



THE RICHMOND HAM

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MAY 2012

The RICHMOND AMATEUR RADIO CLUB will meet Friday, May 11, 2012, 7:00 PM, at the Bon Air United Methodist Church, 1645 Buford Road.

PROGRAM: Feedlines: What's available, what works best, how much does it cost.

Anyone who has an antenna knows there are many options for how to get the signal from the radio to the antenna. We typically call this a "feedline." Our May program speakers will be Mike Owens and Win Grant. They will explore the various types of coaxial feedlines, demonstrate how to use some of the special tools available for installing connectors on feedlines and tell you where you can find some bargains on feedline materials you may have thought were too expensive or too difficult to use. Come and find out how much of your signal is not making the trip between the antenna and the radio and some cost effective ways to get the maximum performance from your investment.

We will also have a Silent Auction at the May meeting.

The meeting will be in Room 1101 in the church's gym building. This is the room we meet in when the Fellowship Hall is not available.

Please drop off donations for the Yard Sale in the Fellowship Hall before heading over to the meeting.

Coming Events:

May Club Meeting & Silent Auction, May 11, 7:00 PM
RARC Yard Sale, May 12, 8:00 AM – 2:00 PM
VE Testing Session, May 12, 9:00 AM
Cap-2-Cap Bicycle Event, May 12
Bike MS Virginia, June 2 and 3
Special Olympics of VA, June 8 and 9
Field Day 2012, June 23 & 24, Laurel Recreation Area

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.

From the Prez

A couple of months ago I wrote in this column about the historical research conducted by Art Williams, Pip Sager and Ron and Barbara Chase which documents the beginnings of our Club. It's all available on our Club website. It's fascinating to read, and the pictures really convey a lot about the cultural changes that have occurred in almost 100 years. Not too many of us wear business suits to the meetings any more.

The research this group has compiled makes a compelling case for the proposition that our Club was

actually founded in 1916 as opposed to 1929 which is the date that has been used for a number of years and appears in our banner. An article from the April 16, 1948 *Richmond News Leader* about the anniversary of the Richmond Amateur Radio Club states: "Their number grew until one day in April 1916 a formal meeting was held and a name was adopted. The Tri-County Radio Club was born." The article traces the name changes over the years from the Tri-County Radio Club to the Richmond Shortwave Club to the Richmond Radio Club. Whether the 1948 article simply left out the word "amateur" in the club name is unclear, but what is clear is that the references are to what is today the Richmond Amateur Radio Club. Armed with this research, we have an opportunity to correct history.



Club members pose for a group shot in the early 1920's

I invite each member to review the research available on the website. I will bring some printed copies to the May meeting for those who don't use computers. The board of directors will meet in June for a regular meeting, and at that time, I will solicit a vote on whether to correct our founding date to 1916 and henceforth to use April 1916 as the official founding date for our Club. I invite you to express your views and share any information you have on this topic to the officers and board members in advance of the next board meeting.

73, Win

D-STAR Programming Update - IMPORTANT!

To all who use the D-Star repeaters, please make sure that you have configured the RPT2 setting on your transceiver to have "W4FJ G" (The "G" is in the 8th space).

As more and more users connect reflectors, repeaters, dongles, DVAP's, and hotspots - the need for the gateway setting in your transceiver's RPT2 becomes very important. If your transceiver does not have it set (properly!), you will be able to hear the other station, but you will not be able to talk TO them. The RPT2 setting makes the D-Star repeater gateway "send" your

voice data to all the other connected systems; without it, you'll only be talking to the local repeater!

The handout from the D-Star Academy with information on the gateway has been posted on our website for anyone who could not attend and wants a copy.

If you have any questions, comments, or concerns - please contact Jim Bates (KJ4WLH) jlbates4@gmail.com (804) 592-1068.

The Tech Corner

It is time again for our yearly RARC Yard Sale. I know everyone has gone through their attic and garage for gently or hardly used stuff that you don't need anymore, but don't forget we are hams. We all have collections of a lot of electronic junk that we probably will never use. Why not donate some of this good stuff to the Yard Sale. You may not ever have thought of selling anything at an organized hamfest. You know that you will never use that old tube rig or for that matter old military rigs or collection of parts, tubes, plugs, cables, maybe a kit you started and never finished. I think you get the drift. The Yard Sale/Silent Auction is our only fundraiser. You can help us fund future projects and fun activities. One geeks junk is another geeks treasure.

TNX, Tom Flippin, KD4CMK

RARC license prep school winds down in May

May 15th is the last class for the 24 students and 5 instructors in this Spring's license prep school. Fritz Schumacher, KI4HWQ, Blake Forbes, KK4FLN, Maylon Pearman, KG4RPO, Buck Vaughan, KR4NL, and I added to the team approach we had started in the Fall. The instructors get involved in each other's classes, especially when one of us had a demo or a show-and-tell item that we thought would give the students that "ah hah" they need to remember a concept for the FCC exam. Tom Flippin, KD4CMK, helped the Tech class with a demonstration of an oscilloscope and signal generators to show what signals look like. A loaned oscilloscope from Richard Arnold, WA4FE, combined with Maylon's Yaesu 817 QPR transceiver did the same for the General class. The pass-rate for the May 17th exams will determine whether all these demos have been worthwhile, but they would not have been possible without the two assistant instructors, help from Tom and Richard, and the five of us working together. Working as a team has also made teaching more fun.

I have already received phone calls from non-hams who plan to attend our Fall classes to become licensed. There's also a demand to teach Morse code. Club members can expect me to do a little nagging to get some of you to teach code. Thanks go to the RARC members for supporting this unique effort. RARC is the "teaching club" and we make it possible for people to study for exams twice a year. Few communities of our size offer this much education for new and upgrading hams. Remember, we're minting new hams and that's a good thing we should be proud of.

Bruce MacAlister, W4BRU, School Coordinator

RARC VE News

Our next VE testing session will be **Saturday, May 12th, 9:00 AM**, at the Bon Air United Methodist Church.

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.

April Meeting Minutes

Meeting Date: April 13, 2012

Meeting Time: 7:00 PM Called to order at 7:05 PM

Presiding Officers: Win Grant, WA4SSG, President, Pete Fundinger, AA4PF, Vice-President, Richard Arnold, WA4FEH, Treasurer and Patricia Johnson, N8WEA, Secretary

The President called the meeting to order and welcomed all. Visitors were: Larry Lawhorne, W4MJQ, Gene Toller, KG4WGS, (who is taking the technician class currently), Richard Worssam and wife Carol, and Paula Hamel.

Old Business:

The March minutes were approved and motioned to accept.

The March Treasurer's report was provided by the treasurer, Richard Arnold, WA4FEH).

Richard also announced that he had applications for membership and that after the 1st of the month, membership would be at a 50% rate. Now's your chance to join and get a great deal!
☺

New Business:

- New membership applications were received from Tim Parsons, KE4ZNN, and Ed Winfree, KE4FSL. A motion was made and seconded to approve the applications. Welcome to the club! A special congratulations to Dave Thomas, KB4IQT for an upgrade to an Extra license.
 - Win Grant announced that Field Day will be held June 23rd and 24th. The club will combine with RATS. Chris Walker will help oversee the event, but will need lots of volunteers to help. Please contact Chris if you are able to help out. The event will take place at Laurel Park.
 - A D-Star Academy will be held on April 21, 10:00-12:00 at the church. If you are interested in learning more about D-Star please attend. If you are planning to attend, please let Win Grant or Jim Bates know after the meeting. Jim will also be helping out with the academy and was commended for his tremendous work on Gateway.
 - A sign-up sheet for refreshments will be available for anyone interested in helping out with monthly snacks. Any help will be greatly appreciated.
 - Roy Schultz, KI4MCX, gave a report on Spring Public Service Events coming up that
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the club members could help with. April 21, Ashland Railroad Run, April 22, March of Dimes for Babies Walk-a-Thon, May 12th Capital Trail Foundation Cap -2-Cap bicycle event, June 2 & 3 Bike MS Virginia and June 8 & 9 Special Olympics of VA. Please contact Roy if you would like information on any of these events. (royschultz@hotmail.com)

- The club will be celebrating our 100th Anniversary in 2016. Although, it is a few years away, plans need to begin soon. Volunteers are needed to be on a committee for this event. If interested, please contact Win Grant
- Marshall Ervine announced that the May monthly meeting will be the annual Yard Sale. This is the only fundraiser for the club. If you have items to donate, please bring them to the church on May 11, when the regular meeting will be held. A silent auction will be held during the meeting on Friday night. Following the meeting, members will have the opportunity to have first glance at the yard sale items. The yard sale will be held on Saturday from 8:00 AM – 2:00PM. Checks will be accepted, but prefer cash. Any amateur radio equipment, workable electronics, clothes, plants, etc. would be appreciated. If you want your items back, if not sold, please come back by the church @ 1:00 to pick up. Any items left over will be donated to charity.
- Please be sure to check out all the local radio nets each week. These are posted in the club information section of the newsletter each month. Also remember to check out the club web page.
- Bruce MacAlister will be presenting a program on Amateur Radio at the Science Museum on May 9th. Anyone interested in helping out or setting up a station would be welcomed.
- There were some visitors present that would love some help in getting radios programmed. Please be sure to always help out your fellow hams and those interested in the hobby! :)

There was no further business, so the meeting was adjourned @ 7:30 PM. A very informative program followed on Dominion Resources Renewable Energy Developments. A slide presentation was given and members had many opportunities to ask several questions. The program was enjoyed by all.

Respectfully submitted,
Patricia Johnson, N8WEA

Highlights of March RARC Board Meeting – Life Membership for Mike Ratcliff

At its March meeting, the RARC board of directors voted to confer life membership status on long time member Mike Ratcliff, KC4AHE. Mike served the Club for many years as the leader of our school program which results in many new hams obtaining licenses each year. Though his health has not permitted Mike to participate in Club meetings recently, the board voted unanimously to recognize Mike's contributions to the Club by conferring on him the status of life member.

In other action, the board endorsed the previously announced plan to form a committee to propose and plan a centennial celebration. Current members of the committee are: Art Williams, W4TY, Richard Arnold, WA4FEH, Tom Flippin, KD4CMK, and Ron Chase, KD4XA. Anyone interested in serving on this committee please contact Win Grant. The committee will select its own chair when it meets. It's not too soon to start the planning process. A number of great ideas have already been proposed.

The board also discussed RARC participating in Field Day in a joint endeavor with the RATS Club as we did last year. Chris Walker will coordinate this, but will likely not be able to attend himself. Those able to participate should contact Chris to discuss specific assignments. This will only succeed if enough members agree to participate.

All members are encouraged to review the proposed amended bylaws. They have been posted on the website and are available in printed form. The primary change is to allow the board to vote by email rather than in a face to face meeting when there is a need for prompt action. Thanks to Marshall Ervine for drafting these changes and making sure they comply with Virginia law. The membership will be asked to vote on the amended bylaws at the May 2012 meeting.

Welcome our new members!

Tim Parsons, KE4ZNN, and Ed Winfree, KF4FSL.

Public Service

The March of Dimes March For Babies was held this year on Sunday April 22. It was again held from Monroe Park and the route ran through downtown Richmond. As in many of the previous six years it rained the night before the event, but this time continued throughout the day. Surprisingly the turnout was pretty decent in spite of the weather.

Participants this year were Dan, KK4FLM, Fritz, KI4HWQ, Hinnerk, KC2WAU, Jim, KJ4DMI, Keith, KK4BHH, Marshall, N4XBP, Mike, AC5PT, Steve, KG4PEQ, and Thomas, KJ4CHS.

Although the Federal Express vans were not present this year, the Sag vehicles were from Lexus of Richmond and were quite comfortable. At the last minute Dave Bartos, the route logistics maestro was called out of town for a family emergency. So Megan Schowengerdt, the rookie

March of Dimes event planner was on her own. To her good fortune most all of the volunteers had several years' experience and know the routine.

Overall the event went smoothly with no more than the usual minor glitches and in all the rain we had it was a miracle but, NOBODY DROWNED!! And everyone got the chance to see how waterproof their radio equipment really is.

And, to top it all off, we actually received a thank you letter this year.

* * *

The following is a list of upcoming public service events in the Richmond area:

Saturday May 12

Capitol Trail Foundation Cap-2-Cap bicycle event

For more information or to volunteer contact Roy Schultz, ki4mcx@arrl.net. This event requires a mobile rig and your own transportation

Saturday June 2 & Sunday June 3

Bike MS Virginia

For more information or to volunteer contact Mike Hackett, mhack61@yahoo.com. This event requires an HT and some decent shoes.

Friday June 8 and Saturday June 9

Special Olympics of Virginia

For more information or to volunteer contact Joe Landers, ke4eue@ke4eue.org OR register online at www.ke4eue.net. This event requires an HT and some decent shoes.

Roy, KI4MCX

Special Event Stations

Museum Ships Weekend 2012 – June 2, 2012, 0000Z June 3, 2012, 2359Z. Activating IOTA NA-143 (Pelican Is.) Brazos Valley ARC will be operating from radio rooms of WWII Submarine USS Cavalla and Destroyer Escort USS Stewart from Seawolf Park on Pelican Is. in Galveston, Texas. We will be operating on 10-80 meters (SSB and CW). Be a part of living history as we commemorate the actions of these ships and crews. More information at <http://www.bvarc.org/index.php?page=ms>. Special Event QSL with SASE via KK5W (QRZ.com).

Ron Litt, K5HM, Event Coordinator

RARC's Annual Yard Sale

Bring donations of clean, usable items of any kind with you to the May 11th Club meeting. Suggestions include: household items, children's toys, books, (technical books are popular), pet items, computers, kitchen appliances, dishes, electronic items, sports items, decorations, crafts, tools, exercise equipment, plants, DVDs/CDs, jewelry, watches, and furniture. Please price as many of

your items as you can. Please note on your electrical/electronic items whether they work.

Donated items that are not sold will be given to a local charity unless they are picked up prior to 1:00 PM the day of the sale.

If you have any questions, please call Win Grant at 272-9695.

Silent Auction

The Club has received some donated ham equipment that will be offered for sale to Club members during this month's meeting. The sale will be by silent auction (no auctioneer). The items will be available for inspection prior to the meeting, and the auction will close after the setup of general yard sale items which follows the meeting. Bid sheets with a description and minimum bid will be available for each item. If you wish to bid, simply enter your name, call sign, telephone number, and your bid amount on the sheet. Remember that the proceeds from the auction will be used for Club activities.

Please see page 9 in this newsletter for a list of items available at the Silent Auction.

GPS Jamming

You're driving down the Interstate and suddenly your GPS navigation system goes bananas. No, your system isn't at fault. Look around and you may see an adjacent 18-wheeler that's the cause. As many of you know, most trucking firms mount GPS antennas on their trucks and connect radios to let HQ keep track of their trucks. Think of it as APRS on steroids. Some truckers are none too fond of having their every move tracked so they're buying small \$20 GPS jammers that make their GPS receivers "fail." There's a well-documented incident where planes approaching Newark airport kept losing their GPS tracking because of a truck nearby with a jammer. So if during your summer travels your GPS gets confused and stays that way, look at the big truck near you. Chances are the driver is enforcing his "privacy" with a jammer causing his navigation system to "fail." It's causing yours to fail as well. It's illegal, of course, but it took months to track down the offending trucker in the Newark airport incident.

Bruce MacAlister, W4BRU

Remote Operations, Part II

Jim Bates (KJ4WLH) - April 2012

Last month I gave some reasons why I became interested in operating remotely. This month, I'd like to share my operating environment - my gear, some software and network information, where the gear is located, and how I like to operate.

Gear located in my outside (detached) shed as follows:



KJ4WLH Photo

1. My main rig is an ICOM IC-9100; I use this rig for just about everything.
2. 40m dipole (doublet), balanced line (ladder line) going into a balun with a short run of coax going into the AT2K <http://www.hamuniverse.com/hfdoublet.html>
3. Palstar AT2K tuner (manual tuning required)
4. 2m vertical, 70cm vertical, and 900MHz vertical antennas
5. 6m loop, 2m loop, and 70cm loop antennas
6. Generic laptop computer connected to the KJ4WLH wireless network and also connected to the IC-9100
7. Kenwood TK-981 mobile (as a base station)
8. Misc coax switches

To make a really, REALLY long story much shorter; here are some of my favorite computer software packages related to ham radio as well:

1. Windows 7 Home, x64
2. Ham Radio Deluxe (HRD) – primarily the Logbook and DM780
3. Dropbox
4. Oracle's Virtualbox (virtual machine operating environment)
5. Logbook of the World
6. Griffin Powermate (VFO knob)
7. Icom RS-BA1 - Remote control software

I'm not trying to do pros vs. cons of each of these software packages/suites - just saying what I have chosen for my particular use. Your mileage may vary - in fact, you might not even get a single mile out of any of them :)

Starting with the hardware pieces, the IC-9100 is connected to the laptop with a USB cable. The IC-9100 has 2 different functions/devices which work over the USB cable: the first device emulates a serial port and the other device emulates a sound card. The serial port interface is the old, reliable CI-V workhorse of the Icom line - it allows rig control from the laptop.

I use DM780 as my preferred HF digital terminal emulator - the IC-9100 sound card operates much like an external TNC, Tigerlink, or other generic data mode terminal. For those who have used any (either internal or external) sound card to work HF digital modes - the

IC-9100 sound card "emulation" works EXACTLY the same way. The laptop "thinks" that it has 2 sound cards when the IC-9100 is on - the "original" sound card that plays music and beeps when Windows misbehaves and the "OTHER" sound card, the one inside the IC-9100 that is used by DM780!

Dropbox is a neat utility that allows you to keep some Windows folders (directories) in sync across ANY other computer that also has Dropbox logged in with the same account. You can have multiple computers, located anywhere, all have a folder (directory) that stays up to date all the time! The way I use Dropbox with ham radio is like this: I keep my HRD Logbook database in a folder that is "monitored" by Dropbox :) That means that whenever I have updated my HRD Logbook, Dropbox AUTOMATICALLY makes all the other computers have the SAME copy as soon as they get connected to the internet! Yep, my logbook can be up to date on all the computers that I own without me having to manually copy it from place to place and try to remember which computer has the latest version.

Oh, by the way, Dropbox can be used to do that for pretty much ANY files that you need to keep in sync. Like my DM780 macros, or my rig manuals, or my (fill in your favorite files here). Yeah, it's easy to use and you get a little bit of space for FREE! (There is plenty of space to do all Ham related stuff WITHOUT having to pay for a monthly subscription.) Final note about Dropbox, it also keeps your files backed up for you online - if your computer dies or your accidentally delete something - you can go online and get it back, yes - still for free!

Virtualbox is another free software program that allows you to create and operate a "Virtual Machine" (VM). A VM is like having a completely separate, dedicated laptop/desktop/server running whatever Operating System (OS) that you prefer. I'm kinda a fan of Windows XP for most ham radio programs - they're not always kept up to date with all the fast pace of Windows Vista/7/8 releases. So, I have created a VM with a Windows XP OS that is dedicated solely to running my ham radio applications! Why in the world would I want to do this? Ahhh, great question!

"Why in the world would you ever think about running a VM with Windows XP for ham radio applications? (Are you insane? Why yes, I am - thank you!)"

1. I never have to change the software that's running. Are you tired of installing, re-installing, un-installing software on your computer - only to find out that something that used to run just fine stopped working? I get tired of that and now I don't have that problem anymore :)
2. Remember Dropbox? The VM has Dropbox on it too! That means that my VM is just as up to date as ANY other computer I have. My Logbook is up to date. My DM780 macros are up to date. My manuals are up to date. EVERYTHING data related stays automatically up to date :)

3. I have access to a bunch of different computers: Work laptop, couple of home laptops, home server. I can run a VM wherever I wish WITHOUT messing up whatever is on those other computers! Get it? I can run my VM for ham radio applications on my work laptop WITHOUT work knowing about it... (Legal disclaimer - I'd never knowingly run non-authorized, work related programs on my work supplied laptop :) I know nobody else would either!
4. Finally, this article is about remote operation! Once I have a good VM, I have a copy that I can use to make more copies and put them wherever I wish. I now have a good, stable, and reliable operating environment that I can "take with me."

Finally, the software that allows my remote usage - Icom's RS-BA1. Of all the wonderful software I've listed so far, this is the most critical and worst performing component. Clearly the worst part of the lot... Fortunately, the FCC doesn't allow cursing and I'm pretty sure that RARC would look unfavorably upon any article with foul language. So, when I call the Icom RS-BA1 software "Really *****, Barely Adequate (version) 1," that's about as close as I can get to making the censors happy.

The upside is that yes, I've achieved success with RS-BA1, but not without much pain and losing 3 hair follicles - I count them now... "Every hair is sacred, every hair is great, if I waste just 1 hair..." - whoops, that's my Monty Python humour slipping out - sorry...

Another minor point; consider how much I have spent on software so far - \$0.00. Pretty nice, but now I get to the point; the ICOM RS-BA1 software costs about \$100! Yeah, \$100... The RS-BA1 software is the most important part of this whole setup and is just a pain in the rump. Not only is it the most critical and problematic part of the solution - it's also the ONLY part that actually costs money, I call that ironic!

ICom's RS-BA1 software is a 2-part package: The server component runs on the laptop out in the shack that is connected directly to the IC-9100. The client component runs anywhere else - for me, I have it running inside a VM (of course!) What happens is that the RS-BA1 server component takes the serial port (the old Icom CI-V) and the IC-9100 internal sound card and makes it available over the network to any authorized RS-BA1 client. The RS-BA1 client's OS "sees" a new serial port and new sound card, just like they were actually attached to the OS! Pretty neat huh?

When you are using the RS-BA1 remote client, you can use ANY program that you like to use that would "normally" work with the rig sitting right next to it. Yes, I can do PSK31 on my VM! Yes, I can do SSB on 20m, or 2m or 70cm or 23 cm - or FM or CW. Ok, well, it'll do CW even though I still can't :(The point is, it'll do whatever you like to do.

Next time we'll talk about ways I use the pieces and parts to make remote operation fun and enjoyable!

73 de KJ4WLH

Richmond Amateur Radio Club (RARC) 1st Annual June "Radio Run"

Purpose:

RARC wants to encourage ALL amateur radio operators to be MORE active on ANY band, frequency, or mode! Even if you are not (yet) a licensed amateur radio operator, you can still participate!

Rules:

1. You must make at least 1 (one) QSO each day of the month of June
2. You must operate on an Amateur Band/Frequency
3. You must generate RF on an Amateur Band/Frequency at your station
4. If you are NOT a licensed Amateur Radio Operator you must listen to an Amateur Band/Frequency using an RF receiver
5. Not Allowed (QSO does not count)
 - a. DV-Dongle (the blue model)
 - b. IRLP using your phone
 - c. Echolink, etc.
 - d. No "radio-reference.com" or internet based radio monitoring sites for listening
 - e. Remember, if you don't generate or receive Amateur Band/Frequency RF, the QSO does not count!
6. We're going to use the honor system for keeping track of all who complete the "Radio Run"! (Be honest – which is a pretty good policy anyway)
7. IF you have made at least 1 (one) contact on each and every day of the month of June, please contact Jim Bates with the following information:
 - a. Call Sign (required)
 - b. Name (optional)
 - c. E-Mail Address and/or Telephone Number (optional)
 - d. If you kept track of your contacts, the # of contacts you made during the month of June, 2012 (optional)

If you have questions, comments, or concerns please contact Jim Bates, KJ4WLH, (804) 592-1068, jlbates4@gmail.com (e-mail is preferred), or RARC.

RF Gain From Graphene

We are beginning to reach some limits with silicon devices. For computers and digital circuits the challenge is to keep making them smaller and smaller for those hand-held computers called smart phones and all the e-readers and tablets. For us hams that affects those digital signal processors in our new HF radios and our software defined radios. We also have trouble with small silicon transistors in our RF circuits because the ever-smaller devices show significant capacitive reactance that we have to counter with other circuits.

Graphene is the new kid on the block that "promises" to solve all our problems in computers and small-signal RF.

Put simply graphene is a layer of carbon – think graphite like in a pencil – that's only a single atom thick. Now that's thin! Graphene moves electrons very efficiently. In fact it moves them so well there's a very small bandgap and, therefore, not much gain. Since we need transistors to give us a voltage gain, that's not such a good thing.

An on-line article by author Neil Savage in the *IEEE Spectrum* on-line blog told of two-layer graphene transistor that has gain at radio frequencies (RF).

"If you don't have large voltage gain, the transistor more or less is useless," says Gianluca Fiori, a researcher in the Nanoscale Device Simulation Laboratory at the University of Pisa, in Italy. He likens a transistor with a high cutoff frequency but low voltage gain to an aerodynamic sports car with a weak engine. "The problem with devices made using just one layer of graphene, explains Fiori, is that they have low output resistance, which translates into poor voltage gain. One way engineers increase the frequency of transistors is to shrink their dimensions, but in a shorter channel the resistance drops further, making gain more of a problem. Adding the second layer increases the resistance without harming the transistor's maximum frequency," Fiori says.

Stay tuned. This world of semiconductors that are just one or two atoms thick is going to revolutionize electronics and that includes for us hams.

Bruce MacAlister, W4BRU

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 (932-9424) has information on his website <http://w4pw.org>.

RARC has the first D-STAR digital repeater in the area. 147.255 (+) and 443.7125 (+). We now have the gateway tied into the worldwide D-STAR network.

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

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 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	\$15.00

- Lots of information about the Club and our activities is available on our website, www.rarclub.net. Check it out!

Strays

In case you missed it, Morse code for gmail! Check it out at <https://mail.google.com/mail/help/promos/tap/index.html>

Mark your calendars now!

Field Day 2012!

June 23 & 24, 2012

We are joining with RARS again this year. It was great fun last year. Great location, great operating setup, great food, great fellowship! Please plan to join us!!



Reminder: Our May meeting will be in Room 1101 in the church's gym building. Please drop off your donations for the Yard Sale in the Fellowship Hall before coming to the meeting. You might want to come a little early to check out all the items in the Silent Auction which will be on display in Room 1101!

The SWAP SHOP

Club members may list their wares in the newsletter. Send descriptive information to Barbara at wa4vuo@arrl.net. 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.***

For Sale: Two 2-meter radios. **ICOM IC-211**, 2-meter SSB, CW, FM transceiver, mic, manual, IC-RM2 computerized remote controller. \$200. Also, **Kenwood TS-700A**, 2-meter SSB, CW, FM transceiver, mic, manual, VOX 3 VOX unit. \$125. Will sell both radios for \$300. Call Jerry Jones, WA4CQX, (804) 449-6245.

Wanted: 6 meter multi-mode transceiver. Base or mobile. Need SSB modes. Please email Blake Forbes at dforges53@comcast.net

Thought for the Day

Whenever I fill out an application, in the part that says "In an emergency, notify:" I put "DOCTOR".

73 de:

Win Grant	WA4SSG	PRESIDENT	(804) 272-9695	wa4ssg@arrl.net
Pete Fundinger	AA4PF	VICE-PRESIDENT	(804) 639-5573	aa4pf@verizon.net
Patricia Johnson	N8WEA	SECRETARY		
Richard Arnold	WA4FEH	TREASURER		

RARC YARD SALE
Saturday, May 12, 2011
8:00 AM to 2:00 PM

Bon Air United Methodist Church, Fellowship Hall

Please help make this a great fundraiser for the Club.

Bring donations of clean, usable items of any kind with you to the May 11th Club meeting. Suggestions include: household items, children's toys, books, (technical books are popular), pet items, computers, kitchen appliances, dishes, electronic items, sports items, decorations, crafts, tools, exercise equipment, plants, DVDs/CDs, jewelry, watches, and furniture. Please price as many of your items as you can. Please note on your electrical/electronic items whether they work.

Donated items that are not sold will be given to a local charity unless they are picked up prior to 1:00 PM the day of the sale.

If you have any questions, please call Win Grant at 301-8847 or Marshall Ervine at 320-8629.

RARC 2012 Silent Auction Items

Prices shown are starting bid values

MFJ-949E Deluxe Versa Tuner II manual antenna tuner, like-new condition, No manual, includes wall wart for meter lamp. \$25.

Kenwood TR-7950 2-meter base-station. Good condition; does have original mike and power cord and owners' manual. Works fine, does NOT have the optional CTCSS / PL cards installed. \$25.

Palstar AA30 Active Antenna for SWL users – excellent condition. Owners' manual but NO antenna. \$10.

Heathkit HM-102 SWR / PWR meter, original power cord but NO owners' manual. \$10.

Hallicrafters SX-99 AM and CW receiver, excellent shape - original factory paint, a true classic, has original owners' manual, well taken care of. \$50.

MFJ-1621 Portable Antenna –excellent shape; looks brand new, has owners' manual and original extendable antenna with a vinyl protective cover. \$25.

Johnson Viking Match Box Antenna Tuner - catalog number 250-23. Like new condition. \$50.

KANTRONICS KPC-9612+ TNC, with V6.0 and V8.2 upgrades. Needs 12 VDC power supply. Includes manuals and other documentation for unit. \$100.

AZDEN PCS-9600D 440MHz FM and data transceiver. Can be used as a 70Cm transceiver or for data. Frequency range is 410.000 - 465.000MHz (RX) and 430.000 - 449.995MHz (TX), 35 watts high power and 10 watts low power. Includes manual, schematics and related diagrams, and assorted misc. information. \$100

AEA DSP-2232/1232 Multi-Mode Data Controller – some documentation, no software or power supply. \$45.

Aerotron FM transceiver that works and can be put on 2 meters. It would work good as a 2 meter packet station because you do not need tone boards or other fancy features. Have manual and all of the papers on it. This is a 120 volt AC built in power supply and the manual tells how to put it on 12 volts DC if necessary. \$10

Heathkit HD-4040 TNC with Status Indicator Module (HD-4040-1), manuals for TNC. Has built-in power supply. \$40.

Heathkit Antenna Noise Bridge HD-1422 with manual. Needs 9 volt battery. \$30.

MFJ 1270 TNC Type 2. Needs 12 VDC power supply. Includes manual. \$30.

Radio Works 620 Carolina Windom antenna, 20 – 6 meters. 34'. Requires antenna tuner. Includes manual. \$40.

AMECO PT-2 RF Pre Amp. No manual. \$10.

Workman CX-3, 3-Position Coaxial Switch, model, \$10.

BearCat 8000 scanner, works well. \$25.

AZDEN PCS-300, 2 meter mobile, no tone board. \$10.

If other items are donated before the meeting, they will be added to the auction.