for SHARES operations, and a class on how to configure your WINLINK account to receive notifications on your primary email address when messages are received. All **MERT, CERT, ARES, HEC and amateur radio operators** are **welcomed to attend**.

Director Preston Bowlin Update

On June 25th, Preston Bowlin, Director of the Division of Emergency Management joined the Wednesday "Check In" meeting with updates on multiple topics of interest for members. We appreciate his time with us and in taking multiple questions from members.

We sincerely thank Director Bowlin for his unwavering support along with providing the financial resources on multiple equipment upgrades completed over the last four-years for MERT's systems. Those resources have upgraded and renewed multiple elements improving our reliability for years to come. Thank You Director Bowlin!

Director Preston Bowlin attends the June 25th "Check In" meeting and provides updates on relevant topics important to MERT activities

Volunteer! Sometimes the jobs no one wants conceal big opportunities. -H. Jackson Brown Jr.

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Till we Meet Again…

(L-R) Gary Neron (KS4TSX) and Ray Woody (WB6FKJ).

ERT sends its very best wishes to Gary Neron (KS4TSX) who is leaving after several years of rvice. Gary was a "GO TO" for any shelter activation during declared emergencies, especial- at the Ft. McCoy school. Additionally, he was always quick to accept a project or help out enever and where ever needed. ***Gary, thank you for your service,*** your support and espe- lly your leadership. You will be missed good friend!

– In his resignation letter, Gary wrote… "I have been privileged to be part of an organiza- tion comprised of such highly knowledgeable, skilled, dedicated and helpful people. It was an honor to serve alongside all of you…" *Gary, the honor was ours!*

For more information of the Marion County Emergency Radio Team (MERT), visit: **KG4NXO.com**

"Wherever you turn, you can find someone who needs you. Even if it is a little thing, do something for which there is no pay but the privilege of doing it." - Unknown

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.

Suwannee ARC, Live Oak, FL
- Last Saturday of the month
- Suwannee Regional Library
- Contact Gerald Guy, geraldlguy@gmail.com

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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