



THE RICHMOND HAM

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October 2014

The RICHMOND AMATEUR RADIO CLUB will meet Friday, October 10th 2014, 7:00 PM, at the Bon Air United Methodist Church, 1645 Buford Road.

PROGRAM: To be determined

Coming Events:

October Meeting, October 10th, 7:00 PM.

VE Testing Session, November 15th, 2014 9:am at the Bon Air United Methodist Church.

Public Service:

Oct 18th, 2014 Step Out to Fight Diabetes
Roy Schultz – ki4mcx@arrl.net

Club Members! If you are not receiving your copy of the Club's monthly newsletter, please contact Richard, WA4FEH, RARC's Treasurer, at wa4feh@gmail.com or phone 743-3899.

September 2014 RARC Meeting Minutes

Meeting Date: Sept 12, 2014
Meeting Time: 7:00 PM
Presiding Officers: President, Dr. Joe Palsa, K3WRY. Vice President, David Robinson, KJ4LHP. Secretary, Maylon Pearman, KG4RPQ.
Board Members: Austin Thomas, N4CVA; Marshall Ervine, N4XBP; Win Grant, WA4SSG; Alan Johnson, WA3J.
Dr. Palsa opened the meeting with the Pledge of Allegiance.
Officers and Board members were introduced. Members and guests asked to introduce themselves.
Treasure report was read by secretary due to the absent of the treasurer.

Minutes were approved for the month of August.

Allan Johnson, WA3J reported on VE testing. Bruce MacAlister, W4BRU reported on the club's school and enrollment. Also, the club was setting up a table at the RVA MakerFest on September 27 at the Science Museum of Virginia.

Joe called for three volunteers to form an election committee. Buck Vaughn, KR4NL; Bruce MacAlister, W4BRU; and Mac McNeer, K4YEF.

Joe Palsa announced that the board had recommended a raise in dues, from \$15:00 to \$20:00 per year, to help offset future cost. The club voted in agreement and the increase will start immediately.

The club received an email from Colin Lyne of Richmond, North Yorkshire in the UK. His club would like to setup a twinning club with us to exchange ideas and friendships and maybe radio contacts as well. The club voted to support the twinning club idea.

Mac McNeer K4YEF talked about promoting ham radio clubs in schools.

It was reported that someone is interfering (on purpose) with the RATS (146.880) repeater. Grayle Hunley, KF4USV challenged members to sign up to bring snacks for the meetings. He also challenged a chili cook off at the January meeting (with a door prize).

The meeting was adjourned. Afterward Bruce MacAlister, W4BRU gave a presentation on using CHIRP software program for programming radios.

RARC VE News

The November Testing session will be on the 8th at the Bon Air United Methodist Church at 9:00am.

If you have questions about a session, please see our website, www.rarclub.net/ or contact Allan, WA3J, at 804-399-8724, or wa3j@arrl.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.

FCC EXAMS EVERY MONTH on the SECOND SATURDAY. For January and all odd-numbered months: Bon Air United Methodist Church, 9 AM. Call coordinator, Allan Johnson, WA3J, 399-8724, or visit <http://www.rarclub.net/>.

For February and all even-numbered months, FCC test sessions are provided by the RAVE group. Coordinator, Pat Wilson, W4PW 804-201-1898.

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 007D rather than to any of our modules. Since the W4FJ stack will all be linked to Ref 007D, anyone linked to that reflector will be connected to the net.

The Club sponsors several local radio nets each week. Join in for the informative discussions and fun.

Wednesday	7:00 PM	28.475	USB
	8:00 PM	147.255	D-STAR Repeater
	8:15 PM	145.730	Packet

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
Age 12 and under	\$5.00
Age 13 to 18	\$10.00
Regular Membership	\$20.00

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

2014 Refreshment Schedule

The refreshment schedule for 2014 is wide open! Consider signing up for your favorite month. The entire year can be covered by only ten volunteers. Let's see some new contributors!!

Help A Club Member

Grayle Hunley, KF4USV, is looking for volunteers to help give rides for older members to club meetings. He has members listed by zip codes to find those nearest to you. Contact Grayle if you can help. 730-0455

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.

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Sunday	7:00 PM	50.135	USB
	7:30 PM	52.525	FM

Grand Chili Cook Off

Come to the Grand Chili Cook Off presented by Grayle Hunley, KF4USV – At the January meeting with a reunion of all that will come. There will be a grand prize given for the best chili that melts in your mouth. Also there will be a great door prize at the Richmond Amateur Radio Club January meeting.

So let's start the new year off with the most exciting meeting ever. Come with new ideas and share them at the January meeting. Bring a friend to show what the Richmond Amateur Radio Club is all about!!

HAMSITES!

Everyone has a few favorite Ham radio related websites. I have mine that I visit regularly and I'm sure most of you have yours. There are lots of facets to the Ham radio hobby and things can get quite specific in nature and also quite esoteric. Same with the Ham related websites. Many however are pretty general in content and can be appreciated by all. Also there are quite a few that offer really well done audio and video content and I'll list a few of those below. My appeal to YOU is that you let me know if you have any favorites that you think the club members would enjoy knowing about. I'll try to list a few each month as long as there is an interest.

This month's offerings are two that are primarily video sites. The first is TXfactor, <http://www.txfilms.co.uk/txfactor/>. A U.K. based production that bills itself as a brand new series of high definition TV shows covering all aspects of the hobby which is amateur radio. A professionally produced programme presented by radio amateurs for radio amateurs. A slick and well produced effort that comes out about once a month.

The second is Tom Medlin's site, <http://w5kub.com/>. Any of you that have been to Dayton or any of the other hamfests will recognize Tom with his roving camera and microphone. Lots of recorded interviews and great live coverage when you just can't make that hamfest on the west coast!

Got a favorite of your own? Let me know. Thanks, Armand.

armand.hamel@comcast.net

CW - A new opportunity!

Interested in putting those rusty CW skills to use? Never learned CW but think you're ready to jump in? Do high speed CW QSO's cause your ears to melt into your brain? Here's a way to stop all those problems: Join the CW Slow Ragchew Net. The purpose of the group is to help new CW folks gain confidence, help old-timers get back in the groove, and plain 'ol ragchew with the "original" digital mode!

Details:

What: CW Slow Ragchew Net

When: Wednesday nights at 8:30pm (usually lasts about 30 minutes)

Where: 50.135

Who: Contact Jim Bates (K8OI) or Armand Hamel (WA1UQO) for details

Amateur Radio and Airport Security

Or

"My 'Opportunity' sharing Morse Code and Amateur Radio with Airport Security Staff - 3 different times!"

Here's a riddle: "What weighs 5 pounds, is made of stainless steel, carbon fibre, springs, wires, has knobs, fits in a suitcase and draws instant attention wherever it's seen?"

I was taking a trip to the United Kingdom (UK) for work the 1st week of September. I like to play radio when I travel and was trying to decide what gear to take. I had always taken my Icom D-Star enabled HT as well as my trusty DVAP, but this time I thought that I'd give HF a try as well. Nothing big, just a QRP rig to do some CW, PSK-31 and perhaps SSB.

I spent a few weeks planning out my HF gear; Flex 1500, mic, Parz End Fedz 40/20/10 antenna (thanks to WA1UQO for the loaner!), power supply, cw paddles, coax, computer interface cables and so on. I also packed my FCC license, the operating regulations for the UK and the UK bandplan. Before long, I had quite a bunch of equipment laid out on the table - fortunately, however, it would ALL fit easily in my suitcase!

Just in case you might not have been paying attention to the latest in international terrorist activities, the UK had just moved their terrorist alert status to their HIGHEST level. Why did I share that piece of trivia - because it played an important role in how I was allowed to "share"

my love of amateur radio with SO many people!

The day of travel had arrived and I made my way to Richmond International Airport. Tickets were all in order and I walked right on up to the security line; no lines - put my carry on bag, laptop and other gear on the x-ray belt and walked right on through the scanner - no problem! Well, that was the easiest part of my journey - my carry on bag had red lights flashing, the operator stared at it for a good 30 seconds and decided to pull all my gear to the side - the fun had begun...

I was "introduced" to a nice Transportation Security Administration (TSA) Agent who asked me to "come this way." So I did... We got to talk about things like: Where was I going? Did I pack this bag? Who did I know at my destination? How long would I be away? All kinds of interesting information - mostly leading to the follow up: May "we" search your bags? "Of course you may."

Perhaps I had entirely underestimated just how my carry on bag looked on an X-Ray screen. To me, a ziploc bag full of wires, fuses, power supplies, cords, cables, and the other necessary items made sense. Combine that, however, with a couple of very "odd" looking rectangular boxes (the Flex 1500) and my CW paddles and it painted a VERY different story. Answer to the Riddle Qestion: A Begali CW Key - Sculpture



The Begali key was VERY interesting to my new friends. They were "impressed" by it's attributes - things such as it being 5 pounds and the X-Ray machine could not "see through it." Why would I need a carbon fibre switching device? What was being switched on? How did it work? Morse Code? Really? Does anyone even Morse Code anymore?

The TSA wiped down every component, all my baggage and gave me a very thorough pat down - I offered to pay them if they just massaged my back and legs a little harder than they were currently doing. Offer declined. No cavity check required! (Thank goodness for that!)

I presented my FCC license, the operating guidelines and some of the other paperwork that I had packed. Eventually, no "bad things" were found - I have no idea what the "wiping down" pad was looking for. I was cleared and allowed to continue on my way.

The scenario was repeated two more times during my travels. I received a VERY thorough interview process at Heathrow during my return trip and a somewhat less intensive check at Newark. During my travels, I did have one Security Agent say she knew what the Begali key was - "When all else fails, Morse Code gets through doesn't it?" I was stunned - pleased - but stunned; nobody knew what they were looking at...

Lesson learned - don't pack stuff that looks like a bomb.

73 de K8OI

Frequency Accuracy to 10⁻¹¹ - Win Grant - WA4SSG

I've long had a fascination with high accuracy devices. In the 1960's, I saved my money to buy a Bulova Accutron watch which used a tuning fork as a reference oscillator. This was before quartz crystal oscillators were miniaturized to fit into watches. When Texas Instruments came out with a digital LED display watch that ran off a quartz crystal oscillator, I had to have one (and I still have it). It was accurate, but not very convenient because the LED's drew so much current that the display remained off to conserve the batteries until you pushed a button.

In reading the manual for my Icom 7800, I saw that the radio has a BNC jack on the back for an external 10 MHz reference oscillator. The radio has a built in oven controlled oscillator (OCXO), that is accurate to within ± 0.05 ppm. That's quite good, and a far cry from the tube gear of the 1960's that I grew up with. I still remember turning on the Hammarlund HQ-129-X about an hour before I planned to operate to allow the radio to settle

down. You could literally hear that receiver drift completely off of a signal in a matter of seconds before it had warmed up. While I have no complaints about the accuracy of the time base in the 7800, I thought it would be fun to see just how accurate I could make the radio using the external time base input. Another Huguenot High School ARC alum, Jim Krause, AB4CZ, also has a fascination with "accuracy" and told me about some frequency standard devices he has acquired over the years. Cellular telephone base stations require very high accuracy "clocks" so an industry has developed to fill that need. The good news is that as the cellular industry buys new technology, the slightly outdated technology can be had on eBay for a fraction of the original price.

The current high end time/frequency standard now seems to be a GPS disciplined oscillator that uses a GPS satellite signal to lock to. GPS satellites have an atomic clock onboard (usually a cesium beam device) and transmit a very accurate time signal. The downside to a GPS disciplined oscillator is that it requires an outside antenna in a location that can see a sufficient number of satellites to acquire a lock. I was looking at something along the lines of a Trimble Thunderbolt, <http://www.trimble.com/timing/thunderbolt-e.aspx>, but the antenna issue was going to add some complexity for my basement hamshack. Then I ran across a Rubidium oscillator that is a small self contained unit that requires no GPS signal, and offers amazing accuracy that far exceeds my "needs." I settled on a Frequency Electronics FE 5860A, 10 MHz oscillator. For some reason, the vast majority of the many units for sale on eBay are in China. I suspect these are all pulls from cellular base stations that have been upgraded to a newer GPS disciplined device.

There are many models of the FE 5680A, but I found one that seemed to be the easiest to interface with the Icom 7800. The device I purchased has a DB 9 connector that requires only 15-18 volts DC and outputs a 10 MHz sine wave signal from an SMA connector. So I placed my order on eBay, and it arrived from China in 10 days. I found a Meanwell switching power supply on eBay for \$25 that supplied the necessary voltage. All that was required was to put a BNC connector on the supplied mini coax that already had an SMA connector on one end, and to wire up the power supply. I plugged the external oscillator into the 7800, went into the radio's menu to tell it to use the external time base signal and waited for the magic to happen

knowing that I now had a radio with a frequency accuracy of 2×10^{-11} in one day. Stated another way, 10 to the power of $^{-11}$ is less than 0.3 milliseconds in a year.

Fortunately, or unfortunately, I could not tell any difference in how the radio operates between the external, Rubidium standard and the internal OCXO. The tone from WWV did not vary as I switched between the internal and external 10 MHz signals. That's probably good news because it confirms the accuracy of the built in time base. The downside to the Rubidium device is that it gets hot, not just warm. While it was obviously designed to run this way and is meant for continuous service, I've decided not to run it all the time. Having confirmed the excellent accuracy of the OCXO, I figure I'll just switch over to the external device periodically to confirm the OCXO is on frequency.

So how does a Rubidium frequency standard, which truly is an "atomic clock," achieve its high accuracy? You can read the manual online at http://www.guidopeer.de/Pub/images/Rubidium/5680_TECH_MANUAL.pdf. A short description of how Rubidium oscillators work is: it's the behavior and monitoring of Rubidium particles at an atomic level whereby this behavior is subsequently fed electronically to the control input of a crystal oscillator so that its output frequency can be adjusted. The FE 5680A is actually a quartz crystal oscillator with a Rubidium "physics package" and associated control circuitry to control the output frequency of the crystal oscillator.

Even if we don't understand how it works, we can appreciate the phenomenal accuracy of this little device which is about the size of a hard drive. The device is accurate to 2×10^{-9} in a year. In scientific notation, 10^{-9} means one billionth which is nine digits to the right of the decimal place. Stated another way, the internal OCXO that is accurate to ± 0.05 ppm will vary 0.5 Hz in a given time period at 10 MHz. But a Rubidium standard will vary 0.0002 Hz or 0.2 millihertz, at 10 MHz in a year. As the manufacturer notes, most people don't have equipment to calibrate a Rubidium standard. It is the standard against which other devices are calibrated. A really cool feature is a built in lock indicator that tells you if the crystal oscillator is locked to the Rubidium physics package. When locked, you can be pretty sure the device is operating within specs. No test equipment is required. A lot of current test equipment has an external port, like the 7800, to allow you to plug in a Rubidium reference.

So if your radio permits attachment of an external time base, you can turn your transceiver into a laboratory grade frequency measurement tool. The only problem is that most radio displays only show two digits to the right of the decimal place, and the tuning step increments on the VFO are similarly limited. So while you will have superb accuracy, the time base cannot add resolution to your display. The price of these used devices has increased in the past two years from about \$50 to around \$200, so don't wait if you are thinking about buying one. Now, if I could just get my MFJ "atomic clock" to sync to WWV, I would be all set.



The SWAP SHOP

Club members may list their wares in the newsletter. Send descriptive information to Armand at wa1ugo@arrl.net, or call me at 804-454-0564. 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.**

900 MHz Radios and Antennas!!

For Sale: 900 MHz radios and antennas. Kenwood TK-981 FM transceivers for 900 MHz, used in good condition, bench checked, 15 watt, preprogrammed for Local and national simplex and repeater frequencies. Microphone, power cord and mounting bracket are included, price \$130. A limited number of mobile and base station antennas are also available. Equipment is provided at cost to promote Richmond area activity. Get yours now and join us on simplex or the 900 MHz repeaters.

Contact Dave Meier, N4MW 804-932-3641 - n4mw@n4mw.com

For Sale the following Items:

Telepost Model LP-Pan 2 to be used on Yaesu Ft-2000, Ft-950, or Elecraft K3.

E-Mu 0204 Audio Interface

IF-2000 interface board (RFSPACE) Uses PowerSDR-IF software. Actual receive for Flex Radio.

All software included.

Call Lew Best W4LEW at 804-740-3890

For Sale

I am moving and have the following items for sale for \$1,000 cash; everything you need to be in business on 6M and 2M FM, currently in operation. Tower is being pulled down on September 4. Will deliver in Virginia for cost of fuel.

- (1) One 50' tri-leg AM tower (4' sections) with base
- (2) One 5-element 6M beam, almost new
- (3) One 2-M vertical (FM) antenna
- (4) Mounted rotator (newly overhauled) Alliance/Dual-speed Controlled; calibrate dial, lighted (manual included)

Also for sale:

Almost new ship-to-shore transceiver with vertical antenna and 1,000 channels (special weather channel) - \$200

Yaesu 2-meter FM Transceiver (FT-2500M) with operating manual - \$25

Call Floyd Callihan K4ROG (703) 659-1461

USED MILITARY ALUMINUM ANTENNA MAST SET CW-124/ GRA-4; TOTAL OF 8 ALUMINUM POLES. EACH POLE IS 66" LONG. THE OUTSIDE DIAMETER IS APPRO. 1.75". The masts are not bent and the case is in good condition. Might be missing a couple of guy stakes or small ropes but other than that the set is in good condition. PRICE: \$135.00 Sold As Is. Picture on request.

RCA TM-867 2-way/base station test set. Appears to be like new. \$50.00 Sold As Is.

Swan Electronics SWR Power Meter (Directional Coupler) Model WMM-200. Rated to 200 watts from 50 – 150 Mhz. Unit is new in the original box with the original instructions. \$150.00 Sold As Is. Picture on request.

Ameritron Model RCS-8V 5-position remote coaxial antenna switch. New in the box with instructions . \$149.00 Sold As Is. Picture on request.

MFJ Enterprises Antenna Analyzer Model MFJ-247. This is the first version of the popular MFJ antenna analyzer series. It covers 1.8 thru 30 Mhz in 5-bands which are 1.8 -2.9 Mhz, 3.2 – 5.3 Mhz; 6.5 – 11 Mhz; 12 – 21 Mhz and 18 -30 Mhz and gives a direct meter readout of the SWR for coaxially fed HF antennas in these frequency ranges. The instrument does not give impedance readings. The operation manual is included. \$50.00 Sold As Is. Picture on request

Items are being sold by Jerry Williams, KJ4IT, 804-357-2190, e-mail kj4it.jw@gmail.com.

Christmas is coming, now is the time to stock on those special goodies for the ham shack.

All of this equipment is from the estate of a SK. All funds go to the family.

1. MFJ-259B antenna analyzer: \$150.00
2. MFJ 949B 300 watt antenna tuner: \$50.00
3. Ameritron AL-80A Linear amp. with 2 spare 3-500Z tubes: \$800.00
4. Heathkit 100 watt CW station: \$250.00
(HR-1680 receiver / HX-1681 transmitter with power supply)
5. Heathkit 1410 electronic keyer: \$50.00

6. Hearhkit hM-102 power/watt meter (200w/2000w): \$30.00
 7. Hy-Gain HAM IV antenna rotor with controller (New inbox): \$550.00
 8. Autek WM-1 power/watt meter (20/200/2000watta) \$90.00
 9. Autek QE-1A SSB/AM/CW filter: \$50.00
 10. Swan SWR/power meter (20/200 watts) \$30.00
 11. Radio Shack HX-100 SSB/CW transceiver, new in box, never opened. \$75.00
- Contact Richard Arnold WA4FEH at 743-3899 or wa4feh@gmail.com

Thought For The Day

Middle age is when it takes longer to rest than to get tired.

73 de:

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