



# North Fulton Amateur Radio League NFARL eNEWS

December 2024

Over 43 Years Promoting  
Service | Friendship | Education | Fun

December 2024

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## Happy Holidays



Well, here we are approaching the final days of 2024. While this time of year historically is associated with religious and social festivities, it also serves as a time to pause and reflect on action plans, events and outcomes undertaken during the last year. If done pragmatically, the understanding of the outcomes can be used to assist development of sound plans for the upcoming future.

North Fulton Amateur Radio League collectively enjoyed some notable achievements in 2024. We had fun while exerting some effort, to conduct another successful ARRL Field Day event. We did well enough operationally to score at the top of our category. We even got the club equipment trailer washed beforehand! Daryl, K4RGK, led us through some successful ARISS contacts, and he found time to refresh the satellite trailer as well. Dave, KO4USA, provided guidance to enable the HamJam Team to conduct a successful event that provided fundraising which exceeded last year.

While these things are nice to recognize, there are so many more things we, as a club, might be able to do if we focus on a few basic and important fundamentals. The club Executive Committee has agreed to look into a long-term operating plan that uses the six elements of purpose stated in the club charter as a starting point to request input from the club membership on what opportunities we need to consider in addition to the traditional events and activities we are aware of. So, look to hear about upcoming surveys on ideas on activities and membership engagement in the coming weeks.

Before we call a finish to 2024, I'd like to thank everyone for your contributions to the club during the past year. Without your involvement it would have been a big challenge to do what was done while benefiting from the effort. Thank you.

73, Mike KN4OAK

## Congratulations VE Candidates!

Wes Lamboley, W3WL

Nobody signed up for the November VE Test session. However, we had four candidates who registered to test for their Ham radio license or upgrade in December. All were successful!

Our thanks again to Slope's BBQ for allowing us to use their dining room space as a test location. We appreciate their willingness to do so, and we ask that you partake of their food and beverage services at your next meal opportunity.

Here are the December 2024 candidates. Please congratulate them when you next meet them..

Candidate	Call Sign	Test Passed
Dave Fetting		Technician/General
Kenneth Bass		Technician
Noah Grucza		Technician
Thomas Hiott	KQ4ZAR	General

We would also like to thank our Volunteer Examiner Team for their support and time to make this test session possible.

73, Wes W3WL



Martha W4MSA, Tom KQ4ZAR & Noah



Dave & Kenneth

Back in October at a club lunch at Slope's BBQ, Dave Biscotti (KO4USA) and Ted Macklin (K4MPM), inspired me to build a Ham clock.



I wanted to make it an appliance, something self contained, with a dedicated small screen, that sits close to my radios, on my shack, always running.

It turned out that I had all the necessary components lying around in drawers, and not being used. It was time to dust off all those parts.

What I used:

- Raspberry Pi 3B+
- 2.4G Wifi dongle
- 5v 2 amps power supply
- 8Gb micro memory card
- 7" Touchscreen display
- 7" RPI Screen case

You can use a more modern RPI, mine is so old it didn't even have WiFi built in, but to be honest using a RPI 4 or 5 feels like a waste of computer power to me. Sure this RPI 3B+ ends up being very slow, but in the end you don't interact with it that much.



Make sure you have at least a 2 amp power supply, the touch screen is power hungry, and the system will complain if it doesn't have enough power.

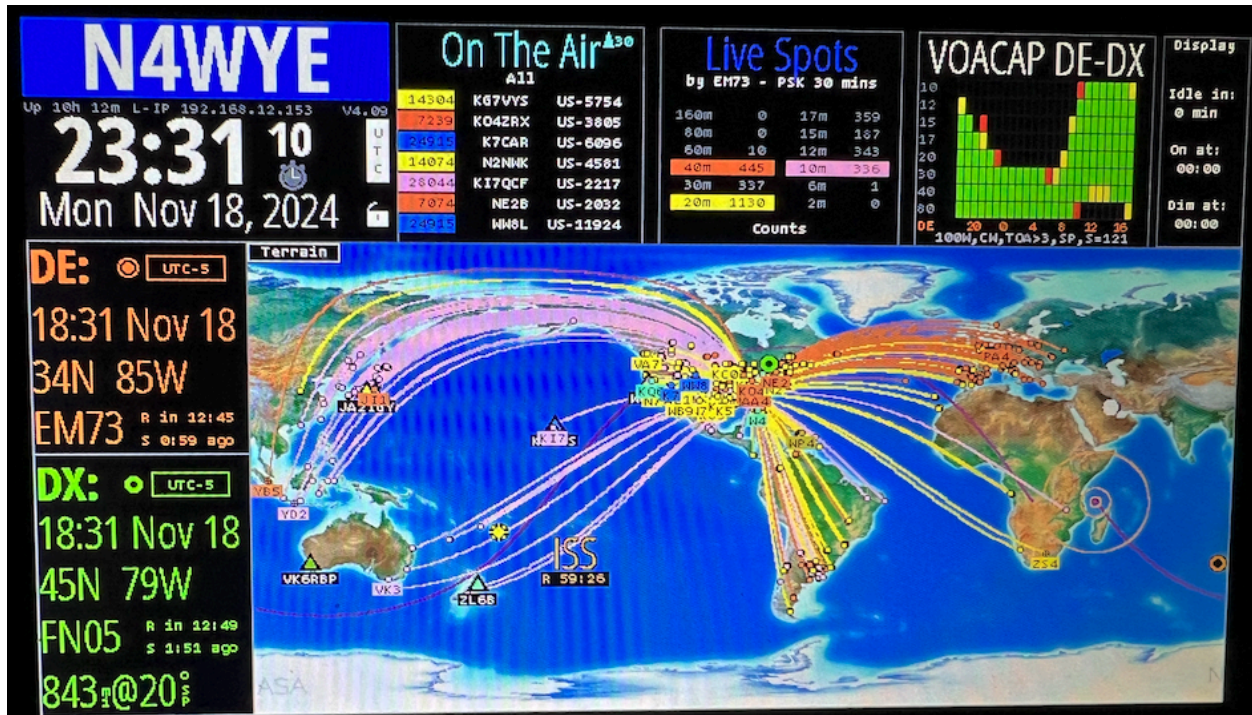
Some folks recommend the use of a mini keyboard, but in my opinion, it is not needed, since the Ham Clock has an on-screen keyboard. I do recommend the use of a computer mouse.

Installing the software is a breeze, I just installed the Raspberry Pi operating system in the micro memory card, and then followed the instructions to download and install the Ham Clock software from the [Clear Sky Institute](https://clearskyinstitute.com/).

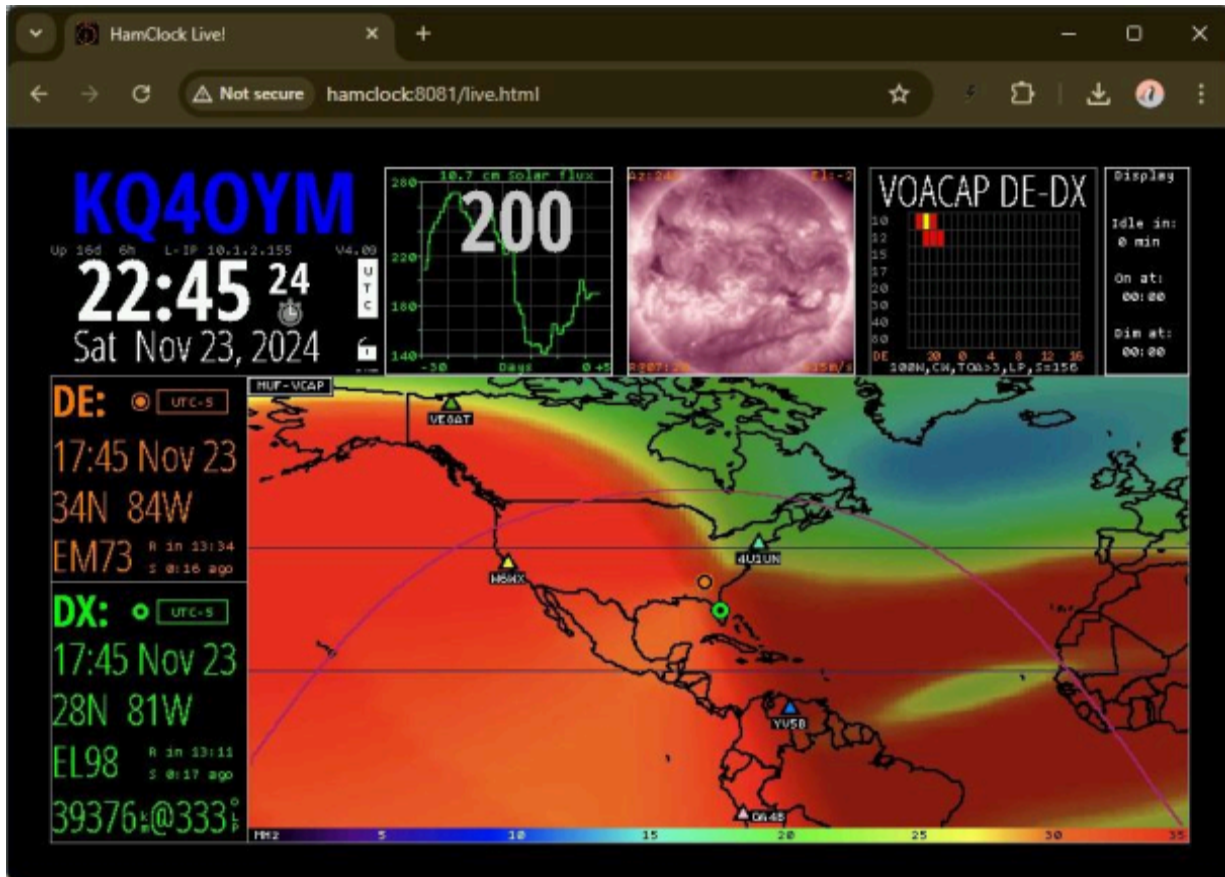
Please note that the available resolutions for the software are fixed. This is because they have designed everything from scratch, including the fonts, so it does not adapt to different resolutions automatically. The resolutions available are 800x480, 1600x960, 2400x14400, and 3200x1920, so take that into account when choosing where to display the Ham Clock. In my case the 7" touch screen is exactly 800x480 so no space is wasted.

Configuring the Ham Clock itself is very easy, input your call sign, your grid location, and in what meridian would you like the map to be centered. In my case I choose the 84W meridian to coincide with Atlanta, but it might be useful to skew that center towards the Atlantic if you do more QSO with Europe, and vice-versa.

Of course there are a few more options in the [user guide](#) for further customization. One of my favorites is the tracking of propagation from your location (in the image Lee's) so you can see which bands are open to where.



Another super cool trick that this Ham Clock has, is its internal web server, streaming the screen directly to your browser. This means that in my case I can use it when I'm operating my physical radio, but also when I'm operating my SDR using Thetis, by opening a browser window.



There are two modes for this; Fully functional, where you can use the mouse and keyboard to interact with it, and also a read only mode, useful if you just want to project on a screen and share with multiple folks.

This was a useful and fun build.

73, Roy KQ4OYM





A few weeks ago, I started thinking about spending Thanksgiving week on Jekyll Island, GA, and putting a special event station on the air. Jekyll Island is a POTA (Parks on the Air) location, US-0636, and a registered US Island, GA-006S. Operating from there meant I could give out both numbers at the same time and enjoy plenty of pile-ups.

The first step was to get the event on the US Islands calendar and send out lots of emails to spread the word. Next came deciding what equipment to bring. I chose my trusty FT-857D of 10 years, paired with a Hamstick dipole and an LDG YT-100 tuner.

We made reservations for four nights at The Moorings condos on Harbor Road and booked Thanksgiving dinner at the Jekyll Island Club. The island is beautifully decorated for Christmas this time of year, complete with a self-guided holiday light tour that adds to its charm.

On Monday afternoon, I set up my station on the screened porch. It had a ceiling height of about 12 feet and was around 8 feet wide—just enough room for the dipole, clearing by 3 inches on both sides.

### Operating Highlights

- **Tuesday, November 26th:** The day started slow but picked up in the afternoon. I made about 15 contacts before shutting down at 5:30 PM when the band went quiet.
- **Wednesday, November 27th:** Another slow morning, but the afternoon was better, with 18 contacts logged.
- **Thursday, November 28th** (Thanksgiving): I only operated for about an hour and logged 5 contacts.
- **Friday, November 29th:** Rain and cold weather moved in, so I shut down the station early.

Overall, the trip was a fantastic experience. Jekyll Island is a unique and beautiful destination, though it does come with a \$10.00 per-car fee to drive onto the island.

It was great to be on the air from such a special location and share the adventure with others in the amateur radio community.

73, Terry W4YBV



## **NFARL Spreads Holiday Cheer with Toy Donation** Lee Johnson, N4WYE

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On December 11, 2024, the club delivered five large bags of toys to Children's Healthcare of Atlanta at Scottish Rite, generously donated by NFARL members. The hospital staff was thrilled and expressed heartfelt gratitude for the contributions, which will bring joy to children in need this holiday season.

This wonderful act of kindness was only possible due to the generosity of our club members, who brought children's gifts to the NFARL holiday party. Your thoughtful contributions made this donation a reality, spreading holiday cheer to those who need it most.

*Thank you to all NFARL members for making a difference! See the full note and photo of the donation.*

73, Lee N4WYE





Dear North Fulton Amateur Radio League,

On behalf of Children's Healthcare of Atlanta at Scottish Rite, thank you for your generous donation of 50 Toys. Your kindness has helped brighten the hospital experience of our patients, families and staff and for that we extend our heartfelt gratitude.

Children's Healthcare of Atlanta, one of the largest pediatric clinical care providers in the country, is a not-for-profit organization that benefits from the generous philanthropic and volunteer support of our community. Operating three hospitals with over a million patient visits annually, Children's is recognized for excellence in cancer, nephrology, gastroenterology, orthopedics, urology, pulmonology, neurology and cardiology..Learn more about our services and the many ways your support makes a difference.

Thank you again for your commitment, dedication, and generous support to Children's Healthcare of Atlanta.

Sincerely,

Volunteer Services

Children's Healthcare of Atlanta at Scottish Rite

Please keep a copy of this information for your records  
Children's Healthcare of Atlanta is a not-for-profit organization  
ID number 58-1710601



Children's Healthcare of Atlanta

[choa.org](http://choa.org)

This email was sent by Children's Healthcare of Atlanta, located at 1575 Northeast Expressway, Atlanta, GA 30329. ©2020 Children's Healthcare of Atlanta Inc. All rights reserved.

### Coax and Wire Redux

N4GG has undergone a QTH change. I've moved to a 55+, HOA controlled small-lot neighborhood. As I've done before, I managed to buy a lot on the periphery of the development with woods behind the house. The lot and the woods are small however, presenting a challenge to getting back on the air.

Many of us wind up burying cable, including coax, rotor cable, control cable and/or radials at some point in our ham careers. Burying cable at the new QTH was a necessity to keep the neighbors happy by, largely, keeping them unaware that a ham operator lives next door. Stealth has been the order of the day.

Prior columns have addressed finding inexpensive wire for radials (February, 2018) and carefully selecting coax with one's specific needs in mind (January, 2020). Here are the coax and wire/cable specifications for the new QTH:

- Buryable
- Low loss (coax). It's a 250 ft run from the shack to the back fence. Loss matters – the new station won't be running 1,500 watts.
- Cost. I continue to be frugal - out of habit. That habit began in 1961 when, as a novice, I was station-building with paper-route money, i.e., broke.
- A lifespan of 20 years. I'm in my seventies and this is my “home before the home.” I'd like to avoid digging up and reburying anything. This station needs to be built “once and done.”

After some research here is what I've bought and why:

Coax: The step above RG-213 (Belden 9913) is LMR-400, made by Times Microwave Systems. There are better cables to be sure, but price escalates quickly as performance goes up. LMR-400 is 3/8” diameter cable – it directly accepts a PL-259 and is relatively easy to work with. If you have ever worked with LMR-600 or LMR-1200 you know what “not relatively easy to work with” is all about. LMR is a registered trademark of Times Microwave Systems, which is an Amphenol Company. As I've written before, Amphenol makes great products and “Amphenol or not at all” continues to be a good rule-of-thumb. In specific cases however there are good alternatives to Amphenol. The column of May, 2024, focused on Max-Gain Systems, a provider of excellent UHF connectors at prices below Amphenol's. This month I'll focus on two additional companies that make excellent products yet have flown below the radar of many hams.

The two Times products of interest to me were standard LMR-400, which is buryable but relatively stiff, and UltraFlex (LMR-400-UF) which is NOT buryable, degrades slowly in UV light



and is flexible. LMR-400's stiffness makes it less than ideal for rotor loops while UltraFlex is good for rotor loops but may need replacing after about 10 years due to UV light degradation.

At my new station the coax of choice is Davis-RF Bury-FLEX. It's something of a hybrid between standard LMR-400 and UltraFlex. Bury-FLEX can be buried (it has the same jacket as standard LMR-400) and has the flexibility of Times UltraFlex. Davis-RF products are less expensive than equivalent Times products (sometimes A LOT less).

As of this writing (November, 2024) Davis-RF Bury-FLEX costs \$1.10/ft for lengths less than 100 feet, \$1.01/ft for lengths from 100 to 499 feet, and \$0.94/ft for lengths 500 feet and greater, when purchased directly from the company. Their products can also be purchased from HRO, RF Parts and many others. Davis-RF sells it by the foot and if you call them someone knowledgeable will answer the phone! Davis-RF also sells an identical version of standard LMR-400 – their designation is DRF-400. The price for DRF-400 is within a penny per foot of Bury-FLEX. The MSRP for Times Ultra-Flex (LMR-400-UF) is \$2.48/ft!

The loss specification for Times LMR-400 and Davis-RF DRF-400 are the same: 0.9 dB/100 feet at 50 MHz. The loss specification for Times UltraFlex and Davis-RF Bury-FLEX are also the same: 1.1 dB/100 feet at 50 MHz. The flexible cables achieve their flexibility in part by using stranded center conductors rather than the solid center conductor used in standard LMR-400. This results in the additional 0.2 dB/100 ft loss at 50 MHz but provides cable that is much easier to work with.

Davis-RF also has a full line of amateur products including antenna wire, insulators, ladder line, Dacron support line, coax sealing tape, etc. They can be found on the web: [www.davisrf.com](http://www.davisrf.com).

I've used Bury-FLEX many times over the years with good success. The Davis-RF company is easy to work with and the telephone support is greatly appreciated. Their products are high-quality - they sell to commercial, marine and military customers as well as hams. I'm not mentioning the company as an advertisement and I have no financial interest in suggesting them. This month's column is about what you can find when you go shopping for exactly what you need. The Davis-RF company is somewhat of a sleeper. I've mentioned the company to hams who say they have never heard of it, despite their being in business for over 40 years.

While I am on the subject of lesser-known companies, I should mention CWS ByteMark, [www.cswbytemark.com](http://www.cswbytemark.com). Like Davis-RF, CWS ByteMark has been in business for over 40 years - quietly serving amateur radio and other markets. CWS ByteMark has been my go-to company for baluns, UnUns and ferrite products for many years. Their products are priced below similar products from big-name suppliers and in my experience the performance of their products is as good or better.

I have used many of their 6:1 baluns (model BAL-300). A folded dipole made with 300-ohm ladder-line and fed with 300-ohm ladder-line needs 6:1 balanced-to-unbalanced matching to get back to 50 ohms. Running a ladder-line transmission line from a folded dipole to the ground, terminating it there with a 6:1 balun and then following the balun with quality 50 ohm coax

results in an antenna system with very low loss and near-perfect SWR. I have tortured BAL-300s with 1,500 watts on the wrong band (very high SWR) and never blown one up.

As an aside, I've wound my share of baluns over the years but always drew the line at 6:1s. A high-power 6:1 balun requires three large ferrite cores and some tricky winding interconnections. For 6:1 baluns, my make/buy decision has always come out "buy." In addition to the complexity, the cost of the large cores, a metal box, the output insulators and the input coax connector probably exceed the price of a BAL-300.

Last but not least I'd like to mention the buryable control cable. When I buried my Bury-FLEX coax at the new QTH I added a control cable into the trench for future use. I expect there will be an antenna relay or two in the backyard before long and perhaps a remote antenna tuner as well. These will need power and control connections. Prior to digging I went shopping for a control cable. There are myriad cable choices – but sticking with "buryable" and "inexpensive" as independent variables, I wound up with lawn irrigation (sprinkler system) cable from Amazon.

The type I bought contains seven conductors of #18 stranded copper wire. The number of conductors and wire gauge choices for irrigation cable are endless. As always, begin with your requirements. What makes sense for your present and future needs? The price for irrigation cable is very competitive and hovers just above the price for the copper content. I don't suggest speculating on irrigation cable, but if you stash some away you might be able to melt it down and sell it at a profit in a few years. Or, maybe not.

Irrigation cable can also be used as rotor cable. What's sold as "Heavy-Duty Rotor Cable" typically has two heavy conductors (#16) for the motor (and the brake in CDR HAM-M style rotors) and six smaller gauge conductors (#18) for the indicator circuitry. The conductors in the irrigation cable are all the same gauge, but two conductors can be connected in parallel to create a single conductor of heavier gauge. Here's a useful rule-of-thumb: When two wires of the same gauge are connected in parallel, their combined cross-sectional area (current handling capability) increases by approximately three wire gauges (the gauge number goes down by three). For example, two #18 conductors in parallel are the equivalent one #15 conductor. I quickly found a 10-conductor irrigation cable on Amazon that's suitable as a rotor cable. Six of the #18 conductors would be used for the indicator circuit and the remaining four #18 conductors would yield a pair of #15 equivalent conductors for the motor.

I hope this month's column has been helpful. When planning your next project, first decide exactly what your requirements are. Then go shopping. There are bargains to be had. Bargains from lesser-known companies and bargains based on alternate applications such as sprinkler systems!

73,

Hal N4GG

Note: Belden, Times Microwave Systems, Davis-RF, Amphenol, CWS ByteMark, LMR, UltraFlex and Bury-FLEX are all registered trademarks.

A few years ago, I downsized and moved into a townhome in an antenna-restrictive neighborhood. The attic had plenty of room for numerous VHF+ antennas for FM, SSB, and satellite work. In addition to the VHF+ antennas, I installed one HF antenna in the attic: a simple wire dipole located at the apex of the attic roof at 30 feet of elevation, spanning the townhome's width of 33 feet. It is fed through a remote antenna tuner (Icom AH-4) using a 16-foot ladder line. The HF antenna performed well from 14 to 54 MHz, but I could not get a match below 14 MHz. On 17 meters FT-8, I've made 10,000-mile contacts (Southern Australia); on 6 meters FT-8, I contacted Trinidad & Tobago (4,000 miles). For the moment, that was good enough.

My interests in Ham Radio include ARES activities. The North Fulton ARES team uses VHF frequencies to communicate via voice or digital modes, but HF has been playing an increasing role in their communication plan, mainly on the 40-meter band. My attic HF antenna is unable to tune to ARES HF frequencies. Even if I could get the attic dipole tuned to 40 meters, the intended coverage area is best served by NVIS antennas when using HF frequencies. At 30 feet of elevation, the dipole is not suited for NVIS propagation.

The back side of my dwelling has a 43-foot-long gutter over the garage entrance that wraps around a porch and two 12-foot downspouts. **This gutter system could function as a horizontal end-fed random-length wire**, so I attached an LDG RT-100 remote antenna tuner to the downspout on the far side of the gutter. Using a 3-foot coax jumper, I connected the 4:1 balun (LDG) to the remote tuner and a two-foot heavy-gauge copper wire from the balun to the gutter. See the Simplified Schematic and Figure 2.

The initial communication attempts on the gutter antenna were discouraging; I contacted AD4MC on the 40-meter band, 9 miles from my QTH, over hilly terrain. However, the signals were weak. While we could converse, listening to the weak signal strained the ears even when using 80 W of power. A closer look at the gutter system revealed that the downspout near the midpoint of the gutter system was canceling much of the RF energy. The solution was a quick trip to my local hardware store to purchase a small section of corrugated plastic downspout. I attached the plastic section to the midpoint downspout tubing between the gutter and the rest of the aluminum tubing, electrically isolating it. See Figure 3.

The second transmitting attempt was spectacular. The LDG remote tuner quickly tuned the gutter antenna to a 1:1 match. Testing the system between AD4MC and my QTH showed remarkable improvement. While not apples-to-apples, using VarAC, I established a solid communication path. I kept decreasing the transmitter's power until I was in the single digits and still received solid signal reports from AD4MC.







Fig 1. LDG RT-100 Controller, Tuner, and Balun



Fig 2. Remote tuner and balun installation



Fig 3. Gutter antenna hidden in plain sight - Note the plastic transition in the center of the pic

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



**E3B01: Where is transequatorial propagation (TEP) most likely to occur?**

- A. Between points separated by 2,000 miles to 3,000 miles over a path perpendicular to the geomagnetic equator
- B. Between points located 1,500 miles to 2,000 miles apart on the geomagnetic equator
- C. Between points located at each other's antipode
- D. Through the region where the terminator crosses the geographic equator

See answer on the last page!

The new Amateur Extra-class license examination question pool, effective from July 1, 2024, through June 30, 2028, has been released and is available at the National Conference of Volunteer Coordinators (NCVEC) [website](#).

Note the new Technician class license examination question pool is effective July 1, 2022.

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](#).



## Contest Corner

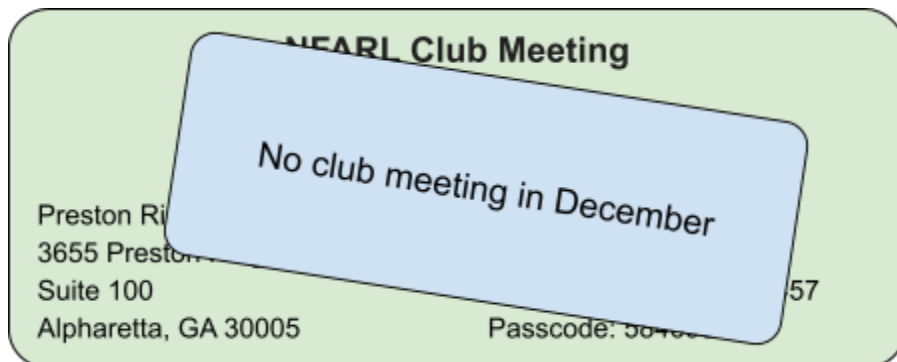
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These are some contests and events scheduled to occur in the near future.

Contest	Time & Date
<a href="#">ARRL 10-Meter Contest</a>	0000Z, Dec 14 to 2400Z, Dec 15
<a href="#">International Naval Contest</a>	1600Z, Dec 14 to 1559Z, Dec 15
<a href="#">NTC QSO Party</a>	1900Z-2000Z, Dec 19
<a href="#">AGB-Party Contest</a>	1600Z-1700Z, Dec 20
<a href="#">ARRL Rookie Roundup, CW</a>	1800Z-2359Z, Dec 22
<a href="#">DARC Christmas Contest</a>	0830Z-1059Z, Dec 26
<a href="#">RAC Winter Contest</a>	0000Z-2359Z, Dec 28
<a href="#">RAEM Contest</a>	0000Z-1159Z, Dec 29
<a href="#">YOTA Contest</a>	1000Z-2159Z, Dec 30
<a href="#">QCX Challenge</a>	1300Z-1400Z, Dec 30
<a href="#">AGB New Year Snowball Contest</a>	0000Z-0100Z, Jan 1
<a href="#">AGCW Happy New Year Contest</a>	0900Z-1200Z, Jan 1
<a href="#">NRAU 10m Activity Contest</a>	1800Z-1900Z, Jan 2 (CW) and 1900Z-2000Z, Jan 2 (SSB) and 2000Z-2100Z, Jan 2 (FM) and 2100Z-2200Z, Jan 2 (Dig)
<a href="#">WW PMC Contest</a>	1200Z, Jan 4 to 1200Z, Jan 5
<a href="#">RSGB AFS Contest, CW</a>	1300Z-1700Z, Jan 4
<a href="#">ARRL Kids Day</a>	1800Z-2359Z, Jan 4
<a href="#">EUCW 160m Contest</a>	2000Z-2300Z, Jan 4 and 0400Z-0700Z, Jan 5
<a href="#">YB DX Contest</a>	0000Z-2359Z, Jan 11
<a href="#">North American QSO Party, CW</a>	1800Z, Jan 11 to 0559Z, Jan 12
<a href="#">DARC 10-Meter Contest</a>	0900Z-1059Z, Jan 12

## NFARL Upcoming Events and Dates

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### NFARES net

Every Sunday 8:30 PM  
NFARL Repeater  
147.06 (+) PL100  
All hams welcome

### Tech Talk

Every Monday 8:30 PM  
NFARL Repeater  
145.47 (-) PL100  
[NFARL Discord](#)

### Hungry Hams

Every Wednesday 11:15 AM



34 East Crossville Road  
Roswell, GA 30075

### CW CHAT

Every Wednesday 8:00 PM  
[Zoom link](#)

### YL Net

Every Thursday 8:00 PM  
NFARL Repeater  
147.06 (+) PL100

### Executive Team Meeting

December 17, 7:00 PM  
Zoom  
[Groups.io](#)

### NFARES Meeting

December 10, 7:30 PM  
The Church of Jesus Christ  
of Latter-day Saints  
500 Norcross St.  
Roswell, GA 30075  
[Zoom link](#)

### VE Testing

Second Saturday 8:30 AM  
Slope's BBQ  
34 East Crossville Road  
Roswell, GA 30075  
[Registration required](#)

### FUN Net (digital)

1st & 3rd Thursday 8:00 PM  
NFARL Repeaters  
147.06/443.15 (+) PL100  
Echo-Link N4SBD-R  
Node: 522043

## NFARL Contact Us

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[nfarl.org](http://nfarl.org)

eNEWS can be located online at: <https://nfarl.org/enews-index>



## Club Repeaters

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Frequency	P.L. Tone	Location	Notes
145.470 (-)	100 Hz	Morgan Falls	EchoLink Node 560686 NF4GA-R
147.060 (+)	100 Hz	Roswell Water Tower	Primary ARES Repeater
443.150 (+)	100 Hz	Roswell Water Tower	
444.475 (+)	100 Hz	Morgan Falls	

Club Call signs: NF4GA and K4JJ

Extra Extra answer: **A (question E3B01)**

## Supporters and Affiliates

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Please support our sponsors and affiliates by visiting their websites.

