# THE RICHMOND HAM

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*P.O. Box 35279, Richmond, Virginia 23235*

**September 2019**

**THE RICHMOND AMATEUR RADIO CLUB** will meet Friday, September 13th 2019, 7:00PM, at the Bon Air United Methodist Church, 1645 Buford Road.

**Coming Events:**

**RARC** VE testing session Sept 14th

Field Day Of The Past, Sept 20-22

Radio Makers Fest, Saturday November 9th

**This Month's Program:** A walk down memory lane with long time radioman and ham Curtis Holsopple K9CH.

## Richmond Amateur Radio Club

Meeting Minutes

August 9, 2019

The regular meeting of the Richmond Amateur Radio Club was called to order at 19:00 on August 9th, 2019 at Bon Air United Methodist Church by President John DeMajo, (K5HTZ).

**Members Present**

All present signed RARC Log Book

**Last month's Minutes –** Motion to accept by John DeMajo (K5HTZ) , seconded by Ken Leidner (WV0L), approved unanimously.

**Treasurer's Report**

Ken Leidner, (WV0L) gave the Treasurer's Report. We had an ending balance of $10,427.62. The Report was approved unanimously.

**New Business and Announcements**

1) A Radio Maker Fest is being planned at the Southern Railway Museum on the 2nd weekend in November

2) Sept 14th VE testing using Laurel – no charge for tests. A new Baofeng handheld will be donated to each new Tech.

3)J ohn DeMajo, (K5HTZ) has made Radios, Antennas and other gear available to set up an Amateur Radio exhibit at Field Day of the Past on September 20-22

4) Show and Tell: Alex demonstrated that you don't need expensive semiconductor building equipment to build a USB Drive.

**Adjournment**

Meeting was adjourned by voice vote.

**Program**

Win Grant, W4WIN gave an in depth presentation on Antennas, Zoning and HOA's

The next general meeting will be at 19:00 on September 13th, 2019 at Bon Air United Methodist Church.

Minutes respectfully submitted by: David F. Robinson ,(KJ4LHP),

## From The Prez

As we round the corner toward the end of another successful year, I want to thank all those who supported our club, and who participated in our programs and projects. Quite a few people have worked hard to give us great meeting programs, a successful license school and exam program, the remote station, and many other club benefits. Our mid-year flea market was a great success, and I want to again thank all those who contributed items and who worked the sale. It has been a pleasure
working alongside members and a board of directors who are very professional, and have the interests of the club and their fellow members interests at heart. We are coming upon an election for your next year's leadership. I hope to be able to continue to serve you as your president. I am always open to suggestions on how to improve our club, and I welcome your input and participation in our chapter programs. On that subject, we are in need of monthly presentations for
the coming year. If you have something to share, please consider presenting a meeting program. People are interested in what you have to say, so don't be shy.

John, K5HTZ

## RARC VE News
## FCC EXAMS EVERY OTHER MONTH

RARC offers VE Testing Sessions on the second Saturday of odd months except June to cover Field Day instead of July.

The September testing session will be on the 14th at the Bon Air United Methodist Church, 9 AM.

If you have questions about a session, please see our website, ***www.rarclub.net*** or contact Allan, WA3J, at 804-399-8724, or ve@rarclub.net

### Club Info...

RARC meets on the second Friday of each month at 7:00 PM, at the Bon Air United Methodist Church, 1645 Buford Road.

We offer 10-week license prep classes in September and March with exams following. Members provide VE testing sessions on odd-months during the year.

### Join the Richmond Amateur Radio Club.

You don't have to have a ham license, just have a genuine interest in the hobby.

Annual Dues are:

| | |
|---|---|
| 80 and over | $0 |
| Regular Membership | $20.00 |

Lots of information about the Club and our activities is available on our website, www.rarclub.net.

### Nets

RARC has the first and only D-STAR digital repeater in the area. 147.255 (+ 600), 443.7125 (+ 5) and now 1284.0000 (-20). In addition to our Wednesday local D Star net (below), we link the D Star VHF module for the National Capital Region D Star Net on Wednesday nights at 9pm. On Tuesday nights at 9pm, we link our VHF module to the North Carolina D Star Net, and on Sunday nights at 9pm to the South Eastern D Star Weather Net.

Beginning on March 5, 2014, the RARC D Star Net which meets on Wednesday nights at 8:00pm will be accessible on our three D Star modules, all of which will be linked.

You can use any of the three frequencies, 2 meters, 70 cm or 23 cm, and you should hear and be heard by everyone.

If you participate in the net via DVAP or DV Dongle, you must link your device to Ref 062D rather than to any of our modules. Since the W4FJ stack will all be linked to Ref 062D, anyone linked to that reflector will be connected to the net.

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| ***Sunday*** | 7:00 pm | 50.135 | USB |
| | 7:30 pm | 52.525 | FM |
| ***Wednesday*** | 7:00 pm | 28.475 | USB |
| | 8:00 pm | 147.255 | D-Star Rptr |
| | 8:15 pm | 145.730 | Packet |

### *MRA*

Interested in information or support of the **Metropolitan Repeater Association (MRA)?**
Call Ed, KG4SNK, at 804-513-1947. The sole business of the MRA is to own, operate and maintain the 145.430 repeater.

### *Show and Tell!*

If you have an item, idea, latest and greatest, or whatever gizmo; please bring it to the RARC meeting. We have a table (usually) set up near the front where you can place your item and share/discuss it with others as they arrive. We also have a section of the agenda set aside for members to discuss their "Show and Tell" item(s). No need to be tentative; we are INTERESTED in what you are doing, how you are doing it and, in true Ham fashion, how much it costs!

## RARC Volunteers Needed

The Richmond Amateur Radio Club has been asked to participate in Field Day Of The Past in Goochland in September. I plan to put an all band transceiver along with an all band MFJ vertical on a tripod on site as a special events station. The operating position will be in a restored caboose that sits on the track directly behind the Pullman car display that is manned by the Richmond Railroad Club guys. We are in need of volunteers to staff the station for the three day weekend. Customarily, there are an estimated 30,000+ visitors to the fair each year, so this is a good chance to show off Amateur Radio to a lot of people in a small time frame. Volunteers will be admitted to the fair for free, so it's a good chance to see some really interesting exhibits at Field Day of the Past too. If anyone would be kind enough to help out with this, please contact me at any of the contact points listed below. The dates are September 20-22 which is Friday, Saturday and Sunday.
Contact: John DeMajo, K5HTZ at
504-858-7689 or jdemajo@demajo.net
Thanks and 73

John, K5HTZ

## New Uninterruptible Power Supply installed for remote station

A test of the installed UPS for the RARC remote station showed that whenever there was a power outage, we were down, no real battery backup. Our only protection was that if the power came back and then off again, we were offline and protected from a yoyo type power fluctuation which can destroy a hard drive.

We bought a new UPS of the sort that's less likely

to crash the system. The installation when well. When completed, a self-test was performed and as expected there was no issue. With the new unit we have around 104 minutes of battery backup time. If the power outage is less than that, then we never "lose power". If it is longer than 99 minutes, 5 minutes before the battery is drained, the PC performs a shutdown. No more hard crashes.

One other thing to note: With the new UPS you are always running off of the battery thru the inverter, never off the line power. So, when you lose power the battery is just not being recharged. No change to the output power.

This change should prevent anyone from having to go to the church to get us back on the air after a power outage no matter how long it is.

Ken Leidner, WV0L

## 2019 RARC ELECTION ENDORSEMENTS and Recognition of Activities Leadership

RARC Club Rules require that there be an election of six Officers each October. These are; President, Vice President, Secretary, Treasurer, and two Directors.

At the September meeting a Nominating Committee publishes its endorsements. The election is then held at the October meeting after any member in good standing is given the opportunity to make a nomination from the floor.

Installation of the newly elected Officers is held at the November meeting.

Nomination Committee endorsements for 2019 - 2020 are:

President: **John DeMajo, K5HTZ**
Vice President: **Allan Johnson, WA3J**
Secretary: **Dave Robinson, KJ4LHP**
Treasurer: **Ken Leidner, WV0L**
Director: **Win Grant, W4WIN**
Director: **Chris Poland-Thomas, KC1E**

**Members, 2019 Nomination Committee:**
John DeMajo, Ex-Offiacio
Mac McNeer, K4YEF, Chair
Bruce MacAlister, W4BRU
Marshal Ervine, N4XBP
Tom Flippin, KD4CMK
Win Grant, W4WIN

**Additional Administrative Board members (Director):**

Immediate Past Present: Jim Bates,K8OI
President's appointment: Tom Ebbert, KG4BIZ
Registered Agent: Mac Mcneer, K4YEF

**Leaders and Coordinators, RARC Activities:**

Editor, Newsletter: Armand Hamel, WA1UQO
Publisher, Newsletter: Ken Leidner, WV0L
Chair, D-Star Repeater Committee: Win Grant: W4WIN
Head, License Preparatory school: Bruce MacAlister, W4BRU
RARC Webmaster: Bruce MacAlister, W4BRU
Leader, Volunteer Examiner Team: Allan Johnson, WA3J
Leader, Builder's Group, Ken Zutavern, K4ZUT
Meeting Facilities Liaison, Tom Flippin, KD4CMK
RARC Property Custodian: Tom Flippin, KD4CMK
Leader, Legislative Impact Response, Win Grant, W4WIN
Leader, Meeting Fund Raising Activities: Judi Lehuqeut, N4DI
D Star Net Control: Armand Hamel, WA1UQO
Eighty, Ten, and Six Meter Net Control: Tom Ebbert, KG4BIZ

**RARC Call Sign Trustees:**

W4FJ: Mike Owens, K4RKO
W4ZA: Mac McNeer, K4YEF

Questions may be directed to John DeMajo, K5HTZ, President

## THE HISTORY OF THE MICROPHONE

To most Hams, microphones are probably our most important station feature next to our rigs and antennae. While station mikes can range from those built into hand-held radios, to PTT mikes on spiral cables, to high quality desk and boom mikes, let us not forget that just over a century ago, we were just discovering the device that could convert sound to electrical signals. Much has happened along that road, and today there are mikes that process speech and music to the extent that live concert hall performances can be brought to our home and car FM radios.

We joke about certain mikes that sound like cans with string attached, but it all actually began in the year 1665 when physicist Robert Hooke developed just such a system employing two acoustic cups connected by a string. In 1827, Sir Charles Wheatstone, a physicist working with the study of sound waves, developed a crude device that could convert sound waves into electrical energy. It is he who coined the term “Microphone”.

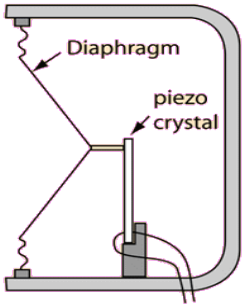
In 1876, Emile Berliner, the inventor of the flat disk phonograph (Edison's phonograph used cylinders), was able to modify Alexander Bell's telephone sound device into a system that could be used with vacuum tube amplification. That invention set the stage for microphone technology through the first two decades of radio and electronic sound amplification.

*An example of an early “Bell” microphone from the Museum Of Yesterday collection.*

In the early 1920s, Berliner's development of electrically amplified sound was put to use in public assembly locations. In theaters, although sound motion pictures were still a decade away, public address sound systems were being installed to facilitate live acts on stage. By November of 1920, a new use was found for the microphone. Vacuum tube technology had now enabled not only amplification, but also oscillation that allowed the transmission and reception of modulated radio waves. The microphone became the link that permitted speech and music to be transmitted over the radio, and the first commercial sound broadcast of the Harding-Cox election returns on KDKA, signaled a new era in communications.

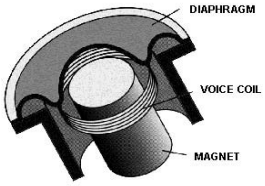
*Commercial broadcast carbon microphone on special "low noise" suspension stand.*

Early broadcasting and audio systems utilized carbon microphones similar to those used in early telephones. As variable resistors that change value as the sound waves strike a disk that compresses the carbon granules, these microphones require an electrical "bias" voltage to effect operation. Later into the 1920s and 1930s, the carbon mike began to give way to microphones that operated on magnetic and piezo-electric principles.




*Piezo-electric microphones rely on a diaphragm applying pressure to a special crystal, which generates a voltage.*

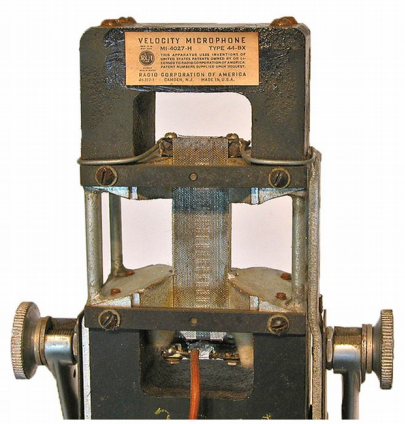
The next big development was the Dynamic microphone. Basically, dynamic microphones rely on a coil and armature design. The armature is mechanically connected to a sound sensing plate or diaphragm. As sound waves strike the plate, the magnetic armature moves within the surrounding coil of wire, thus producing small electrical signals. The armatures can be permanent magnets, or electro-magnets, in which case a bias voltage must be applied in order to make the microphone operate.




*Internal components of a Dynamic microphone.*

Dynamic microphones are used in most consumer and applications today. The sound produced by a good quality dynamic microphone is adequate for home recording, amateur radio communications and public address use. While the principle of induction generated output microphones has not changed a lot, there is still a variation of the dynamic microphone or condenser microphone that stands out when it comes to sound quality.

As high fidelity recording, and high quality network broadcasting came to be, there was a demand for a microphone that exceeded all others in its ability to reproduce sound in a form that was as accurate as the original sound itself. The first microphones that fit this requirement were called “Ribbon” or velocity microphones. The most popular microphones, which became the iconic of mid-century radio and television broadcasting, as well as the recording industry, were the RCA line of studio microphones in the RCA-44 and 77 series. Considered the “Cadillac” of microphones, examples are highly coveted today because, despite improvements in amplification systems, these microphones still capture audio at a quality that has yet to be exceeded. In fact, present day manufacturers are copying the design of the RCA ribbon mikes and incorporating the features into high quality microphones currently being offered.




*The internal components of a “Ribbon” microphone.*

The “ribbon” microphone employs a thin corrugated membrane of metal suspended between magnets. As sound strikes the ribbon, it moves in relation to the coils, thus generating a varying voltage that represents the sound being detected. Because of the delicacy of the ribbon, even the faintest sounds can be detected, and with extreme realism when compared to the original sound waves.

*A 1940s broadcast, from NBC radio, shows comedian Groucho Marx with a contestant on his “You Bet Your Life” comedy-quiz program. In the foreground are examples of the RCA 44 and 77 mikes.*

Today, audio engineers and collectors recognize the quality that was built into these turn-of-the-Century audio devices. The few remaining working examples around today, are now treated as gold by both audiophiles and collectors. While most Ham operators today are using dynamic microphones in their stations, it is good to step back and see how these devices evolved, and what was their finest hour.

## Gear needed for Radio Makers Fest

Saturday November 9th we hams are gathering for a radio maker or builder exhibition for the public at the Railroad History Museum on Hull street just south of the Mayo (14th street) bridge. We need stuff:

**CW demo station at dispatcher's desk**

- A small HF rig, key, and power supply to squeeze onto the dispatcher's desk to demo CW.
- One HF vertical antenna, preferably for 40m and 20m. We'll be doing CW with it.
- A laptop that can convert CW and display the text for the visitors. It also needs a speaker so folk can hear the CW. fldigi would do it but there might be something better.
- An interface between the CW transceiver and the computer to get the CW.

**SSB demo station in the caboose**

- An HF rig and power supply for the SSB station in the caboose, 100-watts preferred.
- Two 20- to 30-foot insulated poles (usually they're fiberglass push-up) that we can anchor against fence posts and hang an antenna on.
- An HF antenna for the SSB station. Given propagation, it should cover 40m, 20m, and maybe 10m. We have about 100-feet of clear space for it that we will put up poles for. Endfed Zepp, OCFD, or a dipole would all work.
- An HF tuner for the SSB station just in case.

**Receive station with spectrum display in freight area**

- An HF and VHF SDR receiver for the freight area demonstration.
- A receiver loop antenna for the SDR. It will be used inside.
- A computer with SDR software and a spectrum display. It needs a VGA output so it can be displayed with an existing projector.

**Builder-maker displays on table in freight area**

(This is what we usually display at the RVA MakerFest at the science museum. That festival will not happen in 2019.)

- Built, partially build, and bag-of-parts kits to show what we make and how we make it.
- Poster of pictures and ham count got lots of reads (W4BRU)
- Ham bands poster
- RARC banner
- Promotional ARRL handouts
- RARC "business" cards.
- Selection of *QST* and *CQ* mags to read
- Soldering gear: iron, hand-tools, meters, maybe a 'scope
- A robot or K4ZUT at a table putting together a kit.

If you've got any of this and will loan it, write (w4bru@arrl.net) or call (804-353-4269) Bruce MacAlister to volunteer the gear.

## The SWAP SHOP

Club members may list their wares in the newsletter. Send descriptive information to Armand at wa1uqo@arrl.net, or call me at 508-838-8353. The Swap Shop is presented in the newsletter as a benefit to our members. RARC takes no responsibility for items sold or traded in this newsletter. The ad will appear three times unless extended. Interested parties will contact you directly. ***You must be an RARC member to place an ad.***

## Wanted

Wanted: one (1) Arduino UNO main board. Will buy or trade.
Contact Alex Sahhar KN4QGQ at agsahhar@gmail.com

A donation of an older 2 meter rig (base or mobile, it doesn't matter) that doesn't do the CTCSS (PL) tones. I want to try creating my own tone generator to make these old radios work with the local repeaters. If successful, I will share the schematics and code with the group. The radio needs to be in working condition. Thank you. Please call Dan ( w4erf ) 540-872-5946 or email chronobot2001@gmail.com

**For Sale:** Kenwood TS430s, PS430 power supply and AT250 antenna tuner for sale $950 plus shipping in US. It passed all the tests, USB, LSB, CW & AM on the Ham bands. Bought new in the box, 1984. call Bruce Haynes at brucehaynes@comcast.net

**For Sale:** Kenwood HF Transceiver TS-440S, 80 - 10 M, with built in antenna tuner; matching power supply PS-430. microphone, CW key, manual. Excellent condition. $350.

Aluminum 30 foot triangular mast, 3 sections, very good condition, $50

Zenith console TV, early 1950's vintage, approximately 27 inches diagonal. Good for tubes, parts, and experimentation. Free for pickup.

Contact Marshall at (804) 339-7786 or at marshe73@verizon.net

**Cushcraft A4S 20-15-10 Beam Antenna** https://www.cushcraftamateur.com/Product.php?productid=A-4S. A4S is the true, high performance tribander for 2-15-10. Precisely tuned high-power traps, carefully selected element lengths, and proper spacing combine to make the A4S the preferred antenna for your HF work! This is the premium antenna with all the features that you want. High gain, low SWR, and wide bandwidth keep the contacts coming in. All U-bolts, clamps and hardware are stainless steel. A4S has pinned boom sections and formed aluminum brackets to keep elements straight in all conditions. Our solid construction keeps the A4S on the tower! The antenna is only 2-years old and is ready for immediate pick up at my QTH. I am asking $450.00 . Please contact me at 804-730-0221 or e-mail me at kj4it.jw@gmail.com 73, Jerry KJ4IT

**ANTENNA TUNER, 3 KW, 1.8-30 MHZ, ROLLER, METER,ANT**
https://www.mfjenterprises.com/Product.php?productid=MFJ-986.

MFJs innovative Differential-T Tuner uses a differential capacitor that makes tuning easier than ever. It gives minimum SWR at only one setting. Broadband coverage ends constant re-tuning. The MFJ-986 is a rugged roller inductor antenna tuner that handles 3KW PEP SSB amplifier input power (1500 Watts PEP SSB output power). It tunes 1.8 - 30 MHz continuously, including MARS and WARC bands. MFJs exclusive AirCore Roller Inductor gives absolute minimum SWR -- something tapped inductors just cant do. 3-digit turns counter plus a spinner knob gives precise inductance control so you can quickly retune your frequency. A lighted peak and average reading Cross-Needle meter shows SWR, forward and reflected power at a single glance! The antenna tuner is ready for immediate pick up at my QTH. I am asking $200.00 . Please contact me at 804-730-0221 or e-mail me at kj4it.jw@gmail.com 73, Jerry KJ4IT

2225 Tektronix Analog Oscilloscope The 2225 is a 50 MHz analog oscilloscope from Tektronix. Measure voltage or current signals over time in an electronic ciruit or component to display amplitude, frequency and rise times, etc. Applications include troubleshooting, production test, and design. The antenna tuner is ready for immediate pick up at my QTH. I am asking $275.00 . Please contact me at 804-730-0221 or e-mail me at at kj4it.jw@gmail.com 73, Jerry KJ4IT

I am selling a GE MVS 40w 2 meter radio with APRS cable mod, Garmin marine GPS, TinyTrak3 interface module and home built MVS programmer / tinytrak programmer. This is a complete functioning system; just connect to an antenna, plug it into a cigarette lighter and it's on the air.
It is currently programmed with my call sign; I could tell you how to reprogram it with yours. $150. Call John Harlow @ 804 464 8248.

## *Thought For The Day!*

***The shortest distance between two points is under construction.***

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|---|---|---|---|---|
| **John DeMajo** | **K5HTZ** | **President** | **(504) 858-7689** | jdemajo@demajo.net |
| **Allan Johnson** | **WA3J** | **Vice President** | **(804) 318-6951** | wa3j@arrl.net |
| **Dave Robinson** | **KJ4LHP** | **Secretary** | | |
| **Ken Leidner** | **WV0L** | **Treasurer** | | |