



North Fulton Amateur Radio League NFARL eNEWS

September 2019

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Service | Friendship | Education | Fun

www.nfarl.org



Join Us for Our September Club Meeting!

Our speaker is Neil Foster, N4FN, who will present: **The Art of QSLing (or "How I Learned the Hard Way")**. For 100 years, amateur radio operators have been exchanging QSL cards to confirm two-way radio contact between stations. In this presentation you'll hear about how it all works.

Radio.....Spark Your C. W. Heard here.....Date..... I. C. W.	
Q.R.M.....	Q.R.N.....Q.R.H.....Q.S.B.....Q.S.S.....Bad Negligible Moderate
RECEIVING	TRANSMITTING
Mignon long wave receiver. Short wave regenerative. Two steps of amplification Baidy Phones	L.K.W. Thordarson G.P.O.I. Condensor 3 inch ribbon on O.T. Benwood Rot. "sink"
Radiation.....Thermo Amps	
Antenna—75 and 45 feet high—composed of 4 wires 60 feet long with 5 feet separation. Ground—Copper and metal plates—pipes driven in the ground—chicken netting. Will be glad to Q. S. R. any msg. O. M. QRK? 5 B Y. Pse QSL card. C. U. L. Best 73's DONALD WILSON, Operator	
913 A Street, Lawton, Oklahoma	

*This QSL card from **5BY** is from the Spark Gap days. It is printed on the back of a one cent postcard*



*This unique QSL card was sent to N4FN from **ZL2IFB**, Gary Hinson, author of the FT8 Operating Guide*

NFARL's meeting is held at the Alpharetta Adult Activity Center at North Park, 13450 Cogburn Rd., Alpharetta 30004.

Our meeting on Tuesday September 17 begins at 7:30 PM, but join us for an informal pre-meeting gathering starting at 7:00 PM. We will also have a youth gathering (for those age 8-18) from 7:00 PM to 7:29 PM. Jim Stafford, W4QO, will lead a fun session about Morse Code.

We hope to see you there!



Do you know a young person, perhaps 8 to 18 years old, who has an interest in ham radio related topics? They don't have to be licensed and on the air, just have some curiosity about science and technology. Bring those students to the new NFARL Jr. meetings which are held from 7:00 to 7:29 PM on the third Tuesday of a month, directly before the full NFARL club meeting in the room next door. While the adults enjoy the social half hour in the big room, students gather in the adjacent library for a brief taste of some ham related topic.

For the inaugural NFARL Jr. meeting in August, Wes Lamboley, W3WL, intrigued the students with his Tesla coil as it induced a nearby fluorescent bulb to glow. He pointed out that Tesla is more than the name of a car company as he told them about the Tesla versus Edison feud.

In the September NFARL Jr. meeting on September 17, Jim Stafford, W4QO, will teach the students the dits and dahs used in the letters of ESTONIA. Before the short meeting time is up, the students will hopefully be using Morse Code to send words and phrases to each other using those letters.

Since the participating students come from different neighborhoods and attend different schools, the NFARL Jr. meetings provide an opportunity for these technology interested students to meet and interact with each other. It can become an outside of school extra-curricular activity students can add to their college application.

So, once again, if you know a young person who might be interested in participating in NFARL Jr., bring them to the next NFARL club meeting. They can attend the NFARL Jr. meeting while you enjoy the pre-club meeting meet and greet social half hour.



If you are interested in the Edison/Westinghouse/Tesla fight to provide electricity to light up the world, consider seeing the movie "The Current War," which is scheduled to be in theaters starting on October 4, 2019.



NFARL Upcoming Events and Dates

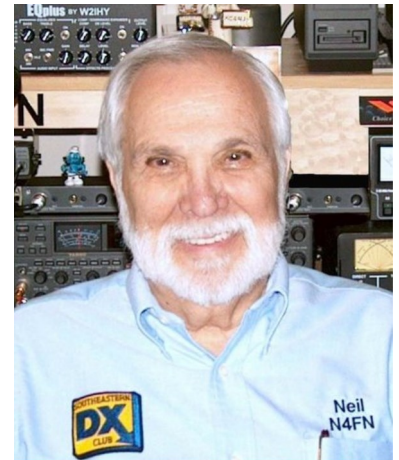
- **Every Sunday — NFARES net** - 8:30 PM - 147.06 MHz (+) PL 100
All licensed hams are welcome, you do not need to be an ARES member!
Check NFARES.org for more information.
 - **Every Monday — Tech Talk** - 8:30 PM - 145.47 MHz (-) PL 100
NFARL's flagship technical based "non check-in" net. The net is always better when using the web based chat room but Internet is not required to join the net.
Check NFARL Nets website for more information and "how to".
 - **Every Wednesday — Hungry Hams Lunch Bunch** - 11:15 AM
Location: Slope's BBQ, 34 East Crossville Road, Roswell, GA 30075
Meet with your fellow club members every Wednesday!
 - **Every Thursday — YL OP Net** — 8:00 PM - 9:30 PM - 145.47 MHz (-) PL 100
Check NFARL Nets website for "how to." This is a great opportunity for YL's to get on the radio with other YL's! OM's (guys) are welcome to listen in to this YL net.
 - **Every Saturday — Royal Order of the Olde Geezers Breakfast** - 9 AM
Location: Reveille Café, 2960 Shallowford Road, Marietta, GA 30066 You don't need to be old or a geezer to join this breakfast get-together, everyone is welcome!
 - **Second Tuesday — NFARES Meeting** - October 8, 2019, 7:00 PM - 9:00 PM
Location: Fellowship Bible Church, 480 W. Crossville Road, Roswell, GA 30075
Check NFARES.org for more information.
 - **Second Saturday — VE Testing** - October 12, 2019, 10:00 AM
Location: Alpharetta Adult Activity Center at North Park
13450 Cogburn Road, Alpharetta, GA 30004 NFARL provides amateur (ham) radio test sessions! All exam modules are offered at all sessions. Walk-ins are welcome, no appointment is necessary. For more information please see our website.
 - **Third Tuesday — NFARL Club Meeting - September 17, 2019, 7:30 PM**
Topic: The Art of QSLing (or "How I Learned the Hard Way") by Neil Foster, N4FN
Pre-meeting social begins at 7:00 PM
Youth gathering from 7:00 PM—7:29 PM! Youth topic: Morse Code
Location: Alpharetta Adult Activity Center at North Park
13450 Cogburn Road, Alpharetta, GA 30004
- 
- **Fourth Tuesday — NFARL Executive Team Meeting** - September 24, 2019, 7:00 PM
Location: Arbor Terrace at Crabapple, 12200 Crabapple Road, Alpharetta, GA 30004
Meetings are open to all NFARL members. Space is available on a first arrival basis.
Please contact the President to ensure available space.
 - **Saturday Nov 2 — Sunday Nov 3 — Stone Mountain Hamfest** at the Gwinnett Country Fairgrounds. More information here.
 - **Saturday Nov 9, 2019 — HamJam 2019** — from 8:15 AM to 1:00 PM
Location: The Metropolitan Club, 5895 Windward Parkway, Alpharetta GA 30005
This event is open to all and admission is FREE thanks to your generosity in purchasing raffle tickets which are available here and at HamJam.info.

NFARL Ham Highlight!

Get to know some of our newer and more established hams!

Neil Foster, N4FN Marietta, GA

I first became interested in amateur radio in the late 50's when I purchased a Hallicrafters S77A short wave receiver for SWLing. It was an AC/DC model and did not have an isolation transformer. Poking about the inside carelessly, I received a nasty shock that tossed me to the floor. I figured that I needed some solid education before I really messed up.



I was first licensed in 1960 as Technician. At that time, the Technician license required a 5-wpm test and the written exam was the same as a General class license. So to move up to a General class license, one only had to pass the 13 wpm CW test. I never applied for the Novice license since it was nonrenewable and valid for one year, so you had to upgrade.

After I became licensed my budget allowed for the purchase of a Clegg 99er, a 6-meter AM crystal-controlled transceiver. Needless to say, my neighbors were not very fond of my activity since 6-meter AM ripped thru TV channel 2.

I met a fellow named Irwin Kane, WA2VGM (SK) who became my Elmer. Irwin was a great mentor and, as an Electrical Engineer, developed some early audio products for ham radio.

My next goal was the Advanced class license which was a written exam only and probably the most difficult test. Later, in 1984, I upgraded to 20 wpm Extra. For many years, I kept my Advanced call of KC4MJ, but when vanity licensing became available in 1996 I became N4FN (my initials reversed). I also hold the British Class A license call sign G0NBJ (my original call was G5DKW) having taken the British RAE years ago.

I have been active in the Atlanta Ham community for many years having served as President of the QCWA, Atlanta Radio Club, the Southeastern DX Club, and NFARL. I once was the coordinator of ARRL VEC testing at Georgia Tech, and when I assumed that role the club advisor Sandy Donahue, W4RU (SK), made me promise never to reveal I was a UGA graduate! I served as the QSL manager for a number of DX operations and currently serve as the NFARL QSL manager.

As an active DX'er, I have 347 countries confirmed, have operated from 13 DX entities, and hold 12 DXCC awards. I am on the DXCC Honor Roll needing only three for the Number One Honor Roll award. I am still interested in chasing DX but currently my main interest is in Digital DXing.

I am quite proud of the Arabian Knights Award (number 568 in the world) and the Royal Jordanian Silver Award (number 191 in the world) from the Arabian Amateur Radio League issued and personally signed by King Hussein of Jordan, JY1 (SK), as well as The Commonwealth DX Award (number 332 in the world) issued by the Radio Society of Great Britain.

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NFARL Ham Highlight! (continued)



My station at home has a Yaesu FTdx5000, an Elecraft K2, and hopefully soon a K4. For HF, I use a K4KIO Hex beam antenna, a GAP Challenger, and a SteppIR BigIR vertical primarily for 30, 40 and 75 meters. When required, I can add a bit of power with the Elecraft KPA 1500 amplifier. For VHF/UHF at home, I use my old reliable Yaesu FT 8800.

Like many hams, I took a hiatus from ham radio for about ten years, missed it, and came back to our great hobby. Fifty-nine years of Ham Radio in January 2019 and to quote my friend Bob Allphin K4UEE "It is still Magic!"

Extra Extra! / From the Extra Class Question Pool

New info for Technicians and Generals and a refresher for Extra Class Licensees!



E2C10 — Why might a DX station state that they are listening on another frequency?

- A) Because the DX station may be transmitting on a frequency that is prohibited to some responding stations
- B) To separate the calling stations from the DX station
- C) To improve the operating efficiency by reducing interference
- D) All of these choices are correct

See answer on the last page!

NFARES Supports Bike Ride / Wayne Chapman, KG5WU

On Saturday August 24, several members of NFARES (North Fulton Amateur Radio Emergency Services) supported the Forsyth Century Challenge bike ride. Approximately 200 cyclists took off from the Start / Finish line at Vickery Village in Cumming, GA. There were four course options covering 28, 35, 65, and 100 miles, with three rest stops and a SAG vehicle.

A special thanks goes to the Sawnee club in Cumming for the use of their 2m repeater WB4GQX on Sawnee Mountain. It provided excellent coverage for all locations.

Everything was going well during the bike ride until the downpour hit right about 3pm. Then it was a mad scramble to try to keep tents from tumbling into roads and getting food and people into more secure shelter. The good news is that the temperatures sure cooled down!

Thanks go to the following hams for their assistance with the ride:

- Fred Ackley, KK4JYO
- Matt Allinson, KG8TRS
- Wayne Chapman, KG5WU
- Jim Kauffman, W4IU
- Richard Lutz, KD4SEV
- Joe Schippert, AJ2Y

NFARL's Educom Subgroup on Groups.io / Jim Stafford, W4QO

All members of NFARL and others interested in things "educational" are invited to join the new subgroup of our email reflector. Go to NFARL.org and on the left side of the page click on Groups.io. On [our Groups.io page](#), go down to Subgroups and you should see the educom subgroup.

This does not mean you are volunteering to help but would like to keep abreast of any activities of that nature. Messages sent to that subgroup will not go to the general group. This might include (but not limited to) schools, scouts/JOTA, makers, STEM, science expos, youth, buildathons, etc.

So if this is something you have an interest in, please sign up for the educom subgroup!



Build This Homebrew Mini Satellite Antenna Controller for Under \$150 / *Eddie Thompson, AE4TQ*



I've been interested in amateur radio and weather satellites ever since I was first licensed in the early eighties. Back then, I occasionally heard NOAA weather satellites while listening to air traffic control transmissions at the top end of the VHF aviation band. My AMSAT activity was listening to passes of UOSAT OSCAR 9 with its unique software-based speech synthesizer voice "digi-talker" and to OSCAR 13 which had a unique highly elliptical equatorial orbit, a "Geostationary Transfer Orbit" elliptical orbit, so you could listen to it for long periods of time.

Last summer I discovered my unused Alinco DJ-G5 handy-talky lying in the desk drawer and remembered that it was duplex and designed specifically for satellite contacts. Now it didn't have CAT control and you had to manually program the frequencies into the memories but this modest 5W HT was just the thing for rekindling my interest in satellites. I immediately ordered an Arrow II 146/437-10WBP antenna and set to work getting the HT ready to make some satellite contacts.

One afternoon, I ran the prediction for one of the FM satellites, connected the Arrow antenna and a hand-mic to the HT, donned a pair of headphones, and pointed the antenna towards the eastern horizon (about 5 degrees elevation) and waited patiently for the acquisition of signal.

A few minutes later I was delighted to hear the squelch break and started to hear stations calling and giving their maidenhead locators. I had everything set up, checked the UHF uplink frequency and called one of the stations, while simultaneously trying to keep the antenna pointing at the satellite to maximize the signal, holding the mic, trying not to drop the HT, and trying to remember the callsign of the person I had just called. Someone replied, I didn't catch their callsign, the satellite faded, and before I knew it the short 8-minute satellite pass was over. It was a lot of work, frustrating, hot, as well as getting bitten by mosquitos, and after several other similar attempts, I decided to explore making my own azimuth/elevation satellite antenna controller.

I certainly wasn't going to take the risk and go straight out and buy a commercial az/el system at a cost of \$1,500 to \$3,000 (at least not until I had mastered satellite making contacts) and at the time, I couldn't find anything commercially available for cheaper than about \$800 (See January 2015 QST "[Portable Rotation 12PR1A Ultra-Portable DC Antenna Rotator](#)"). So in October 2018, I searched the internet for a homebrew solution and it led me to the website of the [Australian School Amateur Radio Club Network](#) where pupils, as a lunchtime science enrichment activity, were making amateur radio satellite contacts with the help of a mini satellite antenna controller.

The authors of the website, Julie Gonzales, VK3FOWL, and Joe Gonzales, VK3YSP, had generously shared all the details of how to construct several satellite antenna controllers, including a couple of light duty designs and one heavy duty. I looked at the options presented and decide to construct the [Mk1b version](#) because it used a single dual-motor controller board rather than the Mk1a version that required two motor controllers.

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Homebrew Antenna (continued)

The mini satellite antenna controller system consists of a computer (either a Windows laptop or Raspberry Pi 3B) running the gPredict software to automatically track upcoming satellite passes and to determine the antenna azimuth and elevation values.

gPredict uses HamLib to convert the data sent to an ATmega34U4 Arduino Pro Micro controller as Easycomm2 commands in order to move the antenna. The micro controller I2C interface output is connected to a L298 dual stepper-motor driver which converts the data into direction and Pulse Width Modulated signals to drive each of the stepper motors. In order to determine the current location of the antenna in relation to the azimuth and elevation commands being received, a LM303DLHC e-compass is used to provide feedback to the microcontroller to keep the antenna fixed on the target satellite. In my design, the e-compass was mounted on the boom of the Arrow antenna behind the reflector element.

The e-compass first has to be calibrated using the "Rotator6" Arduino software. This software is used to test, set-up, calibrate, and run the mini satellite antenna controller. It is provided by Julie, VK3FOWL and Joe, VK3YSP, free of charge. Simply send them an email informing your interest about making the controller and your willingness to share your results and they will gladly email you a copy of the software. They will even feature a picture of your rotator on their website if you share it!

The instructions on their website are very detailed and contain everything you need in order to make your own version of the controller, so I won't reproduce that here.



Controller:
ATmega34U4 5V
16MHz Pro Micro

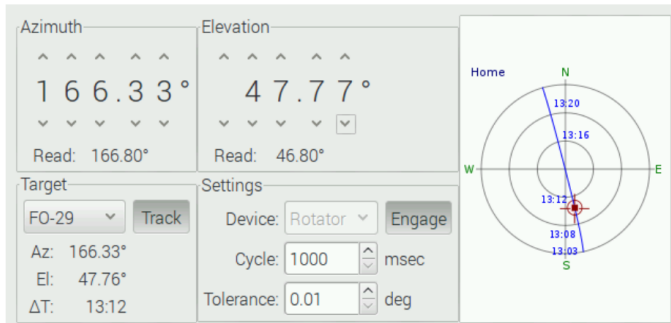
Stepper Motor Driver:
L298N Dual Motor Bridge

DC Motors:
DC 12V 0.6 RPM
High Torque

Initially I used a Windows laptop to drive my antenna controller. It was, however, limited to only using gPredict v1.4 in order to have the rotator position reported back by the Easycomm2 protocol on the USB port; and this version of gPredict was (1) not the latest version, and (2) it did not have the Auto Track function, (which for me was a highly desirable feature). Also I didn't want to have to take my laptop out to the field every time I wanted to work satellites in a remote location.

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Homebrew Antenna (continued)



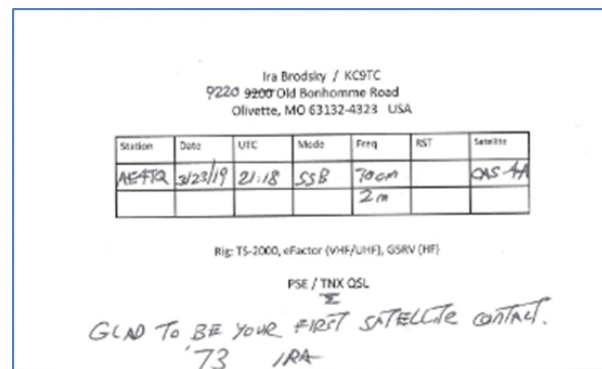
After further reading all the SARC documentation, I learned that if I used a Linux solution the limitation of the position not being reported back was eliminated. So I decided to use a Raspberry Pi 3B. Using this, I could build a Raspian computer for less than \$35 and also use the latest releases of the free gPredict (v2.2.1 at the time) software to control my rotator, and having Auto Track.

Excluding the Arrow antenna, my controller plus the Raspi3B cost me less than \$150. This also included a nice Pyle PSTND1 professional speaker stand I picked up at the Dalton hamfest for \$18 to mount it on. I also used a waterproof aluminum enclose for my project rather than a polycarbonate one.

I completed construction of the mini satellite antenna controller on Christmas Eve 2018, but it wasn't until a few months later before I was able to finally test its ability to help me make satellite contacts due to the very rainy conditions that were occurring at the time.

On March 23rd 2019, I set up the mini satellite antenna controller on my deck ready to capture the afternoon pass of CAS-4A, an SSB transponder satellite. As well as the antenna controller, I also used gPredict on the Raspberry Pi to control the Doppler shift my Yaesu FT857D radio for both uplink and downlink.

At 21:18 UTC, I heard Ira, KC9TC, in Missouri calling "CQ satellite". The controller was smoothly tracking the satellite across the sky and so I gave Ira a call. He promptly responded and we exchanged reports and a few pleasantries before saying 73. That was my first satellite contact! It was simple and I then went on to make several other contacts as well before CAS-4A disappeared below the horizon. I logged the contact with Ira on LOTW and also sent him a QSL card via regular mail in celebration.

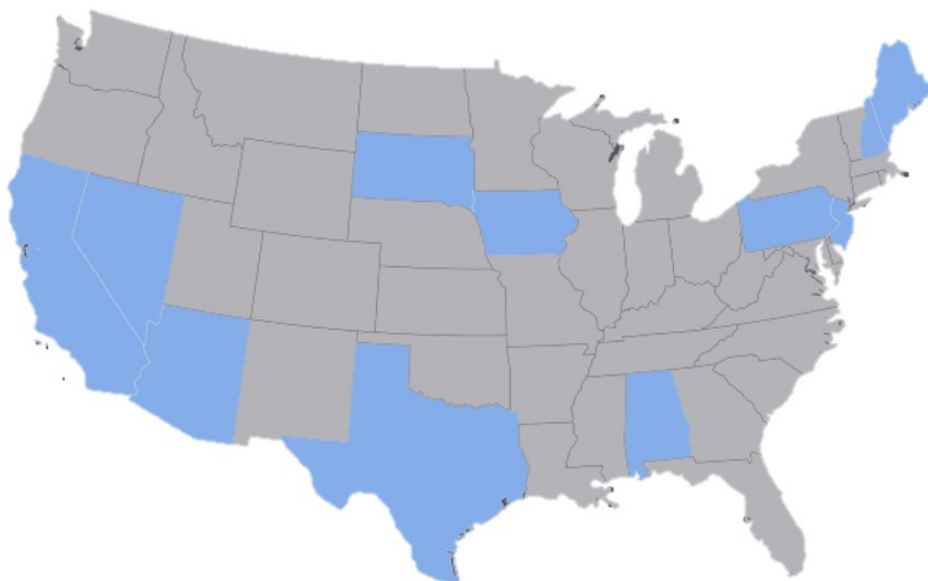


The mini satellite controller was certainly a rewarding project to construct, albeit somewhat challenging. I learned a lot about Arduino hardware, software, and Raspberry Pi for the first time, as well as having to solve some interesting mechanical construction issues. All in all, it was well worth it, and if you are looking for a low-cost entry into az/el satellite antenna control, this project is definitely for you!

Editor note: Eddie will present details of this project in an upcoming NFARL club meeting. Stay tuned for details!

Contest Corner

A host of state QSO parties are coming up, along with the Collegiate QSO Party.



- **9/15/19 — 9/16/19** [Alabama QSO Party](#)
- **9/15/19—9/16/19** [Texas QSO Party](#)
- **9/21/19—9/22/19** — [Iowa QSO Party](#)
- **9/21/19—9/22/19** — [New Hampshire QSO Party](#)
- **9/21/19—9/22/19** — [New Jersey QSO Party](#)
- **9/21/19 — 9/22/19** — [Collegiate QSO Party](#) — This event focuses on collegiate amateur radio, promoting student activity, alumni engagement, and community awareness. This event is open to all radio amateurs. Points can be earned by individuals, clubs, and collegiate stations. The Collegiate QSO Party encourages alumni to connect with their alma mater and students to network with other schools. New hams are welcome and stations are encouraged to be accommodating to new radio amateurs.
- **9/28/19—9/29/19** — [Maine QSO Party](#)
- **10/5/19—10/6/19** — [California QSO Party](#)
- **10/12/19—10/13/19** — [Nevada QSO Party](#)
- **10/12/19—10/13/19** — [Arizona QSO Party](#)
- **10/12/19—10/13/19** — [Pennsylvania QSO Party](#)
- **10/12/19—10/13/19** — [South Dakota QSO Party](#)

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nfarl.org

eNews can be located online at:
<https://www.nfarl.org/enews/eNewsIndex.html>

Club Repeaters

Frequency—Description	P.L. Tone	Location
145.470 (-) EchoLink Node 560686 NF4GA-R	100 Hz	Morgan Falls
147.060 (+) Primary ARES Repeater	100 Hz	Roswell Water Tower
* 224.620 (-) Joint Venture with MATPARC	100 Hz	TBD
443.150 (+)	100 Hz	Roswell Water Tower
444.475 (+)	100 Hz	Morgan Falls
* 927.0125 (-)	146.2 Hz	TBD

** Currently off the air*

Club Callsigns: NF4GA and K4JJ

Extra Extra answer: D (question E2C10)

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