

North Fulton Amateur Radio League NFARL eNEWS

February 2021

*Over 40 Years Promoting
Service | Friendship | Education | Fun*

www.nfarl.org



The tinySA™ Spectrum Analyzer / Philip Miller Tate, M1GWZ

Please join us February 16, 2021 for our club meeting as we welcome our Guest Speaker, Philip Miller Tate M1GWZ.

The tinySA™ is the latest product of the ingenious combination of miniature electronic devices, powerful microprocessors, and smart RF engineering, -all delivered at a budget price. It is capable of very fast and/or accurate RF power measurements at frequencies from 10 kHz to 960 MHz, is battery powered and will fit in a shirt pocket. A range of control and measurement options are built into its (upgradeable) firmware, including some advanced functions. This firmware is in the public domain for modification and for interfacing to external hardware.

This talk will endeavor to outline the principles of RF spectrum analysis, the facilities offered by the tinySA™, the pitfalls and specific areas of vigilance required for accurate measurements and will end with some simple amateur radio measurement demonstrations.

The speaker:

Philip M1GWZ was born near London, England in 1959. At the age of nine, three important things happened: he was shown how to make a crystal radio and built his own; he read his first copy of Practical Wireless; and he was given his first slide rule.

A career in physics and electronics beckoned. This plan was partially derailed in 1976 when a gifted chemistry teacher partially converted him to the Dark Side. Phil graduated with a BSc degree in Applied Physics and Chemistry in 1980, and his knowledge of chemistry secured his career for the following 36 years, beginning in industry and ending in academia, mainly in the wide disciplines of materials science and analytical instrumentation. He picked up a PhD in polymer chemistry and a teaching qualification on the journey.

His present life of leisure supports his hobbies of amateur radio and electronics, music (guitar and bass), target rifle shooting, and studying geography and history via vintage radio and electronics publications from the internet.



February Club Meeting Invitation

Please use this information to access Zoom and join our February club meeting.

The meeting begins on Tuesday February 16, 2021 at 7:00PM EST (Feb 17, 2021 0100 GMT/UTC).

7:00-7:30PM Social Gathering

7:30 PM-7:45PM Greetings & Club Business Update

7:45PM Guest Presenter; Philip Miller Tate M1GWZ

Join Zoom Meeting

<https://zoom.us/j/94265035720?pwd=MmOrbHJmdWtHMIM3eG52aWtaNFhNUT09>

Meeting ID: 942 6503 5720

Passcode: 754422

President's Corner / John Norris, N4IHV

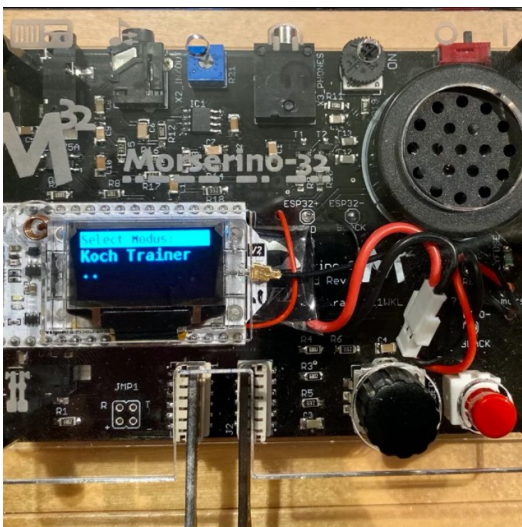
Greetings,

Well here we are in February 2021. Seems to me there is a lot going on but we're still wondering what might come next.

With the Covid pandemic still preventing much social activity, I have decided to show you what I have been doing with my radio time. I have been building and working with Warren, KD4Z, on many miscellaneous projects. Working with Warren has been very informative. His experience and knowledge in electronic design and programming is excellent and this has been a true learning experience for me. We should not miss any opportunity to work with our ham friends. It is like continuing education with a lot of fun included. Just look at Warren's QRZ page. You'll see a lot of information on his projects.

Below are some pictures of seven projects that I have been working on.

Morserino: A very good addition to both CW learning and operation. It is a worthy investment and very easy kit to build.



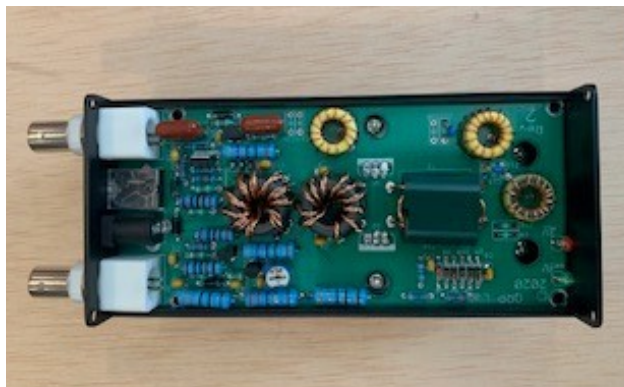
[Home - Morserino-32 - the multifunctional Morse machine](#)

President's Corner / (continued from Page 2)

QRP Labs 20 M Transceiver: An excellent 5 watt QRP Transceiver kit. It has high quality parts and very good instructions. The kit price is amazingly low. I consider it as a best buy for the money that I have seen.



QRP Labs 50 Watt Amplifier: This is used with the QRP Labs Transceiver. It is a little more difficult to wind the coils on this unit. This work is a test of patience. A very good kit and fun to build.



Continued on Page 4

Did You Know?- / Mike Riley, KN4OAK

Terry Joyner W4YBV, has become a board member of the United States Island Awards Program (USI). Terry has been elected as "Special Events Manager" and serves as an Advisor. Check the USI website out at <https://usislands.org> to keep up with 2021 activities plans.

The **United States Islands Awards Program (USI)** covers islands that are within the fifty (50) states of the United States, and the U.S Territories and Protectorates. These island can be in lakes, rivers, and along the coastal shore line. Fresh water or salt water.

The **USI** was formed in 1994 to further enhance "island chasing" that had become so popular on the amateur radio bands. The goal of the USI program is to promote a simple but effective system of island chasing and activating in a professional radio-manner and to operate totally on the "honor system".¹

¹<https://usislands.org/about-us/>

President's Corner / (continued from Page 3)

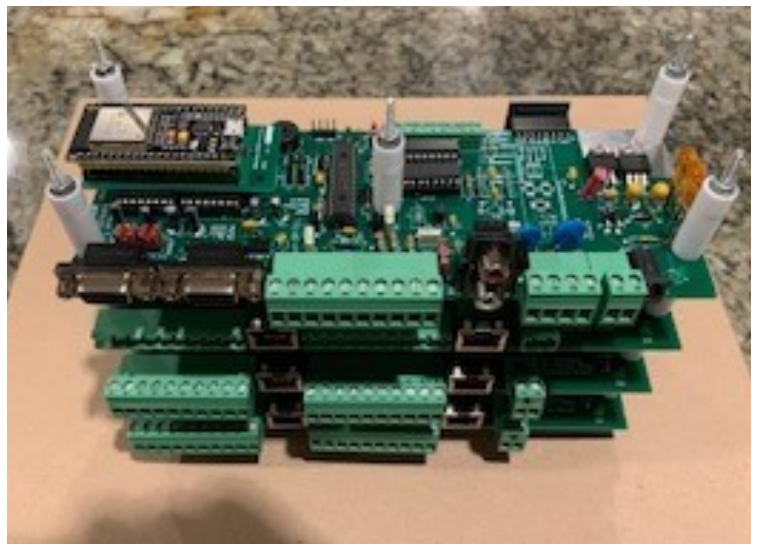
Node-Red with Raspberry Pi: This is a new project that Warren, KD4Z, and I have started. Many people have designed software programs to work with this. The available assortment of programs is truly amazing. Look up Node-Red for more information. Here is a picture of Warren and me discussing Node-Red and a picture of the Raspberry Pi on a relay board.

<https://projects.raspberrypi.org/en/projects/getting-started-with-node-red>

<https://nodered.org/docs/getting-started/raspberrypi>



Multi Control Device: This has been a 2 year project. It is designed to control up to 64 devices using the internet. It is a very comprehensive and versatile system. You can switch antennas, turn on radios or any other device you desire. Warren is the master of this and I am the minion. This was the beginning of our adventure in electronics design and software together. The picture on the left is in an enclosure with a 16 relay board. The right hand picture is outside an enclosure with a 48 relay set-up.



Continued on Page 5

President's Corner / (continued from Page 4)

Ameritron AL 1200 repairs: This Ameritron AL 1200 has become a true challenge in education and repair. It has had many revisions by the previous owner without any documentation or schematics. I have been making new schematics and am seeing lines and components in my sleep. I have currently installed a new relay and finished the new capacitor board. I corrected some wiring and the project continues. Included are pictures of the amp and the new cap board.



Band Pass Filter: This is a Band Pass Filter for 160, 80, 40, m20, and 10 meters. This is a project that several of us in NFARL decided we would undertake. We each built one of these. Chuck, AE4CW, Warren, KD4Z and I got truly educated on winding and testing coils. It was a true education adjusting them for the correct frequency. Sensitivity of wire movement and effect would be an understatement. They turned out to be excellent filters and I am glad we did the project.



As you can see, I am never bored and consider these project activities as part of my life. My education continues with lots of fun included.

Please join us on Zoom for our NFARL Club meeting. See page 2 for the meeting details.

Thanks,
John, NFARL President
N4IHV

Learning by Building a Coax Choke Balun / Tony Santoro, WA3TRA

If you haven't already, read the QST article *Create Your Own 1:1 Coax Choke Baluns*, (John Portune, W6NBC, QST, February 2021, Pages 30-31) for background on Tony's observations— editor

I've had my Technician license since 1971, General since 1991, but never really did much except talk on 2 meters. I'm now studying for the Extra. Since I like tinkering with things, I realized I don't just want to be a textbook licensed amateur. Reading the QST balun article, I saw a good opportunity to try a project with making do with material at hand and without spending a lot of money.

This project requires applying some thinking on technical theory and proving the calculations work. I read the article in QST and looked at the web references (**you really have to try this!**). It was a real eye opener on understanding how to make the amateur radio stuff work. The author's work provides for a 2 meter antenna, however: I'm using a 2 meter/440 dual band ground plane so I had to figure out how to calculate a working value for the inductance. This article shows step by step what I learned and how I achieved the goal.

The take away: What I learned is you have to figure things based on variables such as available materials and type of wire. Look at the two web sites referenced and you will see you can't just plug numbers in to get an inductance value. Here is a summary of steps I took and the results:

1 – Starting impedance: the author suggests at least four times the system impedance, so I used 200 ohms to evaluate the inductance values.. You need calculations for two frequencies. Here you can apply the inductive reactance formula:

$X_L = 2 * \pi * f * L$, where **L** is the inductance in Henrys.

You can verify the accuracy by using the author's referenced calculator:

<https://www.electronics2000.co.uk/calc/reactance-calculator.php>

Inductive reactance: $X_L = 2 * \pi * f * L$, where L is the inductance in

2 meter 145.470 MH	70 cm 444.475 MH
$200 = 2 \times 3.14 \times (145.470 \times 10^6) \times L$	$200 = 2 \times 3.14 \times (444.475 \times 10^6) \times L$
$200 = 6.28 \times (145.470 \times 10^6) \times L$	$200 = 6.28 \times (444.475 \times 10^6) \times L$
$200 = (914 \times 10^6) \times L$	$200 = (.028 \times 10^6) \times L$
$(200 / (914 \times 10^6)) = L$	$(200 / (.028 \times 10^6)) = L$
.219 uH = L	.072 uH = L

Inductive Reactance Calculator ($X_L = 2\pi fL$): ¹

Enter Inductance: 0.219 Microhenrys

Enter Frequency: 145.470 Megahertz

$X_L = 200.169 \text{ Ohms}$

Enter Inductance: 0.072 Microhenrys

Enter Frequency: 444.475 Megahertz

$X_L = 201.076 \text{ Ohms}$

¹ <https://www.electronics2000.co.uk/calc/reactance-calculator.php>

Continued on Page 7

2 – Calculate micro-Henrys (μH) based on turns and coil diameter. There are many sites with reactance calculators. Some only provide metric measurements. Some provide selectable dimension units. If you're not comfortable working with mixed units or different exponential call outs, take your time and make sure you understand what the calculator tool does and how it operates. I wasn't comfortable with the www.allaboutcircuits.com/tools/coil-inductance-calculator, so I found another which I found easier to understand and work with. This tool can be found at <https://www.translatorscafe.com/unit-converter/en-US/calculator/coil-inductance/> and allowed me to examine different coil diameters, number of turns, etc. I chose to work with the STL file for the "Handy 3D printed Quick-form" referenced in the QST article (page 30) as I have access to a 3D printer. This required a little trial and error to get to a design target of at least 200 ohms.

3 – The third challenge: Matching your materials to your application. I have a dual band 2 meter / 70cm (440) antenna so I wanted to make sure the inductance value would be high enough to exceed 200 ohms on both frequencies. There are several approaches that could be used to solve for the coil design. Since the STL file was available, and I had RG-8x cable and the antenna, I worked the problem from that point of view. I settled on 3 turns of RG-8x on a 1.75" diameter with a coil length of 1". This provides an inductance value high enough to satisfy the minimum 200 ohm requirement on both frequencies. Here is a screen shot of the web site I used. Notice the 440 nH calculation in the lower left corner. Pay attention to the units of measure!

Single-Layer Coil Inductance Calculator ¹

Calculate Inductance from the Given Number of Turns, Coil Former Diameter, and Winding Length

The calculator determines the inductance of a single-layer coil.

Example: Calculate the inductance of a single-layer coil of a 10-turn air-core coil wound on a cylindrical former with a diameter of 2 cm; the length of the coil is 1 cm.

Input

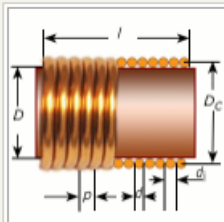
Coil former diameter
 \varnothing inch (in) ▼

Number of turns
 N

Length of the coil
 l inch (in) ▼

Output

Coil inductance
 L 440.01717 nH

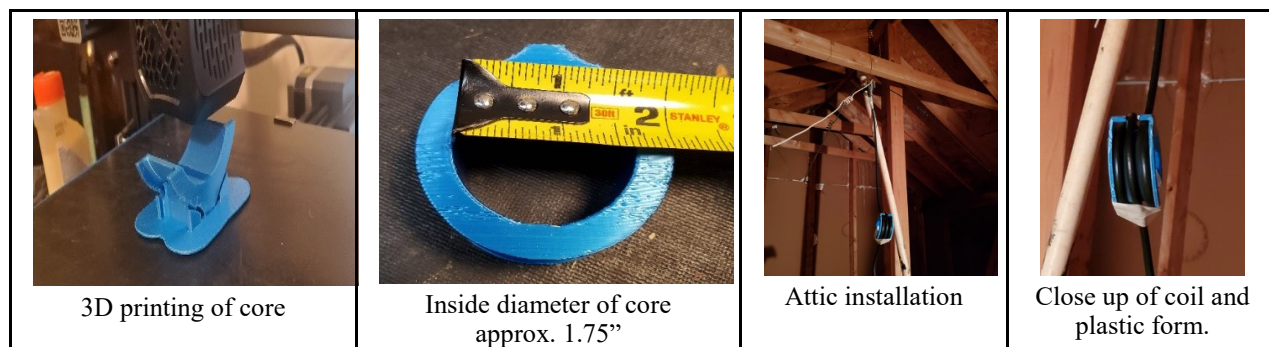


Single-layer inductor:
D is the coil former diameter, D_c is the coil diameter, l is the coil length, p is the coil pitch, d is the wire without insulation diameter and d_j is the wire with insulation diameter.

¹ <https://www.translatorscafe.com/unit-converter/en-US/calculator/coil-inductance/>

Learning by Building a Coax Choke Balun / continued from Page 7

It makes sense that one size inductance value has several variables that can be used to get the needed outcome. As stated earlier, the physical size of the coil can vary based on materials at hand. I actually downloaded the 3d file and my son created a form as shown:



Bottom line: I was glad I chose to try this. Experimentation is a great way to learn. There are many on-line calculators to help with the calculations. However, try and run the numbers first on a calculator to get a reactance value. Once you have that, you can reverse engineer the coil diameter.

Enjoy and 73,

Tony, WA3TRA

reference: Portune, John, W6NBC, "Create Your Own 1:1 Coax Choke Baluns", QST, February 2021

Name This Ham /

Our February "Name This Ham" spent time growing up in Illinois. CW was first learned while 9 years old, but this ham never got licensed until 40+ years later. This ham was finally licensed in 2013 after being pressured by hams who are friends and co-workers. A fun fact about this ham- there at least 24 mentions and articles in the NFARL eNEWS archives associated with this ham.

This ham's longest DX contact turned out to be the most memorable operating experience as well, a nearly 1-1/2 hour phone QSO with Stuart VK4SDD, in Queensland, Australia. While this ham likes operating on all modes, the ability to operate CW can be attributed to Mr. Jim Stafford W4QO and PSK to Mr. Neil Foster N4FN. Operating on digital modes are consider by this ham to be favorites.

Most people would associate this ham as being very willing to help others with challenges and tasks they may have underway. "Being a ham has enabled friendships to be made and assistance to be given that I otherwise wouldn't have an opportunity to do so" says this ham.

"The Icom IC-7100 and the 520 foot sky loop antenna I use" are claimed to be the favorite pieces of ham gear by this ham. This ham belongs to many radio clubs, but also enjoys woodworking, photography, and working with and on computers.

If you think you know who this ham is, go to page 10 to verify your answer.

\$\$\$ Help for Youth CW Aficionados / Wes Lamboley, W3WL

The ARRL conducts Morse code proficiency testing several times a month. One can prove capability by copying the 10 to 40 words per minute text messages and sending them to the League for scoring. If you are successful, your name, call sign and copying speed will appear in QST and you will receive a certificate (suitable for framing!). Trouble is, the initial certificate costs \$10.00 and further endorsements are an additional \$7.50. Many youth do not have a lot of money and cannot afford the cost of a certificate. So, the NFARL Board stepped up and will sponsor anyone in W/VE land under 21 that can qualify for the certificate/endorsements. Support for this effort will come from the NFARL Youth Education, Scholarship and Activities fund that is financed through HamJam donations.

The ARRL will begin the program in April; NFARL's underwriting will be announced soon in one of their newsletters, and the NFARL's generosity will appear on the monthly QST page titled "Certificate of Code Proficiency".

Contest Corner /

- **REMINDER—WINTER FIELD DAY** Log submission **DEADLINE** and contents: Logs must be submitted to <mailto:wfda@winterfieldday.com> via email **before 0000 UTC March 1st** to be considered. Emailed Logs should contain the following in the subject line... "WFD 20XX Log K8XXX" with K8XXX being the call sign you used for the event. Logs **MUST** be submitted as an attached Cabrillo File, not as an email text. Go to <https://www.winterfieldday.com> for complete set of rules.
Remember to list "North Fulton ARL" as your affiliated club!
- Check the **WA7BNM Contest Calendar**. This site provides detailed information about amateur radio contests throughout the world, including their scheduled dates/times, rules summaries, log submission information and links to the official rules as published by the contest sponsors. [WA7BNM Contest Calendar: Home](#)
- ARRL Inter. DX Contest, CW: 0000Z, Feb 20 to 2400Z, Feb 21
- South Carolina QSO Party: 1500Z, Feb 27 to 0159Z, Feb 28
- North American QSO Party, RTTY: 1800Z, Feb 27 to 0559Z, Feb 28
- North Carolina QSO Party: 1500Z, Feb 28 to 0059Z, Mar 1
- Virginia QSO Party: 1400Z, Mar 20 to 0400Z, Mar 21 and 1200Z-2400Z, Mar 21, 2021
- Georgia QSO Party: CW, Phone: 1600Z, Apr 10 to 0400Z, Apr 11, 2021

DALTON HAMFEST / February 27, 2021

Location: North GA AG Fairgrounds,
500 Legion Dr, Dalton, GA 30721

Gate Opens at 8am

Admission: \$5 at the gate. Free Parking. Admission is eligible for all Prize drawings.

-Additional \$5 for boneyard.

NFARL Will Be Present—Two Tables

- **CPO Kits will be available**
- **Various BNC Connectors available**

Extra Extra! / From the Extra Class Question Pool

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



E9C07

What is the approximate feed point impedance at the center of a two-wire folded dipole antenna?

- A. 300 ohms
- B. 50 ohms
- C. 72 ohms
- D. 450 ohms

See answer on the last page!

Studying for your Amateur Extra-class license?

The new Amateur Extra-class license examination question pool, effective from July 1, 2020, through June 30, 2024, has been released and is available at the National Conference of Volunteer Coordinators (NCVEC) [website](#).

Ian NV4C and his team hold license test sessions on the second Saturday of each month. For more information including upcoming test dates, [click here](#).

Name This Ham Answer

The answer to February's "Name This Ham" is **Bob Hensey, K4VBM**

If you know someone in the ham community or NFARL club that you think would make a great entry to "Name This Ham" please let us know! Send your suggestions to enews@nfarl.org



Another Great Volunteer Examiner Testing Session!

Wes Lamboley, W3WL

Slope's barbeque was the scene of another highly successful VE testing session on Saturday, 2/13/2021, with 21 of 21 persons getting their first license or upgrading. There are now 8 new Techs, 9 new Generals and 4 new Extra class licensees. Many TNX to Ian-NV4C and his VE Team for making it happen!

Again, it was interesting to get a chance to talk with all the test takers and find out a little about them. Three that had upgraded to General had gotten into "Summits on the Air" and are truly enjoying the communications aspects of that branch of our hobby. Several others had gotten interested in the hobby through CB. One good story was about a young man's Grandfather who got him interested a long time ago. He finally got his license and knows Grandpa is proud of him. Another story boiled down to "My husband told me to get the license" They enjoy hiking and ham radio is an asset on the trails. Another lady, whose husband is a ham, said "If you can't beat um' join um". She upgraded to General. Another guy had been in the military and worked for the UN for years as an IT/Communications Engineer and knew a lot about satellites. He got really interested when I told him about the new digital modes! Several others got into the hobby to help during emergencies. It has been my pleasure to get to talk with these hams and I am truly looking forward to getting to be able to do it without face masks!

Also, it was great to have Joe Schippert, AJ2Y, there to answer question and provide information about the North Fulton Amateur Radio Emergency Service, as many of the new hams want to get involved with that aspect of ham radio.

And now, for the "Rest of the Story". It turns out that Marlene White, wife of Bob White who owns Slope's, comes in at 5:30 in the morning the day of our testing just so she can get her work done and not make any noise while testing is going on. She then goes back home and returns after testing is completed and washes down all the tables that were used for the testing. I am humbled by how blessed we are to be able to use the Slope's restaurant for testing, and they are very pleased to offer it. Without Slope's we could not do any testing, so remember them the next time you fancy some GREAT barbeque!

Candidate Name	Test	Call (If Any)	Candidate Name	Test	Call (If Any)
Maurice Berg	Tech		Sheryle Gallmeier	Tech	
Tom Abernathy	Extra		Sean Smith	Tech	
James Grebe	Extra	KK4VRZ	Stuart Bond	General	KO4EAI
William Trammell	Extra	KO4BND	Vicki Waits	General	KE4ICX
Randy Stearns	General	KO4KVK	Ted Macklin	Tech & General	
Rebecca Key	General	KO4KVG	Tyler Williamson	General	KM4AXB
Ben Greve	General	KO4KVH	Jesse Bailey	Tech & General	
Randall Dykema	Tech		Brian Pettry	Tech	
Petr Kokliaguine	Tech		Ray Shrader	Tech	
Sean Gladden	Tech		Jim Marks	General	KO4JUK
			John Dominkewicz	Extra	KO4KVI

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 (Discord) but Internet is not required to join the net. Check [NFARL Nets](#) for more information and "how to". Here's the link to the NFARL server on Discord web app <https://discord.gg/spr2a9D>
 - **Every Wednesday — Hungry Hams Lunch Bunch** - 11:15 AM
Location: Slope's BBQ, 34 East Crossville Road, Roswell, GA 30075
(770) 518-7000 *Call to verify operations*
Dining Room now OPEN with COVID-19 Restrictions. Get Take Out if you can't stay!

 - **Every Thursday — YL 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 Thursday — CW SIG** — 8:00 PM on ZOOM. Meeting ID is 815 5160 3634; password is CW-CHAT (all CAPS)
 - **Every Saturday — Royal Order of the Olde Geezers Breakfast** - 9 AM
Location: Reveille Café, 2960 Shallowford Road, Marietta, GA 30066
(770) 971-6800 *Call to verify operations*
Dining Room now OPEN with COVID-19 Restrictions.
 - **Second Tuesday — NFARES Meeting** - March 9, 2021 ***Online meetings only until COVID-19 Restrictions Lifted.*** Check NFARES.org for more information.
 - **Second Saturday – VE Testing - NFARL March 13, 2021 session: COVID-19 Restrictions in place. By reservation only.** See the ["Test Sessions"](#) web page and [NV4C's message](#) on the NFARL Groups.io reflector for details & registration process. Contact Ian at nv4c.ian@gmail.com for questions / concerns / reservations.
 - **Spalding Amateur Radio Club Video Supervised Virtual VE Exam**- Go here and review info <https://k4cxs-scarc.wixsite.com/k4cxs>
- **Third Tuesday — NFARL Club Meeting** - February 16, 2021, 7:30 PM
Online meetings only until COVID-19 Restrictions Lifted
— February 2021 Topic: The tinySA™ Spectrum Analyzer / Philip Miller Tate M1GWZ Zoom opens at 7PM for Social Networking. Meeting begins promptly at 7:30
 - **Fourth Tuesday – NFARL Executive Team Meeting** - February 23, 2020, 7:00 PM
Online meetings only until COVID-19 Restrictions Lifted
— monitor website and NFARL Groups.io reflector for updates.

Contact Us

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North Fulton Amateur Radio League

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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 Call signs: NF4GA and K4JJ

Extra Extra answer: A (question E9C07)

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