

2024 Alachua County ARES(R) / North Florida Amateur Radio Club

Some data and statistics about our backup emergency communications citizen volunteer group during calendar year 2024:

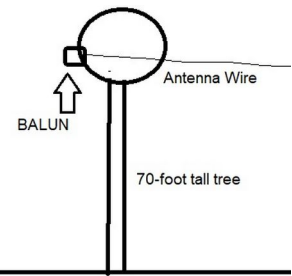
No.	Item	
1	Number of technically badged volunteers (many of whom haven't been involved in years) see: https://www.nf4rc.club/how-to-docs/county-ares-docs/badging-list/	26
2	Number of participants in 2024 Winter Field Day Exercise: (see https://www.nf4rc.club/historical-exercises/2024-winter-field-day-aarip/)	14
3	Radio connections ("contacts") achieved during 2024 Winter Field Day Exercise:	304
4	Approximate percentile outcome 2024 Winter Field Day Exercise in our Class/Category	In top 10% of nation
5	Number of participants in 2024 (Summer) Field Day Exercise (see https://www.nf4rc.club/historical-exercises/2024-field-day-aarip/)	14
6	Radio connections ("contacts") achieved during 2024 Summer Field Day Exercise:	1643
7	Approximate percentile outcome 2024 Summer Field Day Exercise in our Class/Category	In top 6.5% of nation
8	Number of Hurricanes Deployed	3
9	<ul style="list-style-type: none"> • Volunteer hours 2024 Debby 	165
10	<ul style="list-style-type: none"> • Volunteer hours 2024 Helene 	178
11	<ul style="list-style-type: none"> • Volunteer hours 2024 Milton 	134
12	Notable Projects Completed <ul style="list-style-type: none"> • Completion of Six-Band HF 100-watt Antenna Multiplexer • Replacement of HF backup antenna #2 • Technician License Course, East Gainesville • Multiple fire stations equipped with backup VHF systems • Solving diesel generator restart failure issue • Completion of portable, trailered 30-foot tower • Refurbishment and reinstatement of HF 3-element Yagi antenna • Acquisition and outfitting of portable HF go-box system (ACFR funding) • Refurbishment of donated 6-meter kilowatt amplifier • Homebrew construction of 10 Arduino-based WINKEYER emulators • 2-meter and 6-meter County Coverage Experiment 	

	/Documentation <ul style="list-style-type: none"> • First ever exhibits at Veterans' Day and Santa Delivery events • First ever Meteor Scatter contact for our group 	
13	Attendance January Meeting	15
14	Attendance February Meeting	14
15	Attendance March Meeting	(no minutes)
16	Attendance April Meeting	15
17	Attendance May Meeting	12
18	Attendance June Meeting	14
18	Attendance July Meeting	16
20	Attendance August Meeting	21
21	Attendance September Meeting	15
22	Attendance October Meeting	(no minutes)
23	Attendance November Meeting	21
24	Attendance December Meeting	10

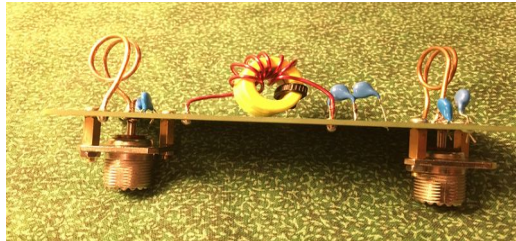
Jeff Capehart tracks "activities" and volunteer hours from our group, another set of markers for engagement:

Month	# of Activity Events of Any Type	Person-Hours
Jan	17	478
Feb	11	103
Mar	17	112
Apr	23	276
May	21	163
Jun	26	537
Jul	10	65
Aug	10	299
Sep	14	287
Oct	10	222
Nov	9	114
Dec	19	152
Total	187	2805

January 2024 saw us in a pickle -- our 130-foot EFHW antenna had come loose from its tie, and the Balun was stuck up in a tree... Ouch! So we organized an antenna party and took turns firing lead weights over tree branches to put it all back up again. Manish Sahni KQ4KTE, Craig White KO4ZRZ, and Rosemary Jones KI4QBZ were some of our marksmen!



We worked toward WINTER FIELD DAY and learned how to connect up radios with our new ANTENNA MULTIPLEXER. We also built a new 6-meter bandpass filter.



WINTER FIELD DAY -- our first time really using the multi-band ANTENNA MULTIPLEXER that we built from kits and from scratch as well. It worked! We had three transmitters simultaneously pumping 100W each into one coax line going to our EFHW antenna. Leland Gallup AA3YB began to understand how band-modes were multipliers and cracked the whip and helped us achieve a fantastic score in our 3I category. **We later learned that our 300-odd contacts combined with our multipliers put us in the upper 10% in our category nationally.** (It takes a long while for WFD scores to come out.) Toward the end of the event, Mannish smelled SMOKE and one of the capacitors in the homebrew 15m filter had given up the ghost.¹ Field repair was successful and we continued on. AARIP: <https://www.nf4rc.club/historical-exercises/2024-winter-field-day-aarip/>



FEBRUARY saw an emphasis on building portable "go-boxes" based on what we learned from Winter Field Day. <https://www.nf4rc.club/how-to-docs/technite-go-box-construction-options/>

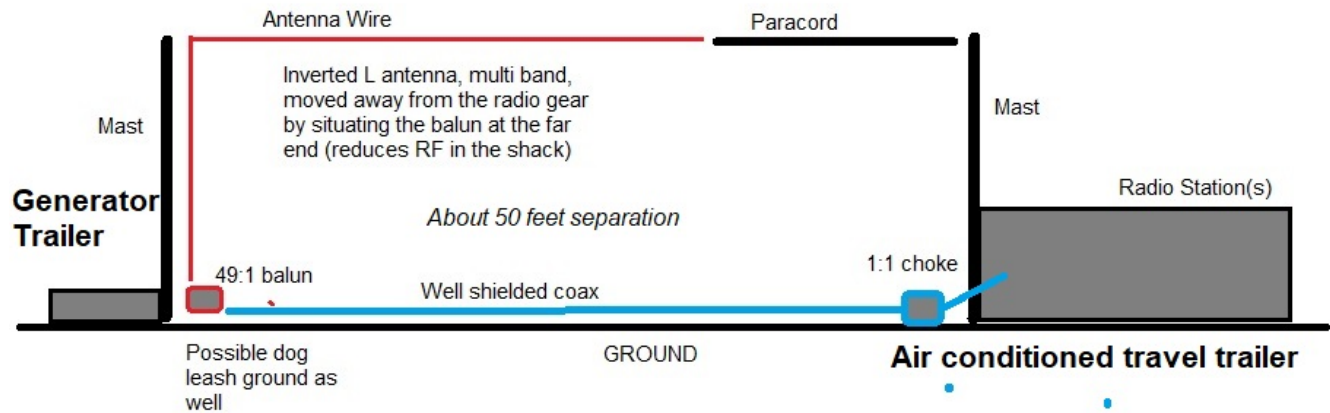
Due to Valentines' Day we had to move our meeting, and Jeff and Susan brought over their NEW (to them) MOTOR HOME! We had a great dinner/celebration meeting. February also saw more



growth with Reid Tillery and the Windsor/East Alachua radio volunteers. That growth continued throughout the year, and morphed into twice-monthly simplex radio tests over to the EOC and throughout the eastern portion of Alachua County. This is the first time to our knowledge that we've had such good volunteer communications into Windsor and beyond. More power to Sam Register and Reid Tiller and others -- Several GARS folks helped with getting TOWERS for some contract fire stations.

¹ We believe the ESR (equivalent series resistance) of the no-name ceramic capacitors were TOO HIGH, causing excessive power dissipation. We fixed this by arranging for parallel capacitors to lower effective ESR.

MARCH - we started coming up with a plan for FLORIDA QSO PARTY -- a very quick antenna and station setup:



We ended up operating from TWO different locations, and we were able to get all our stations setup, or torn down (including the antennas) in less than 15 minutes! This was amazing for us. We had a lot of fun, but we ended up with some TICKS!

In APRIL Reid Tillery's work to build backup communications at far-out fire stations continued with success at several stations!

Our FLORIDA QSO PARTY group had a ton of fun!



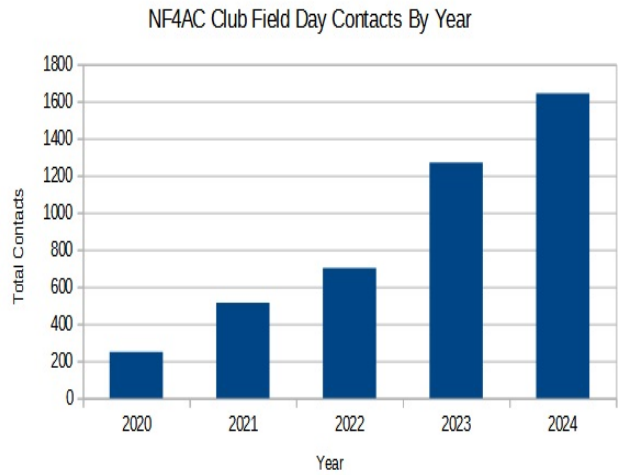
In May we were hard at work getting ready for SUMMER FIELD DAY and we built a 160m bandpass filter and expanded our Antenna Multiplexer to include that band.

We were also working to get the three element BEAM in working condition -- and we succeeded in the end!



In JUNE our big effort was a complete 4A Field Day Effort at a County Park -- where we were only 1,000 feet from a high power FM transmitter antenna. We had to do some TESTING and PLANNING to make sure that wouldn't take us out! We set up in a huge LODGE building and also in a camping shelter, giving us antennas very far apart. We used the ANTENNA MULTIPLEXER extensively, and we ran from GENERATORS for the entire effort. Our 5kw diesel generator worked WELL but had problems with re-start when "hot."

Our team had an astonishing 1600+ contacts, showing amazing improvement year over year over year for our group.



We had HUGE HELP from the MARC TEAM -- so we actually had TWO TOWERS -- their humongous tower with VHF and HF wire antennas, and our own smaller tower with a BEAM on top and working rotator. A second 6 meter beam was also on our trailer -- but without a rotator.

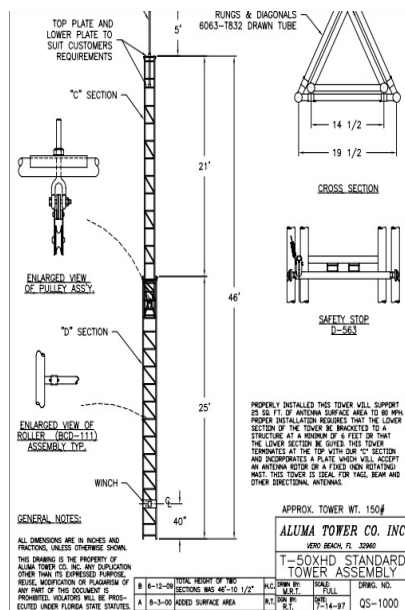


The diesel generator. Later in the year, the problem with heat and the fuel shutoff got SOLVED so it is now a reliable key-start diesel generator without any significant Radio Frequency Interference.

We ended up scoring in the top 6.5% of the very competitive 4A category which was AMAZING for us. Our team really came together and worked well together. AARIP: <https://www.nf4rc.club/historical-exercises/2024-field-day-aarip/>

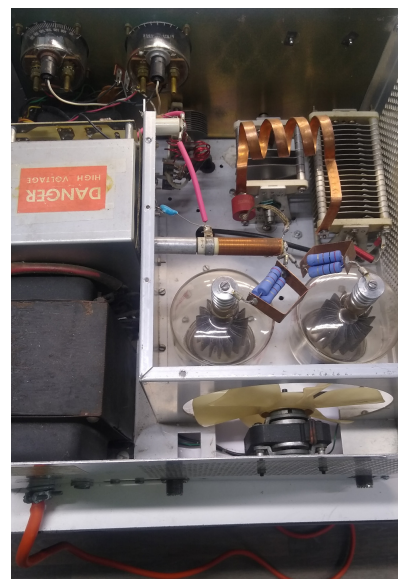
After FIELD DAY we were pretty tired out. We did a lot of thinking about how much work it had been to setup a complete 4A system -- and as a group decided that we didn't want to do that again if we could avoid it, as small as we are!! It had added scores of more equipment that we had to transport and install....

In JULY, David Huckstep lobbied Alachua County Fire Rescue and successfully got funds for a PORTABLE GO BOX HF System -- including the Amplifier -- so we didn't have to keep moving the base HF system at the EOC. This was a huge win-win for all sides. He also successfully lobbied for a 50 foot alumatower to be placed at the NEW EOC site -- many people didn't realize how much we depend on STRUCTURES for our many antennas!



This is a huge step for our group as we move into the NEW EOC when it is refurbished. We have already created significant documents to suggest where we should have antennas etc.

In AUGUST, George Dietz very very generously donated an older King Converted SB-200 6 meter kilowatt amplifier to the effort! Mike Hasselbeck pretty soon took charge and did a huge amount of work to update this amplifier. That took months!

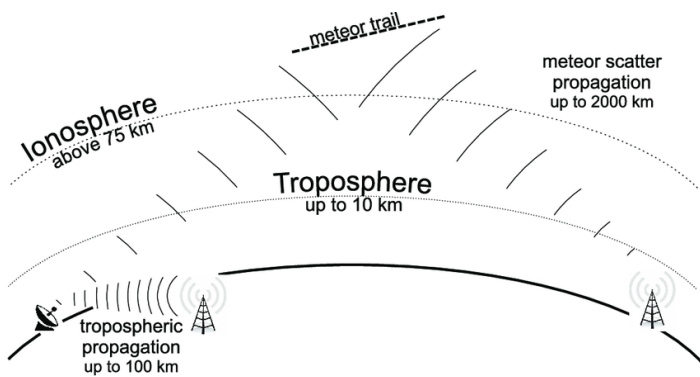


THEN CAME HURRICANE DEBBY -- and we were staffing the EOC and Shelters! AARIP: <https://www.nf4rc.club/incidents/2024-hurricane-debby/>

Next we started the Arduino-based WINKEYER emulator project -- our own printed circuit board, our own homebrew keyer using code provided helpfully by K2NG quite a while ago. <https://www.nf4rc.club/how-to-docs/arduino-k3ng-winkeyer-emulator-locally-developed-morse-code-keyer-manual/>



And we were working toward a POTA/METEOR SCATTER outdoor event -- in August, Mike Hasselbeck gave a talk on VHF propagation methods and explained this esoteric comms method. Why not? We decided to give it a try during the Geminids Meteor Shower in December.



Meteor scatter isn't really scatter (we think) -- it is a reflection off the ionized trail of a meteor bursting through our outer atmosphere. It requires very specialized communications methods (high speed 700 word per minute CW was the first technique used) and a good antenna and power, if you have it!

HURRICANES HELENE AND MILTON!

OCTOBER: Our hardy band of volunteers has now gotten a real workout, with our **2nd and 3rd 2024 hurricane deployments, for Helene and then Milton!** During Helene, Alachua County had up to 55,000 households without power, but only a smattering of residents in shelters. Our volunteers staffed three shelters and the EOC and had a tiny bit of "margin."

- **Big Surprise:** During Helene our trusty Gainesville Amateur Radio Club 146.820



Jim Carr KC4MHH (L) and Jon Simonds KC4NWK (R) standing beside some of the impressive repeater bank @ TV-20 receiving tower. They generously make multiple repeaters available for disaster service.

repeater lost power, along with the powerful TV station at which it was based, and our secondary repeater along with it!

Big Discovery: The Univ of Florida radio club 146.910 repeater worked just fine for connecting all of our shelters!

Helene AARIP: <https://www.nf4rc.club/incidents/2024-hurricane-helene/>

Then came Hurricane Milton and suddenly we had hundreds and hundreds of travelers with no possible hotel rooms and dwindling gasoline, flocking to our shelters, which reached a combined total of 621 overnights. The County had to open a 4th shelter; Eric Pleace, KO4ZSD, rose to the occasion and staffed the sudden opening. But our power losses were much less severe, less than 4,000. And all our repeaters survived. As part of our training/updating during Milton, we tested Jon Simond's UHF repeater KC4NWK and found it has astonishing reach! So we're up to four great potential VHF/UHF repeaters we can utilize. <https://www.nf4rc.club/incidents/2024-hurricane-milton/>

Potential County Reimbursements

Alachua County has invested well over \$100,000 into equipment and infrastructure for our group of volunteers -- but our volunteerism and signed ICS-214's are making it possible for the County to get "return on investment" because of generous federal matching funds to local county disaster efforts. Using \$15-\$20/hour for our time and assuming 8:1 match, we came up with these estimates for potential reimbursement:

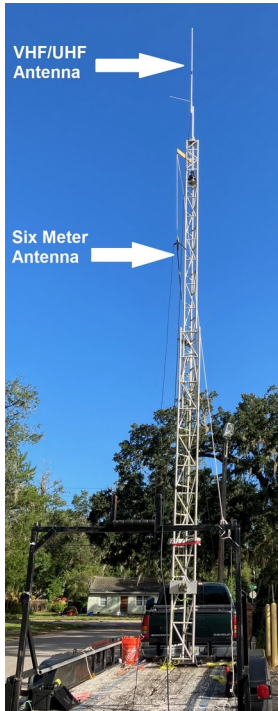
#	Incident	Deployed Hours	Estimated Reimbursement
1	2022 Hurricane Nicole	72 deployed hours	\$ 8,640
2	2023 Hurricane Idalia	41 deployed hours	\$ 6,500
3	2024 Hurricane Debby	165 deployed hours	\$24,000
4	2024 Hurricane Helene	178 deployed hours	\$28,480
5	2024 Hurricane Milton	138 deployed hours	\$22,080
TOTAL ESTIMATE		456 deployed hours	\$89,700



And while we were having Morse Code fun -- we worked out a CHEAP way to make a homebrew PADDLE to go along with our homebrew Arduino Winkeyer!

\$7 Paddle construction

Since we are asking the ACFR for a tower, we felt we should TEST to see what kind of COUNTY COVERAGE we can get without repeaters, if we have such a tower.....

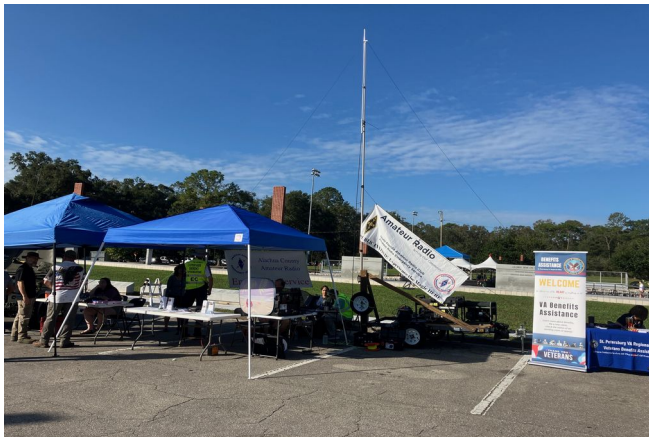


So we did a full test -- not only on 2 meters, but we threw in some 6 meter work at the same time!

You can read the FULL WRITEUP of our very careful tests here: <https://www.nf4rc.club/new-eoc-tower-recommendation-empirical-test/>
Those tests demonstrate that such a tower will be very successful in providing emergency backup communications across most of the county.

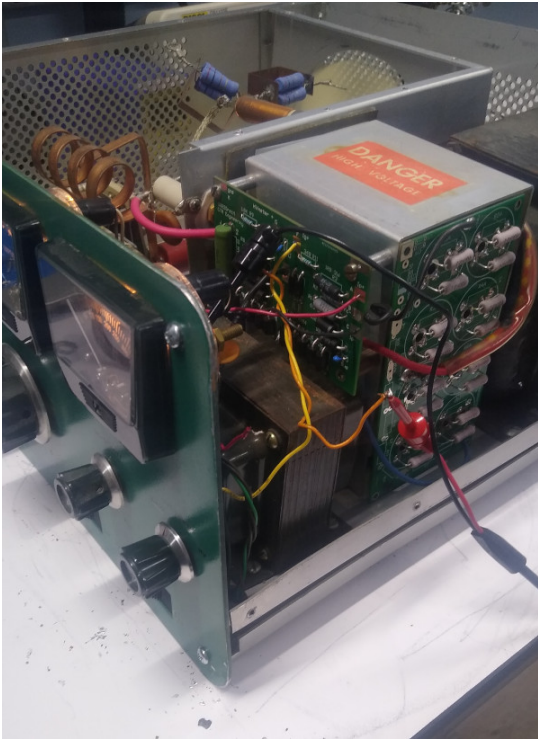
You can see how BUSY we were in 2024!!

But that's not ALL we did -- next we did the VETERANS' DAY exhibit in November, and we also did the SANTA DELIVERY in December (and helped out with the helicopter arrival) -- it was REALLY COLD at the Santa Delivery!



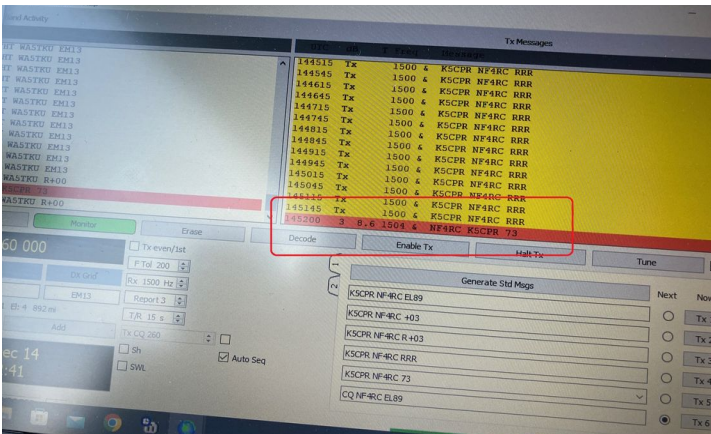
Veteran's Day Setup (1st time for us!)

Mike Hasselbeck had our amplifier pretty much ready to go, and we actually got to TRY IT outdoors at the POTA/METEOR SCATTER outing (once the Park Ranger turned on the AC!)



Mike had to rebuild not only the power supply but also

much of the metering systems....



Our meteor scatter event was definitely a **LEARNING PROCESS** -- but we heard and communicated with several stations -- everyone got really good at recognizing the incoming signals! and we finally completed a full QSO with a station in Texas! This takes **MULTIPLE** meteors to pull off:

This is us working on the 6 meter beam that Mike Hasselbeck donated to the group:



WHAT A YEAR!!!

