The Official Newsletter of the Gwinnett Amateur Radio Society
November 2020 http://www.gars.org/ Volume 29, Issue 11

# The GARzette

## November 2020 GARS Meeting: Multiband and EFHW Antennas, by Steven Ellington N4LQ


## The Georgia QSO Party

SECC SOUTH EAST CONTEST CLUB

SOUTHEASTERN DX CLUB

## TechFest

## Online GARS meeting Tuesday, November 10, 2020 at 7:00 pm

# President's Message

**From the President…**

Well, we tried something different and safely got together for a couple of hours at the Park. It was great to see some GARS Members in person and not just in front of a camera on the screen. On Saturday evening, October 24th, about nineteen folks, including some XYLs met at a Pavilion at Rabbit Hill Park to enjoy a Brown Bag meal and chat in person. Some even brought their latest project to share and create some discussion. Mostly, everyone just enjoyed getting together. I'll be interested in any comments on whether we should have more of these informal meetings while we're still somewhat locked down from normal meetings and events.

We will have one item of official GARS business at the next online meeting. To clean up a minor point in the GARS Bylaws, we are proposing a slight change to remove the official mailing address for GARS from the Bylaws document and allowing the Officers to set that address. We have changed mailing addresses a few times over the years mostly to make it convenient for the Secretary and Treasurer to retrieve mail, membership applications and dues payments. Rather than amend the Bylaws to indicate the official change, the proposal is for the Officers to establish the mailing address and publish it on the website and other documents. The official change proposed will be listed in this issue of the GARZETTE and then the Secretary will read the change and a vote of current GARS members at the online meeting will be taken. It is a minor change, but eliminates a Bylaws change and vote for an address change.

Another important decision for the GARS Community are nominations for the GARS Ham of The Year. This is your opportunity to recognize the person you feel has made a major contribution to the club during this incredibly unique year. If you have a member in mind that has been tireless in their support and participation or has accomplishments that have benefited the club or you want to recognize someone for their contributions to Amateur Radio, please write down your thoughts and reasons for your nomination and submit them by email to wb4qdx@arrl.net by December 1st. The Officers will discuss the nominations and select the GARS Ham of The Year. We will make the presentation either at an online meeting or the first opportunity we have to meet in person.

The holiday season is approaching so it's not too early to start thinking of your radio wish list for Santa. There are some new radios out this year or what about that new tower or SteppIR antenna. We have all been good this year as we hibernated indoors, so Santa is ready to reward our good behavior.

See you soon on the air or the next online meeting.

73,

**WB4QDX, Club President**

# GARS Meetings & Workshops

**GARS Meetings and Workshops**
**Will be held online until further notice.**
**See http://www.gars.org for more information**

## GARS Virtual Login and Zoom Etiquette

Due to COVID-19 the following events are being held via Zoom video conferencing. Login info will be emailed via Groups.io Subscribe at; https://groups.io/g/GARS

**Workshops and Meetings are OPEN to all, feel free to share your invite with others.**

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- Workshops will be **recorded**. By participating you consent to being **recorded**.
- Please change your display name to Your **FirstName CallSign**, e.g. **Hiram W1AW**
- **How to change Your Display Name in Zoom**
- Please stay muted until ready to speak. Your space bar works like a PTT for un-muting
- To be fair to everyone, there will be a three minute limit for each person during Q & A
- You may ask questions in chat; **please stay on topic while using chat.**

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## Workshop Schedule:

- November 17, 2020 – Chaz Cone W4GKF – Explaining 10-10
- December 15, 2020 – **No Workshop in December**
- January 19, 2021 – Brian Haren W8BYH – Georgia Amateur Radio Situation Awareness Map
- February 16, 2021 – Lee Johnson N4WYE, hands on with the Nano VNA (Vector Network Analyzer)
- March 16, 2021 – Rich Donahue K0PIR – (Topic TBD)

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## GARS Workshop – November 17th 2020

Explaining 10-10
By Chaz Cone W4GKF

Introduction: Chaz Cone W4GKF is the Chapter Head for the North Georgia Chapter of 10-X International, President and Life Member of the Atlanta Radio Club. Database and webmaster of the Southeastern DX Club (SEDXC), member and webmaster of the South East Contest Club, member of the North Fulton Amateur Radio League (NFARL). He is an avid DXer; lead the KD4DX DXpedition to Navassa Is back in 1972, operated from Costa Rica as TI50DX honoring the 50th anniversary of SEDXC, plus other DXpedition 2009-2010.

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## GARS Meetings – November 2020

**WHEN:** Second Tuesday – Doors open at 6:30pm, Meeting Starts at 7:00pm
**WHERE:** Online Meeting using Zoom, invitations will be on Facebook,Groups.io,discord server

**PROGRAM:**

- November 10, 2020 – Steven Ellington N4LQ will present “Multiband and EFHW Antennas”
- December 8, 2020 – Dave Casler KE0OG, of ASK DAVE YouTube channel will speak
- January 12, 2021 – Lee Johnson N4WYE, NANO VNA (Vector Network Analyzer)
- February 09, 2021 – John Kludt K7SYS, The 4-Year Amateur Radio Upgrade to ISS

The GARzette November 2020

## Inside



## GARS Communication

2 Meter Repeaters

147.075(+) MHz Tone 82.5
147.255(+) MHz Tone 107.2

1.25 Meter Repeater

224.580(-) MHz Tone 100.0, 1.6 MHz Offset

70 Cm Repeaters

444.525(+) MHz Tone 82.5
442.100(+) MHz Tone 100
442.325(+) MHz Tone 100

6 Meter Repeater

53.110 (-1 MHz) No Tone (Offline for Maintenance)

**Other Resources:**

APRS

144.390 -- 1200 Baud W4GR

D-STAR
WD4STR

145.060 + (1.4 MHz)
440.550 + (5 MHz)

**Don't forget to support our advertisers at the back of the *GARzette*.**

Snail Mail Address:
GARS
P.O. Box 492531
Lawrenceville, GA 30049

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If possible, bring your articles to the monthly meeting in Microsoft Word or rich text (.rtf) or text or HTML format or by e-mail to editor@gars.org. Artwork can be accepted in most any graphics format and can be submitted via e-mail to the same address. Alternate means of submittal can be arranged when necessary.

In keeping with the Amateur Radio spirit, permission is hereby granted for the reproduction of The *GARzette* articles by other Amateur Radio club newsletters provided that proper credit is given to the individual author and *The GARzette*.

*The GARzette* is published each month with the assistance of Norm Schklar, WA4ZXV who prints copies for distribution at meetings, etc. and Dave Bruse, W4DTR, who distributes the newsletter electronically.

Deadline for submissions is the 28th of each month for inclusion in the following month's issue.

For additional information view our Website at: http://www.gars.org

Newsletter Email: editor@gars.org Editor: Bob Hoffman, K4CQO Assistant Editor: Bill Eggers, WB2RIS

# GARS HELP WANTED

Speakers Needed for GARS Workshop Presentations, 3rd Tuesday of the month – Email workshop@gars.org to volunteer.

[PS— Articles to publish in the GARzette, either written by GARS members or published elsewhere, are always welcome. —Ed.]

# GARS Happenings

## 20 Years ago in the November 2000 GARzette:

- By-laws were being updated with monthly meetings and special meetings
- The upcoming 2000 Christmas party reservations cost $5.00 per person
- The Techfest for 2001 was getting scheduled
- Bill KG4FXG provided an interesting CW Mania article

You can always browse the GARzette archive at http://www.gars.org/newsletters
73, Bob, K4CQO, GARzette Editor


Gwinnett Amateur Radio Society

The GARZETTE

The President's Pen

GARS By-Laws

**We bring you the Inaugural Stone Mountain Hamfest Commemorative SES!**
**Special Event Stations: K4A – K4M – K4R – K4C – W4BOC/P (Bonus Station)**
**Starting EST Friday, November 6th 7pm, or 19:00 EST – 00:00 UTC**
**Ending EST Sunday, November 8th 7pm, or 19:00 EST – 00:00 UTC**
**48 hours round the clock! Schedule your time to operate a 1×1 SES callsign:**
https://stonemountainhamfest.com/hamfestSES/

## AMATEUR RADIO LICENSING CLASS

### GENERAL LEVEL LICENSE
(INTERMEDIATE LEVEL LICENSE)
### NOVEMBER 7,14 & 21, 2020
### AMERICAN LEGION POST 294
### 3282 FLORENCE ROAD, POWDER SPRINGS, GA 30127

**Students must attend all three classes. Classes are from 8:00 AM until 3:00 PM. There are no facilities for meals so you must bring your own or go out for lunch. We will take lunch from 11:00 AM to 12:00 NOON. There are restaurants nearby.**

Students must register for the class. The ARRL General Manual will be used for the class. You can purchase the manual from the ARRL at www.arrl.org or from Amazon. You can also purchase the manual from Ham Radio Outlet, 6071 Buford Highway, Atlanta (about two miles North of I-285 on the right) or www.hamradio.com.

There is no fee for the class or for the FCC Exam at the conclusion of the class. **For more information or to register, please contact ELDEN MORRIS, N1MN at 770-713-4403 or by e-mail at N1MN@ATT.NET**

# Net Managers Corner

## Monday Night 2 Meter "Want, Swap, Sell, and Information Net"

## GARS NEEDS MEMBERS TO SERVE AS NET CONTROL STATIONS!

**GARS is a great Amateur Radio service club** and we have the membership and awards to prove it. Our club is a very busy and active club and we use the Monday night net to get the information out to our members. Weekly participation is needed to make our net function well. There is only a small group of very dedicated people that make the net happen each week, and we need more members to volunteer to serve as Net Control Stations (NCS) on a rotating basis.

Out of almost 300 members, there are only SEVEN primary people who serve as NCS for the GARS net every Monday night. In no particular order, they are:

| | | |
|---|---|---|
| Don - KW4AL | Ray - N4GYN | Bill - KK4AUA |
| David - KA4KKF | Kevin - KK4WOG | Chuck - KK4TKJ |
| Russell - AB4QQ | | |

As GARS Net Manager (Chuck KK4TKJ), I really need 26 people to fill NCS positions. I do plan and post the schedule months in advance. Any conditions will be accommodated that you as a rotating NCS need to place on the scheduling of your duties. If your plans change, I can make adjustments for the schedule to work, and I will make those changes happen as soon as I am notified of a problem. As Net Manager, I also send out reminders each week to let the NCS scheduled know he or she is NCS for the next Monday night net. In short, serving as a rotating NCS is a small duty but a great contribution to the club.

The "Want, Swap, Sell Information Net" begins promptly at 19:30 every Monday night and runs about 45 minutes. As a scheduled NCS, you will request the assistance of a volunteer alternate NCS each time you have Net Control. Your simple duties will be to tune in to the GARS repeater, read the script, take a few notes and forward the information to me for record keeping.

Please lend a hand and contact me at KK4TKJ@arrl.net. Sign up to help support the effort that makes GARS the great club that it is.

73 and see you on the Nets!

*Chuck McCord,* KK4TKJ

GARS Net Manager

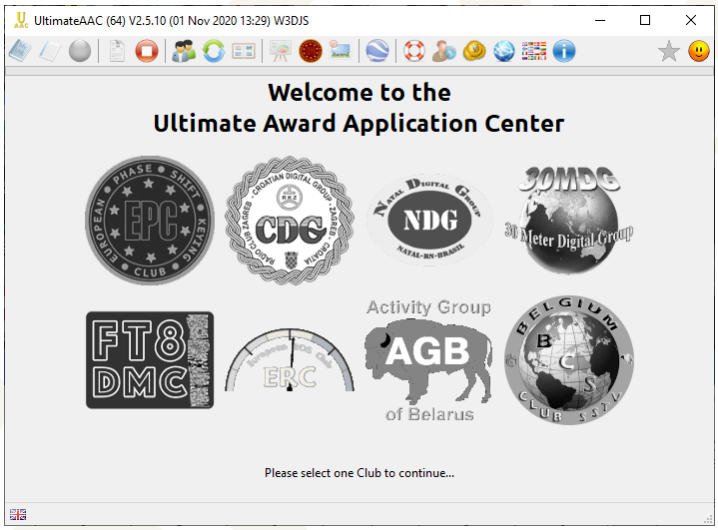
# FT8 Contesting Using UltimateAAC

By Dave Slotter, W3DJS

I've been a strong proponent of digital modes, starting with PSK31 and JT9, then eventually migrating over to FT8 and more recently FT4, implemented by the WSJT-X application program written by Joe Tayler, Bill Sommerville, et al. After using FT8 a few months, I was browsing the various mailing lists and discussion groups, when I came across the FT8 Digital Mode Club at https://ft8dmc.eu . I started reading through their website and found out one could become a member, and so I did. My member # is 03127, and at the time of writing this article, there are over 33,000 members. Then, also on their website, I learned about their Awards, and found I could download some software called UltimateAAC which would assist with that.

UltimateAAC is a cross-platform application and is available for Windows PCs, Macs and even Linux. It is available for download from the website: www.epc-mc.eu (under Downloads on the upper right hand side of the page.) You do have to log into the website in order to download UltimateAAC. After installing UltimateAAC and launching it, you must fill in some basic information like name, callsign and email address. The email address is important for receiving awards.

Once launching UltimateAAC and providing the basic information, you should see a screen which looks something like this:




To go forward, click on the first club you are a member of (you may be a member of one or many clubs) and you will be taken to the club screen. Then you can click on the top left most icon which is "Open Standard Logbook" and UltimateAAC will read in all your logbook's ADIF entries and calculate which awards for which you may apply. Please be patient – UltimateAAC is very slow and you can watch its progress by looking at the green horizontal progress bar. Eventually it finishes, and you can then proceed to apply for all the awards for which you've qualified. After you've clicked on Apply for the award, you'll receive a confirmation dialog and hopefully also an email to the email address you registered stating that you've applied for said award.

Generally in about 6 hours to 24 hours you should receive a second email from the Club stating that your award(s) are available for download. When you click the link in the email and go to the Club website, you can download all the awards you've earned in either PNG or PDF format.

There are many different categories for awards. There are awards for activating 10, 25, 50, 100, … grid squares in a country, on a continent, or on a band. There are awards for working 25, 50, 100,

250, 500, 1000, 2000, … callsigns in a country, on a continent or on a band. There are categories for which I haven't even mentioned. If you can conceive of an award type, chances are that UltimateAAC and the Clubs have it available for you to earn.

To date, after 9,000 FT8 / FT4 contacts, I have earned over 400 award certificates. The certificate awards range from very basic to more moderate to advanced. If you like chasing awards for digital modes, then the UltimateAAC software is definitely for you.


**The entire article is available on-line, see**
**http://www.gars.org/newsletters/2020_11_GARZETTE.pdf**

# In the Footsteps of the Ancient Ones

Brian R. Page, N4TRB
n4trb@arrl.net
http://n4trb.com/

If the first golden age of amateur radio was the 1920s, then the second golden age was certainly the years following World War II when the surplus market was flooded with a huge variety of military gear. Amongst the mountain of surplus were millions of quartz crystals, the majority of which were likely in the FT-243 form factor. Quartz crystal frequency control was a strategic advantage for the Allies during the war. The Allies, particularly the United States, had control of the high-quality quartz from the mines in Brazil. Quartz delivers rock solid frequency stability, highly resistant to the vibration & temperature extremes that compromise frequency control using tuned LC circuits. For example, some German radios could be used only when stationary.

The U. S. government recognized this advantage and created a massive program under the Army Signal Corps to nurture the nascent crystal industry. And they had their work cut out for them. In the early stages the U. S. had only a handful of manufacturers. Cutting & grinding quartz was essentially a *black art* with only certain companies, and in some cases only certain individuals, able to produce crystals of consistent quality. This Signal Corps program ranked with the Manhattan atomic bomb project, and RADAR, as technologies vital to the war effort. The Corps multiplied the chosen few to hundreds of small firms. The full story of the quartz war industry is best found in Richard Thompson's book, *Crystal Clear*, and in his January 2004, *QST* article.

The challenge for amateurs was that although FT-243 crystals were abundant & cost next to nothing – there are stories of barrels full of crystals being sold for pennies from the stores of Radio Row in New York City – the vast majority of these crystals were nowhere near the amateur frequencies. That's still true today. You'll easily find FT-243 crystals at hamfests, but chances are slim that you will find one cut for a ham band. For hams of that era, the solution was clear: take them apart and grind them down (or rather up) to a usable frequency. Being in the possession of a few dozen World War II vintage crystals, I decided to try my hand at crystal grinding. I began with a crystal cut for 6900 kilocycles, which we today know as kilohertz, kHz, made by Daughtee Manufacturing in Chicago.

To see if this crystal was still viable, I plugged it into my trusty Altoids tin crystal checker and fed the RF to a little


**Figure 1**
This FT-243 form-factor quartz crystal was manufactured by Daughetee Manufacturing for use by the United States military during World War II. The quartz crystal on the inside was cut for a frequency of 6900 kilocycles, or 6900 kHz using current terminology.

**Figure 2**
The first step in trying to change the resonant frequency of the crystal was to make sure that it was still viable. Although FT-243 packages are tightly sealed, the years have taken a toll on some crystals so that they may no longer function correctly. In this case, the crystal was still spot-on. The difference between 6900 kHz and my reading of 6898.7 kHz is more likely a result of my equipment accuracy.

frequency counter which registered 6898 kHz, close enough. It's important that I selected a crystal that was *lower* in frequency than my intended target frequency, somewhere, anywhere, in 40-meters, hopefully in the traditional CW portion of the band. Grinding away quartz *raises* the frequency. There is no practical way of lowering the frequency although tales abound of amateurs dusting the quartz with graphite in desperate attempts to do so. The first step was to take the crystal apart. Removing the cover reveals a powerful little spring whose job is to squash the plates in the crystal sandwich tightly together.

The top layer in the sandwich is a thin piece of old-time circuit board material for insulation, followed by a brass electrode that provides electrical connection between the FT-243 pins and the sandwich stack. This must be gently pried away to access the sandwich, a translucent sliver of quartz crystal between two flattening plates.

The ancient ones are probably rolling in their graves, seeing me grind the tiny crystal using an ordinary whetstone. The canonical method specifies the use of fine abrasive powder on an optically flat piece of glass. I tried a bit of that using 250-grit powder that I have on hand for sharpening woodworking planes, but the grit seemed rougher than the whetstone. Since this was just pure experimentation, I persisted with the whetstone.

After about thirty minutes of grinding, the quartz crystal didn't look any different than when I began. Did I mention that I really didn't know what I was doing? It was still thin and appeared very fragile, although I was surprised that it held up well to some rather forceful grinding.

Next, I cleaned the crystal in water and then rubbing alcohol using lint-free cloth. Reassembling the FT-243 crystal holder was just the reverse of that described above. And then came the acid test: plugging it into the crystal checker and reading out the frequency. Woo hoo! Talk about luck! The finished crystal landed on 7036.6 kHz, not only just *somewhere* in the 40-meter band but rather close to the QRP watering hole.

This really was just good fortune. And I neglected to mention that it took me two tries. The first time I ground away for about five minutes, not having the slightest clue on how much grinding would be needed to move up 150-ish kHz. That five minutes hardly moved the resonance. With nothing more than gut feel, I repeated the disassembly and hit the whetstone for another 25-minutes.

As soon as I get the bugs worked out of my classic two-tube 5763 & 6C4 transmitter, you might find me calling CQ rock bound on 7036.6 kHz. Incidentally, when I was first

**Figure 3**

On the inside, FT-243 crystals are a sandwich of insulation, contact plates, and the thin quartz crystal, all pressed tightly together by a powerful little spring.

**Figure 4**

Here the sliver of translucent quartz crystal can be seen resting on the two contact plates. This crystal has a tiny chip on one corner.

**Figure 5**

I used a common whetstone to reduce the thickness of the crystal blank, raising the resonant frequency. Recommendations in publications from the 1950s on this process specified using fine powdered grit on laboratory-flat surfaces. My reckless approach is likely a big contrast to the proper way of achieving the desired result.

licensed, Novice privileges required the use of crystal control. The FCC wasn't sure we could handle VFOs. The 40-meter Novice segment ran from 7150 kHz to 7200 kHz. That little span of 40-meters wasn't just to keep us corralled where we couldn't do much damage. There was a practical reason as well. Since all Novices were rock bound, the chance of someone answering your CQ on your calling frequency was slight, indeed. Once you called CQ, you would have to scan the Novice segment to see if someone responded.

It was just pure chance that the crystal I selected for my little experiment was from Daughtee Manufacturing. But Daughtee was unique, infamous, amongst wartime crystal manufacturers. The Army Signal Corps monitored their contractors and required the use of sophisticated testing equipment for quality control. When the inspectors examined the Daughtee operation, they were appalled. The proprietor, Lew Daughtee, used no precision equipment. Instead, each evening he put that day's batch of crystals in a freezer and left them overnight. The next day that batch was tested, still frozen, to verify they were on frequency. Then he stuffed them into an oven and baked them until they were too hot to touch – and tested them once again. After the Signal Corps witnessed Lew's process, they gave him an exemption. It's kind of cool to think that my homebrew transmitter will use a crystal that is not only a veteran of World War II, but one that is notorious as well.

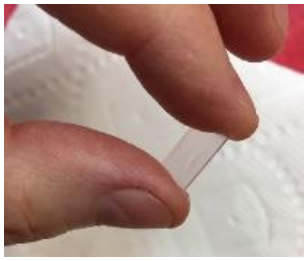


**Figure 6**

In this view you can see how thin the crystal blank appears. Grinding from 6900 kHz to 7036.6 kHz produced no noticeable change in observed thickness to my eye.

**Figure 7**

The acid-test for this little experiment was measuring the final result which fortunately showed success. The crystal ended up well situated in the CW portion of the 40-meter band.

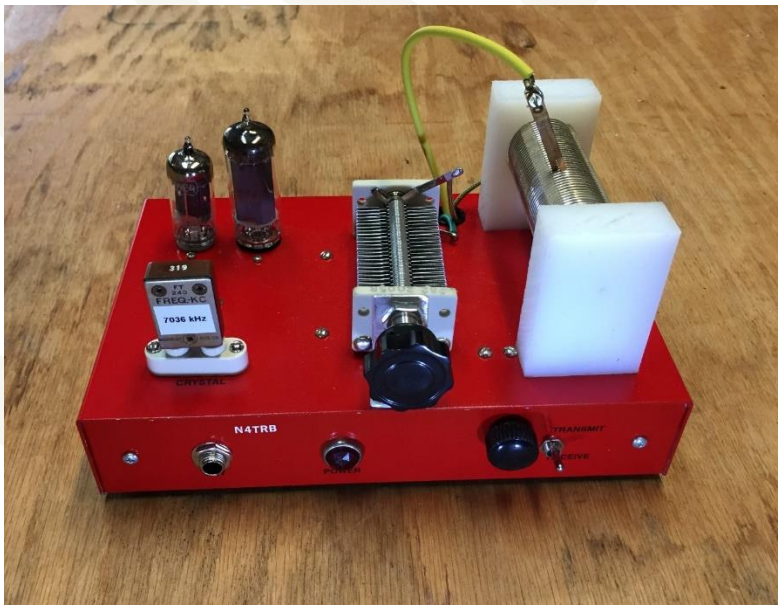



**Figure 8**

Now with a new label, this World War II veteran FT-243 may see service in this little two-tube transmitter.

**The entire article is available on-line, see**
**http://www.gars.org/newsletters/2020_11_GARZETTE.pdf**

# Drake R-4C and T-4XC

## Vintage Amateur Radio

**de Bill Shadid, W9MXQ**

The introduction of the original Drake R-4 Receiver and the T-4X Transmitter proved to be a big success for the R. L. Drake Company. The R-4 Receiver developed into the R-4A and then the R-4B models with incremental improvements. At the same time, the transmitters moved from the original T-4X Transmitter (which was marketed both with the R-4 and the R-4A) and later the T-4XB Transmitter to match up with the R-4B Receiver.

The "B" series receivers and transmitters all used the technology Drake introduced with the front-end crystal filter supplanted with tuned circuit filtering for final bandwidth control. This technology reached its best performance examples in the R-4B and T-4XB. We affectionately know this final version of this set as the Drake Twins, or specifically, the "Drake B-Line." We use these references to this day. Drake had developed the standard Noise Blanker in the R-4 line to its furthest point in the R-4B. But, times were weighing in on the Drake Twins and something had to be done to keep them competitive.

Drake's response to the demand for a new radio resulted in one of the most respected and well-designed radio receivers and transmitters of the time. The receiver performs well even today – that is, up to the limitations now solved with microprocessors and totally solid-state circuitry. Enter the revolutionary, Drake R-4C Receiver and T-4XC Transmitter. Hands down, the star player in this pair was the receiver, the R-4C.


**Drake T-4XC Transmitter and R-4C Receiver**
**with Drake MS-4 Speaker Console**

**W9MXQ Radio Collection**

The R-4C Receiver turned out to be a very expensive product for the time. So, for Drake to place it in a competitive position, they made many features optional that had been standard equipment with the R-4, R-4A, and R-4B. But, at the same time, the optional components that were added to the base radio made it superior to its predecessors. The options included a Noise Blanker and a wide selection of Bandwidth Filters.

The optional Bandwidth Filters were Eight-Pole Crystal units following the standard crystal front-end (roofing) filter. These very effective units replaced the wide skirt tuned-circuit filters in the earlier R-4 versions. These filters were available in 250 Hz, 500 Hz, 1500 Hz, 4000 Hz, and 6000 Hz bandwidths. Including the standard SSB filter, the R-4C could hold a total of five filters. (Very early R-4C radios held only four filters.) The R-4C that resides at W9MXQ is equipped with the SSB Filter, a 4000 Hz filter

(Wide SSB and AM use), a 1500 Hz filter (Narrow SSB and RTTY use), a 500 Hz filter (CW and RTTY), and a 250 Hz filter (CW).

Like the original T-4X and T-4XB Transmitters., the T-4XC used separate eight-pole crystal filters for USB and LSB SSB generation. Drake used Crystal Filter SSB Generation as did most companies in early SSB – only Hallicrafters used Phasing SSB Generation of the major producers – but only in their very early SSB radios. Collins used Mechanical Filters which equate more with the Crystal Filter process than the Phasing process.

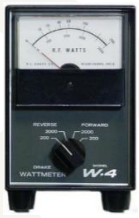
The R-4C Receiver had an optional NB-4 Noise Blanker that far surpassed the standard equipment Noise Blanker incorporated into the original R-4, R-4A, and R-4B Receivers. The NB-4 was able to be effective on a much wider variety of noise than the earlier examples. This included acceptable performance against the Russian Woodpecker and some types of power line noise not eliminated by the earlier receiver noise blanker circuits. The NB-4 was an outgrowth of the very effective 9-NB Noise Blanker that was optional on the Drake TR-6 Six-Meter Transceiver.

In my opinion – shared by many –, the Drake R-4C Receiver with its variety of Filters and the Noise Blanker provided a communication tool far advanced, in many ways, to all its competition. In fact, I know of at least one personal acquaintance in the local DX Community still using the “Drake C-Line” as his main station for working DX. His choice is still shared by many. As my future article on the much-praised Drake TR7 Transceiver will point out, the Drake R-4C in combination with the Drake T-4XC was never surpassed by its replacement “7-Line” product line in down and dirty, drag out the weak signal DX operation. Both the “C-Line” and “7-Line” designs exist at W9MXQ and I concur with this feeling – without reservation.

All Drake “4-Line” Accessories were used with the Drake R-4C Receiver, T-4XC Transmitter, as well as the Drake TR-4C series Transceivers of the day (as well as the earlier models in the “4-Line” designs). Shown again with this article are the popular accessories of the time. . .


**MS-4 Speaker**

**(AC-4 Power Supply Inside)**




**W-4 Wattmeter**


**MN-4 – 300 Watt**

**Antenna Matching Network**


**L-4B Linear Amplifier**

**(2x 3-500z Eimac Tubes)**


**MN-2000 – 2000 Watt**

**Antenna Matching Network**

**Pictures from the W9MXQ Radio Collection (MN-4 Picture from WB4HFN)**

The MN-4 Antenna Matching Network has a rather interesting history. Late in the product life cycle of the "C-Line" radios, Drake introduced the TR7 line of transceivers and other "7-Line" products. In that line there were also Antenna Matching Networks including the 2000-watt MN2700 and the 300-watt MN75. To accommodate buyers of accessories for their still new Drake "C-Line" twins (and the TR-4C series transceivers) Drake made a version of the MN75 Antenna Matching Network to match the R-4C, T-4XC, and the TR-4C. It was the MN-4C. Look at these pictures for comparison . . .


Drake MN75 Antenna Matching Network designed to match the Drake TR7 Transceiver series of products. It had a capability of running 300 watts SSB/CW input power from the radio.


Drake MN-4C Antenna Matching Network designed to match the Drake "4-Line" equipment. Electrically it is identical to the MN75. Note color and cabinetry to match the "4-Line" equipment.

**Photos: WB4HFN**

Antenna Matching Networks (Drake's fancy terminology for "Antenna Tuner") were very popular products. As the TR7 and its separately styled accessories were introduced, there was determined to be a need for a matching antenna tuner for recent, or earlier, buyers of the Drake "4-Line" separates or the TR-3 and TR-4 series of transceivers. Ultimately few of these seem to have been made – or at least few reach the used market, today. That said, even the original MN-4 Antenna Matching Network is difficult to find. More will appear on the MN75, and its higher power sister, the MN2700, in a later installment.

> Note: You may see here a slight model number issue that would appear to be a typo. It is not. Drake used a dash in its model numbers through the "4-Line" equipment. So, the receiver and transmitter were the R-4C and T-4XC, respectively. The transceiver was the TR-4C. But, with the introduction of the "7-Line" this changed, and the dash was omitted. So, while the TR-4C used a dash in its model number, the TR7 did not. This extended to the accessories. So, the MN-4 became the MN75, for instance. Drake remained true to this system and when they made the MN75 into the MN-4C they put the dash back in its place.

Other accessories were also used with the very popular Drake "4-Line" Receivers, Transmitters, and Transverters. By the time of the new "C-Line" radios, however, the line of transverters had vanished as strong contenders for weak signal VHF/UHF stations (SSB and CW – and later, Data) radios with very high performance began appearing from Japan. Interestingly, however, transverters have remained popular from European manufacturers.

In many ways, the Drake T-4XC Transmitters differed in only small items from its earlier versions, the T-4X and the T-4XB. It still used a pair of the 6JB6 final amplifier tubes and ran an input power of 200 watts PEP SSB and CW – netting 100 watts, nominal, output on both modes.

The Drake transmitters in this series had a good quality AM modulator incorporated so the T-4XC (along with the T-4X and T-4XB) could produce a relatively good quality AM signal.

The R-4C Receiver inherited the inductively tuned VFO (more properly said as “PTO” for Permeably Tuned Oscillator) from the earlier versions of the receiver. As mentioned in the previous article on these twins, the Drake radios (like the Collins radios of the time) lacked multi-stage variable capacitors for tuning individual stages in the radios. Again, inductive tuning was used with a rack assembly tuning all stages at once ganged to the PRESELECTOR control on the receiver and the RF TUNE control on the transmitter.

Drake R-4C series receivers continued the use of PASSBAND TUNING that was featured in their earlier receivers. This was much more effective than the Q-Multiplier used by others. Like the earlier Drake R-4 series radios, the R-4C included a NOTCH filter in addition to their very effective PASSBAND TUNING. The PASSBAND TUNING was more effective in the R-4C due to the much sharper bandpass filters in the i-f system.

The Drake R-4C and T-4XC were essentially general coverage and could transmit and receive continuously from 1.5 to 30 MHz in the HF spectrum.

> Note: There were some work-around issues close to the system i-f in the 5 MHz area. It is difficult – but not impossible – to use these radios on the 60-meter band.

In addition to great strides in i-f filtering and noise control in the R-4C Receiver, Drake made significant strides in the incorporation of solid-state circuitry in both the R-4C and the T-4XC. They also made a significant upgrade in the dial readout mechanical system making it much easier to read frequency. This feature also spread to the TR-4C series Transceivers. Frequency readout on the “C” series radios was much easier and more precise. Time was running out for vacuum tubes at Drake – the R-4 had 13 tubes that progressed to 6 tubes in the R-4C. The balance of the circuitry had moved to solid-state devices by the time of the R-4C. The T-4XC also benefited from this shift. All this allowed for lower current consumption and less heat as the line progressed through its life cycle.

Separate receivers and transmitters – models that could be interconnected to allow for transceive operation – were becoming rare when the “C-Line” was released. Kenwood and Yaesu also had separate receivers and transmitters in that time frame, but the Drake system was on the market after Kenwood and Yaesu left the scene and focused totally on transceivers. Use of these separate (receiver and transmitter) systems required a lot of interconnection. The VFO systems had to be switched between receiver and transmitter. Lower level i-f systems were interconnected to provide for best on frequency performance between the two radios, as well as transmit/receive antenna switching, indicator lamps to show which VFO was active, etc. The “C-Line” had simplified these interconnections compared to the earlier Drake “4-Line” separates but did require interconnection for. . .

1. Mute Line – allowed for receiver standby during transmit.
2. Anti-VOX – allowed for low level receiver audio to inhibit transmission caused by receiver audio.
3. Injection – Connects the R-4C Premixer System to the T-4XC.
4. Carrier Oscillator – Provided a means of connecting the T-4XC Carrier Oscillator to the R-4C. This phase locked the two units to insure same frequency operation when transceiver operation is used on either VFO.
5. PTO Lamp – allowed for the VFO in use to illuminate showing which was in control of operating frequency.
6. Antenna – this connection feeds the antenna line from the T/R relay in the transmitter.

There are other connections for the system, such as antenna input to the transmitter, ground, and all the items we are used to seeing. But, this was the beginning of the end for the separates concept – replaced by sophisticated transceivers with dual receivers (and more than “dual” these days) and the need for only an antenna and ground connection as well as a microphone and/or key.

We cannot leave the transition to the “C” series Drake radios without details on the improved dial mechanism and the change in front panel design.


R-4B (common to the R-4 and R-4A) front panel showing the tuning dial with the single clear disk handling tuning to 25 kHz marks. Note then the main tuning knob with 1 kHz registration marks – 25 of them on the knob skirt. Calibration of the 1 kHz dial skirt required moving the knob while holding the skirt in place to zero against the calibrator. The 25 kHz upper dial window readout is adjusted using the red lever to the right of the readout.

Notice the trim (satin clear aluminum) around the edges of the front panel. That feature is missing on the R-4C Receiver, below. This difference is present on all "C" series radios – and later accessory pieces. For instance, the MN-2000 Antenna Matching Network front panel changed after the introduction of the "C" series equipment.


R-4C front panel showing the dual disk clear dials for the readout. The 1 kHz marks are on the front clear disk while the 100 kHz markings are on the rear of the two clear disks. Holding the unmarked skirt of the tuning knob while turning the main dial allows for adjustment of the correct frequency. You can see that both units provide measurement accuracy to better than 1 kHz, but with the R-4C, one merely watches one readout area (vs. two with the R-4B).

**Upper Picture: K9VSK**
**Lower Picture: W9MXQ**

Knob layout changes rather significantly between the R-4/R-4A/R-4B and the later R-4C. Efforts were made with the R-4C to use any filter with any mode. Mode and AGC settings were more flexible with the R-4C than with the earlier receivers. Separating the common shaft Bandwidth and Passband Tuning controls on the earlier receiver with separate controls on the R-4C cause the R-4C to combine the AF and RF gain controls onto a concentric shaft. These were separate controls on the earlier receivers. My personal feeling is that the position of those controls – especially the AF Gain control – on the earlier receivers – was better ergonomics. Not all R-4C users would necessarily agree with me on that point, however.

The R-4, R-4A, and R-4B Receivers allowed for 10 extra 500 kHz coverage ranges between 1.5 and 30 MHz – in addition to the five crystals covering the 80, 40, 20, 15, and 10-meter bands. (Note that 160 meters appeared on the main band switch, but its range crystal must be accessed from the accessory 10 optional crystals.) The R-4C was similar but had 15 accessory crystal positions. The T-4XC was also general coverage but had only 4 accessory crystal positions in addition to the standard ham bands. This was identical to the accessory crystal availability on the T-4X and T-4XB.

During the run of the "C-Line," Drake introduced a rather revolutionary accessory, the FS-4 Synthesizer. The unit provided output for all necessary injection frequencies allowing the R-4 and T-4X series radios to run from 1.5 to 30 MHz. The FS-4 could feed the receiver and transmitter simultaneously – so only one unit was required. This now very rare accessory would also be made to work (with an internal oscillator crystal replacement) with the Drake SPR-4 and Drake 2C Receivers).


This FS-4 is part of the "C-Line" station at W9MXQ. Today the FS-4 units are very hard to find for sale. The unique crystal required for "4-Line" receivers and transmitters is no longer obtainable so an FS-4 buyer must be certain that the unit is not setup for SPR-4 or 2C receiver use. This is rarely easy to determine because in many cases the FS-4 units are traded repeatedly, and the seller has no idea of its internal setup.

**W9MXQ Photo**

Those familiar with the R-4C Receiver know that there were at least four changes in the radio over its life cycle. One of them, the third of the four (that we know about), involved an additional position for selectivity options, a changed front panel, and the addition of a crystal filter position on the radio's chassis.



The upper picture (to the left) shows the original R-4C front panel. Near the upper center of the panel you will see the Mode Switch with four position for AM, SSB, CW 1, and CW 2.

The lower picture shows the later (after the third revision) R-4C where the Mode Switch has five positions for AM, SSB, CW 1.5, CW 500, and CW 250.

In the later receiver the CW positions relate to specific filters. The CW 1.5 position is very handy for "Narrow SSB" reception in times of heavy QRM.

**Upper Picture: W9DYQ**
**Lower Picture: W9MXQ**

The four updates that are known to us today involved other significant changes that were not always visible. Many updates involved improvements in i-f capability. Some involved mechanical changes inside the radio that improved inter-stage shielding. Looking at a top view of the inside of an early and late R-4C shows much added shielding over the entire i-f tuning area in the center of the chassis.
Much of what you read in my previous article about the R-4, R-4A, R-4B and the T-4X and T-4XB relate also to the R-4C and T-4XC. And, small pieces of the previous article are repeated here. Most important of that repetition is the picture below that appears on the WB4HFN website for Drake radio collectors and appreciators. He says it all in this picture that chronicles all lines of Drake radios – so it is worth repeating . . .


**http://wb4hfn.com/DRAKE/DrakePageHome.htm**

I appreciate that you read my articles. Remember that I am open to questions and comments at my email address, W9MXQ@TWC.com.

**Notes:**

1. Thanks to W9DYQ who reviewed this article and offered user suggestions.
2. Readers needing information about identifying FS-4 Synthesizer models (R-4(x), SPR-4, or 2-C) feel free to contact me at W9MXQ@TWC.com for details.



**The entire article is available on-line, see**
**http://www.gars.org/newsletters/2020_11_GARZETTE.pdf**

# Georgia QSO Results




Georgia QSO Party 2020 Results

by Dave Slotter, W3DJS

I was hoping to be able to release the results of the 2020 Georgia QSO Party at a GARS Club Meeting, but COVID has not been cooperative unfortunately, so I would like to finally announce the results and winners of the 2020 Georgia QSO Party.

The Gwinnett Amateur Radio Society as a club finished in 8th place with 17 entries with a score of 71,364. This is a slight tick up from 2019 when GARS finished in 9th place with 3 entries and a score of 59,958. The obvious difference here is that 17 operators worked from their home QTH in 2020 versus the club primarily operating at the EAA hangar in 2019.

I am proud to be able to finally announce the individual GARS club winners. The same member placed first in both the CW and Mixed Operator categories, and that person is Mike Weathers, ND4V. Mike made 343 CW contacts and 17 Phone contacts. The other winner in the Phone category is member Joel Levine, WA4HNL with 176 Phone contacts. Congratulations to both of our winners!

I am looking forward to once again chairing the Georgia QSO Party in 2021, and I intend to drive GARS' effort whether it is in one location or many locations like we did for 2020. See you on the airwaves!

--

Dave Slotter, W3DJS

# GARS Membership

**New GARS Members in November 2020**

David Saroza (KO4EFM)

**Total Members as of November 1, 2020**
**323**

Join GARS members for our weekly breakfast gathering at

7:30 AM most Saturdays

Now at

Cracker Barrel Restaurant
75 Celebration Dr.
Suwanee, GA 30024

The following members are celebrating birthdays in October:

**HAPPY BIRTHDAY!! From All of Us at GARS**

John Bachtel (NR4JB)
Benjamin Bogard (KM4DE)
Pamela Brown (KJ4RYV)
Julia Collier
Lasburne Colquhoun (KK4IQG)
Drake Cullinan (KN4ZEY)
Anthony De Lucia (W4OG)
Christi Dickerson
Matthew Dyals (KN4WBL)
Robert Eybers (KN4WBM)
Puddin Garrison (KJ4QIB)
Eddie Geike (AK4WM)
Colt Goodrum
Eileen Kelley
Danny Kelley (KI4KXO)
Jack Kempster (KN4QMB)
John Kludt (K4SQC)
Karen Kregel (KC6JCX)
Al Ludwick (NN4ZZ)
Andrea Lynch (KM4OKX)
Gretchen Mann (W1MKW)
Donna McCord (KM4FMW)
Kathy Mellichamp
Nick Nikley (N0NCQ)
Sue Pannell
Kevin Scott (K4GTR)
Andre Steyn (W7ALS)
Lawrence Teper (KN4CGP)
Jim Webb (W4NTA)
Nova Whatley (KF4HLG)
Karen Whited (AB4NW)

## GARS MEMBERSHIP

Your current GARS membership status is shown in the monthly newsletter e-mail towards the bottom of the message.

To become a GARS member, or to renew your GARS membership, please visit our website—http://www.gars.org

To make changes to your GARS membership (moved, new e-mail address, new phone number, etc.), please e-mail the Membership Committee - membership@gars.org

You can renew or update your Amateur Radio license information with the FCC at their website for free http://wireless.fcc.gov/uls/index.htm?job=home

To update your ARRL information, please visit their website - http://www.arrl.org

Membership Chair: Karen Albritton, KI4HPP

Committee Members: Dave Bruse, W4DTR, Pam Meridy, WB1AKQ,

Ivette Santiago, KN4OYE, Cathy Kelley, KN4DM

## Repeater Status

| | |
|---|---|
| 6M | Currently down |
| 147.075 | Operational in Snellville |
| 147.255 | Operational in Snellville |
| 224.580 | Operational in Grayson |
| 442.100 | Operational at Goshen Springs |
| 442.325 | Operational in Buford |
| 444.525 | Operational in Snellville |

Link remote receivers being added

## Donating to GARS

Your GARS donation can be used for a certain purpose by donating to one of these funds:

- GARS SK Memorial Fund for Education (to remember and honor Silent Keys);
- GARS Scholarship Fund (Administered by the ARRL for awarding scholarships);
- GARS General Fund (any club purpose).

GARS has joined these rewards programs (a portion of every purchase you make through these merchants may be donated to GARS):

- Amazon Smiles;
- Kroger Community Rewards program.

For more information on how to sign up for these rewards programs, or to donate to GARS, visit http://gars.org/gars/donations-to-the-club

## GARS on Social Media

**Discord Request:**
http://gars.org/discord

**Groups.io:**
http://gars.org/groups.io

**Visit GARS on Facebook:**
http://gars.org/facebook

**Follow GARS on Twitter:**
http://gars.org/twitter

**Join GARS on YouTube:**
http://gars.org/youtube

| Officers | | |
|---|---|---|
| John Davis, President | WB4QDX |  |
| Sandy Jackson, Vice President | KJ4DRO |  |
| Joe Biddle, Secretary | AD4PZ |  |
| Pam Meridy, Treasurer | WB1AKQ |  |
| Randy Collins, Program Manager | N4COR |  |
| **Managers and Committee Chairs** | | |
| Karen Albritton, Membership Chair | KI4HPP |  |
| Dave Bruse, VE Team Leader | W4DTR |  |
| David Adcock, Webmaster and Field Day Chair | KA4KKF |  |
| Ralph Pickwick, Apparel Manager and Education Chair | KJ4CNC |  |
| Glen Wendt, TechFest Chair | W3WWT |  |
| Bob Hoffmann, GARzette Editor | K4CQO |  |
| Eddie Foust, Repeater Chair | WD4JEM |  |
| Mike Weathers, WAS / DXCC QSL Card Checker and Historian | ND4V |  |
| Chuck McCord, Net Manager | KK4TKJ |  |
| Technical / RFI Advisor | Open |  |
| Joe Biddle, Winter Field Day Chair | AD4PZ |  |
| Kyle Albritton, Multimedia Chair | W4KDA |  |
| Don Stewart, Elmer Manager | KW4AL |  |
| Dave Slotter, Georgia QSO Party Chair, Workshop Leader and Public Information Officer | W3DJS |  |

| Directors and Trustees | | | |
|---|---|---|---|
| Kyle Albritton, W4KDA |  | Rick Cobb, N4XYY |  |
| Mike Weathers, ND4V |  | Bill Cherepy, WB4WTN W4GR Trustee |  |

# GARS Meeting Minutes

## Gwinnett Amateur Radio Society GENERAL Meeting Minutes 10/13/2020

**President John Davis (WB4QDX) and Opened the meeting at 7:00pm and Closed the meeting at 8:00pm**

**(Covid-19 Alternative Online)**

~~EAA Facility, 690 Hanger Rd. Lawrenceville, GA.~~

**Online participants: 50**

**Treasurer Report: Pam (WB1AKQ)** presented the financial report.

**Membership Report: John** reported the Membership is at **[ 336 ]**.

**Programs – Randy (N4COR)**

The announced next month's program:

November - Steve Ellington (N4LQ) Mult-Band / End fed antennas

December – Looking for a Holiday theme event

January - Lee Johnson (N4WYE) Nano VNA Virtual Network Analyzers

**Workshop** – **Dave (W3DJS)** announced that the Workshop is looking for speakers

**October – Dallas (KD4HNX)** announces that Mark (N7GRB) showing the Ridgid Pro Toolbox and Cart Transformation to VHF/UHF Radio Go-Box Set

**JOTA – Steve (WB2OGY)** gave details on this Saturday's JOTA activity at the Lawrenceville VFW from 9-4pm and looking for some volunteers.

**Meeting Location – Joel Lavine** announced that the airport hanger is open but will be closed on the weekends in Mid-November.

**Special Event - David (KA4KKF)** mentions a volunteer opportunity for folks to operate a Stone Mountain Alford Memorial Radio Club for a Special Event of Stations with 1x1 call signs.

**Garzette** – **Bob (K4CQO** is in transition to take over as editor of the Garzette from the outgoing **Editor Bill (WB2RIS)**.

John gave praise to Bill for doing a great job with the Garzette for several years.

**Fund Raiser (DogShow) – David (KA4KKF)** mentions that we will have a Dog Show to work on **March 31st – April 4th.** Approximately ~15 volunteers will be needed.

**Program – Mike (ND4V) - Basics of DX**

****Event dates** are recorded at the time of the General Meeting and subject to change.

Submitted by: **Joe Biddle (AD4PZ) GARS Secretary**

## Gwinnett Amateur Radio Society Workshop Minutes

### 10/20/2020

**Number in Attendance:** 26

**Workshop Topic:** RIDGID Pro Toolbox and Cart Transformation to VHF/UHF Radio Go-Box Set

**Presenter:** Mark Bell N7GRB

**Brief Summary:** Mark took us through his thought process of selecting a tool box set that is heavy duty, stackable, lockable, moisture resistant, and lower cost that using Pelican cases for building his VHF/UHF Go-Box. He included wiring diagrams, power connections for AC/DC, construction techniques and considerations he made along the way. Included are photos of other Go-Boxes that inspired him.

**Mark's presentation is posted at**: http://www.gars.org/gars/previous-workshops/

**Submitted by**: Dallas KD4HNX

# By-Laws Update

The following By-Law update is to be presented at the next GARS meeting and voted upon:

Here is my proposed change:

1. Remove the address from the title of the ByLaws.
2. Add the following language as Section A3. "The mailing address of GARS of shall be selected and set by the Officers."

# Events – GARS and others

## ARRL CONTESTING INFO

**From ARRL Contest Calendar**
**> For more information click the links <**

**November 2020**
7-9 Nov. Sweepstakes - CW
21-23 Nov. Sweepstakes - Phone
28-29 EME - 50 to 1296 MHz

**December 2020**
4-6 160 Meter
12-13 10 Meter
20 Rookie Roundup–CW

**January 2021**
1 Straight Key Night
2 Kid's Day
2-3 RTTY Roundup
16-18 January VHF Sweepstakes

**February 2021**
8-12 School Club Roundup
20-21 International DX – CW

**March 2021**
6-7 International DX– Phone

**April 2021**
11 Rookie Roundup – Phone

**(no ARRL contests in May)**

**June 2021**
12-14 June VHF
19 Kid's Day
26-27 Field Day

**July 2021**
10-11 IARU HF World Championship

**August 2021**
7-8 222 MHz and Up Distance Contest
14-15 10 GHz & Up – Round 1
15 Rookie Roundup – RTTY

**September 2021**
TBD EME - 2.3 GHz & Up
11-13 September VHF
18-19 10 GHz & Up - Round 2

**October 2021**
18-22 School Club Roundup
TBD EME - 50 to 1296 MHz

**For more information:**
http://www.arrl.org/contest-calendar

## HAMFEST CALENDAR

**[Please confirm the status of a hamfest before making plans to attend. – Ed.]**

**11/07/2020 - 11/08/2020**
Stone Mountain Hamfest, ARRL GA Section Convention **(CANCELLED)**
**Location:** Lawrenceville, GA
**Type: ARRL Convention**
**Sponsor: Alford Memorial Radio Club & Gwinnett Amateur Radio Society**
**Website:** http://www.stonemountainhamfest.com/

**11/21/2020**
Montgomery ARC Hamfest, ARRL Alabama State Convention 2020
**Location:** Montgomery, AL
**Type: ARRL Convention**
**Sponsor: Montgomery Amateur Radio Club**
**Website:** https://w4ap.org/marc/hamfest

**12/11/2020 - 12/12/2020**
Tampa Bay Hamfest, ARRL Florida State Convention
**Location:** Plant City, FL
**Type: ARRL Convention**
**Sponsor: Florida Gulf Coast Amateur Radio Council**
**Website:** http://www.tampabayhamfest.com
**For more information:** http://www.arrl.org/hamfests-and-conventions-calendar
**When searching by division, remember some states adjacent to GA are in different divisions:**
**Southeastern: GA, AL, FL Delta: TN Roanoke: NC, SC**

## GARS Events Calendar for 2020

| | |
|---|---|
| TechFest (www.techfest.info) | January 18 |
| Winter Field Day | January 25&26 |
| General HamCram | TBD |
| **Dog Show Fundraiser** | **Canceled for 2020** |
| Georgia QSO Party | April 11 (home ops) |
| North metro area Fox Hunt | April |
| **Memorial Day Parade** | **Canceled for 2020** |
| **ARC/KARC Hamfest** | **Canceled for 2020** |
| Field Day | June 27&28 (home ops) |
| Tech HamCrams | **Mar (canceled),** Nov |
| JOTA | October |
| Maker Faire | TBD |
| Stone Mt. Hamfest | **Canceled for 2020** |
| Holiday Party | **Cancelled for 2020** |
| TechFest (www.techfest.info) | **Cancelled for 2021** |
| Winter Field Day | Jan 30,31 2021 - Stay tuned |

## GARS Recurring Calendar

- 2nd Tuesday of the month at 7 pm (except December): Monthly Club Meeting **(online until further notice)**
- 3rd Tuesday of the month at 7 pm (except December): Monthly Workshop **(online until further notice)**
- 2nd Sunday of the Month at 2 pm **(suspended until further notice)**:
  GARS Ham Exam Session
  Fire Station #24
  2735 Mall of Georgia Blvd
  Buford, GA 30519
- Every Monday at 7:30 pm: GARS Want, Swap, Sell, and Information Net on the GARS 147.075 MHz repeater
- Every Monday at 8:30 pm: ARES Training on the GARS 147.075 MHz repeater
- Most Saturdays at 7:30 am :
  GARS Weekly Breakfast
  Cracker Barrel Restaurant
  75 Celebration Dr., Suwanee, GA 30024

## GARS CALENDAR FOR November 20200

| SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---|---|---|---|---|---|---|
| 1 | 2<br>**7:30 – 8:00 PM GARS 2M Net** | 3 | 4 | 5 | 6 | 7<br>**Breakfast at Cracker Barrel in Suwanee 7:30 AM** |
| 8<br>**GARS VE Team Session (Cancelled)** | 9<br>**7:30 – 8:00 PM GARS 2M Net** | 10<br>**7:30 – 8:00 PM GARS Meeting (Online)** | 11 | 12 | 13 | 14<br>**Breakfast at Cracker Barrel in Suwanee 7:30 AM** |
| 15 | 16<br>**7:30 – 8:00 PM GARS 2M Net** | 17<br>**7:30 – 8:00 PM GARS Workshop (Online)** | 18 | 19 | 20 | 21<br>**Breakfast at Cracker Barrel in Suwanee 7:30 AM** |
| 22 | 23<br>**7:30 – 8:00 PM GARS 2M Net** | 24 | 25 | 26<br>**Thanksgiving** | 27 | 28<br>**Breakfast at Cracker Barrel in Suwanee 7:30 AM** |
| 29 | 30<br>**7:30 – 8:00 PM GARS 2M Net** | | | | | |

# Active VE Testing Sessions

## North Fulton Amateur Radio League (NFARL)

The VE Team will be holding an exam session on Saturday, October 10th. [The next session is scheduled for. November 14th. Check http://www.nfarl.org/testSessions.html for more information. - Ed.] All license class exams will be available. The exam session will be held at Slopes BBQ, 34 Crossville Road, Roswell, GA, 30075. Hours are 9:00 - 11:00 AM.
The exam fee is $15 cash. Other Details:

Seating limited to 8 candidates.
No walk-ins accepted.

Pre-registration via email to nv4c.ian@gmail.com required. Phone reservations not accepted.

Please do NOT register if you are not sure you will make it. Seating is limited and we want to be sure everyone who wants to test can do so.

Registration will close at 11:59 PM on Thursday, July 9. That gives Ian time to know what to expect Saturday, and accommodate replacements for cancellations.

Masks required. No mask, no admittance.

Enter the building via the side entrance.

Please pre-register with the FCC for an FCC Registration Number at https://apps.fcc.gov/cores/userLogin.do

Please pre-fill and bring the NCVEC Quick Form 605, found at http://www.arrl.org/files/file/VEs/605%20Form_2020_Fully%20Interactive.pdf

Please also bring the following:

Government-issued photo ID
Pen and pencil
If upgrading, copy of current license
Calculator (as stand-alone device) if you want to use one

Source: http://www.nfarl.org/testSessions.html

## On-Line Testing at hamstudy.org

### So you want to take a remote exam…

If you read our recent press release then you already know about the group that grew up to take on this new challenge and it has been our privilege to provide the software that nearly all of them use.

**To find an exam session**, go to https://ham.study/sessions/online

## Cherokee Amateur Radio Society

We may only be able to accommodate a few simultaneous tests so we can maintain the safety of everyone. We recommend highly that you register if you want to be accommodated.

Register with John Reynolds (VEC) W4TXA
Phone: (770) 715-9640
Email: wx4txa.john@gmail.com

Where: Cherokee County Charter Academy. 2126 Sixes Road, Canton GA, 30114 (We will be outside, under cover sidewalk, West/Left side of Building)

Time : 1:00PM (1300 - 1430) on (date TBD)

Testing will be outdoors, but requires the wearing of a mask to keep everyone safe.

For more information, please visit their website at https://www.wx4car.org/

## Stephens County Amateur Radio Society

VE session (date TBD) from 1 till 4 pm in Lavonia GA at 1240 E. Main St, at the white gazebo. [Lavonia, GA is off I-85 near the Georgia / North Carolina border... - Ed.]

If you need to test please get a hold of us at ( kr4cw1@gmail.com. ) We are working on a 2nd test session , if you would like to be a part of it please send us a contact email to club email and will be glad to help you on the prelist of this….

We will be giving All Tests ( Tech, General, Extra ) Cost will be $15.00 must have ID and copy of License, if you're upgrading…if it's your first time taking a test please go to the FCC website and sign up for a FRN number and create your Account. Here is the link to get started: https://apps.fcc.gov/coresWeb/regEntityType.do

Please make sure you print this off and bring with you, so you will have your FRN number. Without this we cannot submit your test.

Source: http://www.sc-ars.org/

# Local VE Sessions

**[Please check with each session contact for current status.—Ed.]**

*GARS publishes Metro Atlanta VE exam schedules as a service and is not responsible for errors or changes. Call and confirm schedules before going. All sessions are walk-in, unless otherwise noted. Take copies of current license and certificate of completed elements with you to all sessions. Find additional sessions online at http://www.arrl-ga.org*

**First Sunday, ODD Months**
2 pm (Jan, Mar, May, Jul, Sep, & Nov)
VEC: WCARS
Braselton Public Utility Building
4986 Highway 53, Braselton, GA
Contact: Roger Gibson, WB4T
(770) 271-4210 or (770) 712-9560
w4rlg@bellsouth.net

**First Sunday, EVEN Months**
2 pm (Feb, Apr, Jun, Aug, Oct, Dec)
VEC: WCARS
Hall County EOC
470 Crescent Dr. Gainesville, Ga.
Contact: Perry Roper, KO4RD
(770) 536-3056

**Second Saturday**
10:00 AM
Alpharetta North Park, Adult Activities Center
13450 Cogburn Rd, Alpharetta, GA 30004
Contact: Ian Kahn, KM4IK
E-mail: km4ik.ian@gmail.com

**Third Saturday, ODD Months**
VEC: ARRL
9:30 am (Walk-ins welcome)
Stone Mountain Masonic Lodge
840 VFW Drive
Stone Mountain, GA 30083
Contact: Frank Haynes, KV4SP
Email: fhaynes@vatmom.net
(678) 467-3712

**First Sunday, EVEN Months**
VEC: WCARS and W5YI
2 pm @ Barrow Co. Emerg. Serv. Bldg
66 McElroy Street
Winder, GA 30680
Contact: Mike Wolcott, W4WYI
(404) 281-6581
E-mail: W4WYI@ARRL.net

**Fourth Tuesday**
ARRL VEC
7 pm @ United Way Service Center
6279 Fairburn Rd., Douglasville
Contact: Jessie Clower, KB4WFK
(770) 942-6466

**Fourth Sunday**
2:30 pm Georgia Tech
VanLeer Elec. Building
Rm. W218, 777 Atlantic Dr.
For more information go to www.w4aql.com and click on "Test Sessions"

## GARS VE Testing

**Second Sunday**
VEC: W5YI
2 pm
Fire Station #24
Mall of Georgia Boulevard
Buford, GA 30519
Contact: Dave Bruse, W4DTR
E-mail: exams@gars.org

(**Suspended** until further notice)

## September GARS Results

No GARS VE Session.

[Other local clubs are starting to hold limited VE sessions. See the articles on Page 6 in this issue of the GARzette for more details. —Ed.]

GARS VE Team Leaders
E-mail: exams@gars.org

GARS VE Website:
http://gars.org/exams


**[Please check with each club for meeting schedule and method (online, etc.) - Ed.]**

**First Tuesday**
Kennehoochee ARC
Fire Station #1, Training Room
112 Haynes Street, Marietta, GA
Meeting begins at 7:00pm
Talk In 146.880(-)

**First Thursday**
Atlanta Radio Club
Georgia Red Cross HQ
1955 Monroe Dr., Atlanta, GA
Meeting is at 7:30pm
Talk In -146.820(-)

N.E. Georgia ARC
Commerce Public Library
1344 South Broad Street, Commerce, GA
Meeting is at 6:30pm
Talk In - 147.225(+), PL 123.0

**Second Monday**
Georgia Tech ARC
Room W218
Van Leer Electrical Engineering Bldg.
Georgia Tech Campus
Meeting at 7:00pm

Sawnee Amateur Radio Association
Beaver Toyota
1875 Buford Highway, Cumming, GA
Meeting at 6:30

**Second Thursday**
Alford Memorial Radio Club
Annistown Road Baptist Church
Annistown Rd & Spain Rd
Stone Mountain, GA
Dinner at 6:00pm, Meeting at 7:30pm
Talk In - 146.760(-)

**Second Saturday**
North GA QRP Club
Board Room of The Shepherd Center
2020 Peachtree Rd, NW, Atlanta, GA
at 10:00 AM

**Third Tuesday**
North Fulton Amateur Radio League
Alpharetta Recreation & Parks Dept.
Alpharetta Adult Activity Center
13450 Cogburn Road, Alpharetta, GA
meeting at 7:30pm
Talk In - 145.47(-)
For more information, go to:
http://www.gars.org/

## GARS Supporters



[Note: HRO is now open to walk in traffic on a limited basis at all locations. - Ed.]