



THE RICHMOND HAM

Published Monthly by the Richmond Amateur Radio Club

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April 2022

THE RICHMOND AMATEUR RADIO CLUB RARC Meeting Virtually Happening and in person!

Our monthly meeting on Friday April 8th, 2022, 7:00PM, at the Bon Air United Methodist Church, 1645 Buford Road, and also a virtual one. The Zoom meeting will start at 7:00pm.

Upon joining the meeting you will be muted. You may exchange greetings with members through the chat feature (keyboard).

Cell phone and tablet users please use Landscape orientation for better imaging.

Kenneth Leidner is inviting you to a scheduled Zoom meeting.

Topic: RARC Monthly Meeting - Virtual
Time: April 8th, 2022 07:00 PM Eastern Time (US and Canada)

Every month on the Second Fri.

Please download and import the following iCalendar (.ics) files to your calendar system.

Monthly:

<https://us02web.zoom.us/join/88518058584>
<https://us02web.zoom.us/join/88518058584>
<https://us02web.zoom.us/join/88518058584>
<https://us02web.zoom.us/join/88518058584>

Join Zoom Meeting

<https://us02web.zoom.us/j/88518058584>

Meeting ID: 885 1805 8584

One tap mobile

+13017158592,,88518058584# US
(Germantown)

+13126266799,,88518058584# US (Chicago)

Dial by your location

+1 301 715 8592 US (Germantown, MD)

Meeting ID: 885 1805 8584

Find your local number: <https://us02web.zoom.us/j/88518058584>

Ken Leidner , WV0L

This Month's Program:

To be determined.

Richmond Amateur Radio Club Meeting Minutes March 11, 2022

The regular meeting of the Richmond Amateur Radio Club was called to order at 19:04 on March 11th, 2022 on Zoom and in-person by President John DeMajo, (K5HTZ) with a Quorum present online. Agenda was displayed on screen.

Members Present: Check-ins on Zoom and in-person at the Church.

Last month's Minutes – Approved unanimously.

Treasurer's Report:

1) 3 new membership applications: Ken Edwards KO4YAQ Technician; Randall Lynch KO4VDA Technician; Felix Bueno K4STI Extra - Approved unanimously.

2) Ken Leidner, (WV0L) gave the Treasurer's Report. We had an ending balance of \$18707.55. The Report was approved unanimously by voice vote.

3) Testing session will be held March 12 at 12 noon at the Bon Air Library.

4) Bruce MacAlister (W4BRU) reported on intermittent problem with the Club's remote station. He is working to pin it down and fix it.

5) RARC School: Bruce MacAlister (W4BRU) we have 30 students, and will also hold 2 seminars.

New Business:

1) President John DeMajo, (K5HTZ) recognized Win Grant (W4WIN), who presented Bruce MacAlister (W4BRU) with an Award for the work he did in organizing the ARISS program with Carter Woodson Middle School.

2) President John DeMajo, (K5HTZ) discussed our partnership with RATS for the Virginia QSO Party, 12noon – 5PM on Saturday March 19th.

3) Bruce MacAlister (W4BRU) spoke on New Ham Workshop on April 30th

at the Richmond Railroad Museum. He needs volunteers for instructors and help.

Show and Tell:

1) Rob Thomas (KC4NYK) talked about the Long Island CW Club's CW classes online.

Adjournment:at 07:24

Program: Tonight's presentation is by Bruce MacAlister (W4BRU) on the ARISS program with Carter Woodson Middle School.

The next general meeting: April 8, 2022

Minutes respectfully submitted by:

David F. Robinson,(KJ4LHP), Secretary

From The Prez

It's hard to believe that we are at already at the half-way mark in our year which began in November.

This has been a really active year for the Richmond Amateur Radio Club as we begin to dig out from under the Covid-19 restraints. Already this year, we have seen our first surplus equipment sale in two years, that allowed us to discontinue the expense of our rental storage. We also have begun in-person meetings, in addition to the Zoom meetings, for those who wish to attend in person. Then in January, we topped off a year of work with the students at Carter G. Woodson Middle School as ten sixth graders, with our help, were able to talk to an astronaut on the International Space Station via ham radio.

Just recently, we partnered with RATS for the 2022 Virginia QSO Party, which provided a wonderful opportunity for some "eye ball" QSOs that were sadly missing for the past two years. At the end of April, we will be holding our first ever "New Hams Workshop" at the Richmond Railroad Museum, a full day affair in which forty newly licensed hams will have an opportunity to learn "on-the-air" skills from experienced hams. After that, we are partnering with RATS again this year for Field Day, and there are plans for other activities to come later in the year.

I am extremely grateful to the members of our club who step up and volunteer to make these events possible. Our club has been responsible for bringing new members into the fold, and into the ham radio hobby, and we have become a notable institution in the community when it comes to education in the area of radio and communications. Thanks to everyone for your efforts in getting RARC through the dark days of 2020-21, and making us an even better organization.

73

John K5HTZ

RARC VE News

We have two different groups that provide testing.

1. One is free, but only offers testing sessions on the second Saturday of odd months except June (Field Day) replaces July. The next session will be on Saturday May 14th at 10:00am.

2. The other one cost \$15.00, but offers testing sessions on the 1st Saturday of every month.

1. RARC offers Free VE Testing Sessions on the second Saturday of odd months except June (Field Day) replaces July. Currently all testing starts at 10:00 AM and is at: Chesterfield Library Bon Air Branch 9103 Rattlesnake Rd North Chesterfield, VA 23235.

Pre-registration Required. Walk-ins Accepted. Pre-Registration required for Techs and for special needs applicants. Anyone taking the Tech exam needs a FRN from the FCC (Google obtaining a FCC FRN) and bring that info to the session. 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

2. KC4TS Cats Vet (Cats Volunteer Examination Team) offers VE Testing Sessions that cost \$15.00 on the 1st Saturday of every month. Currently all testing starts at 10:00 AM and is at: Gospel Light Church 2109 Anderson Hey Powhatan VA.

Check-in is between 10am and 12pm and we stay as long as needed to finish all the exams. Walk-in candidates are welcome! You just need a valid ID, an individual FCC FRN, and the testing fee of \$15 which goes directly to the ARRL (cash or check made payable to "ARRL VEC"). We can provide pencils and a very simple calculator or you can bring your own. See <http://kc4ts.org/> for more information.

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 \$22.00

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 1284.0000 (-20). In addition to our Wednesday local D Star net (below), we link Module C (VHF) to REF 062A for the National Capital Region D Star Net on Wednesday nights at 9pm. On Tuesday nights at 9pm, we link Module C (VHF) to REF 054C for the North Carolina D Star Net.

The RARC D Star Net meets on Wednesday nights at 8:00pm and is accessible on our three D Star modules, all of which will be linked together via REF 062D. So if you are in RF range of the repeater, you can join the net on any of the three RF modules and be heard by everyone.

If you participate in the net via DVAP, DV Dongle or a Hotspot (such as Pi Star), you should link your device to REF 062D rather than to any of our modules which will allow you to be heard by everyone.

Any questions, contact Win – W4WIN at wingrant@gmail.com

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!

George O Mara, KC4ESX SK

Mac passed away on Wednesday, March 23, 2022 in a local hospital. He is survived by his loving wife of 62 years, Harriet; his son, Martin O'Mara and wife Janet; granddaughter, Amanda Vierrether and husband Taylor; grandson, Aaron O'Mara and wife Jessica; two sisters, Elizabeth O'Mara, her son Matthew Cody and Mary Lou Hilton and husband Charles. Mac graduated from Hermitage High School in 1955. During his younger years he was very active in the Sea Scouts of the Robert E. Lee Council. He served in the U.S. Air National Guard where he was activated during the Berlin Crisis. He was a man of many interest and hobbies including Ham Radio, a member of the Richmond Amateur Radio Club and also a member of Central Virginia Radio Enthusiasts.

New FCC Application Fee Will Not Apply to Amateur Radio License Upgrades.

The Federal Communications Commission (FCC) staff has clarified in response to an ARRL request that the new \$35 application fee will not apply to most license modifications, including those to upgrade an amateur radio licensee's operator class and changes to club station trustees. The FCC staff explained that the new fees will apply only to applications for a new license, renewal, rule waiver, or a new vanity call sign. As previously announced, the new fees take effect on April 19, 2022.

"We are pleased that the FCC will not charge licensees the FCC application fee for license upgrade applications," said ARRL Volunteer Examiner Coordinator (VEC) Manager Maria Somma, AB1FM.

"While applicants for a new license will need to pay the \$35 FCC application fee, there will be no FCC charge for future upgrades and administrative updates, such as a change of mailing or email address. Most current licensees, therefore, will not be charged the new FCC application fee until they renew their license or apply for a new vanity call sign."

ARRL previously [reported](#) that the new \$35 application fee for amateur radio licenses will become effective on April 19, 2022. Further information and instructions about the FCC Application Fee are available from the ARRL VEC at www.arrl.org/fcc-application-fee.

The Ohmite Glass Dummy Load

As a collector of radios from the past, I am always on the lookout for interesting and unusual devices that were used in the maintenance side of radio. Recently I came across such a device that seems to be

extremely rare. It caught my attention because the only other reference I had ever seen to one of these devices, was in an obscure 1936 radio parts catalog. The Ohmite Resistor Company made all types of resistors back in the '30s, including carbon, wire wound, ballasts, etc. One of the specialized resistors was the Ohmite glass dummy load. These were round glass bulbs of the same size as a 100 watt lamp of that era, but they contained a resistor that acted as a dummy antenna. Models were available in 100 and 250 watt, and available resistances ranged from 13 to 500 Ohms.

Not only were these dummy resistors sold individually, but at the same time, the BUD Company, which manufactured metal products ranging from radio cabinets to railroad cars, incorporated the Ohmite dummy load into a test instrument that included an RF ammeter and metal case. Designed to handle 100 watts at a 74 ohm load, the BUD device provided amateur operators with a bulb type dummy load and measuring device for tuning low to medium power transmitters.

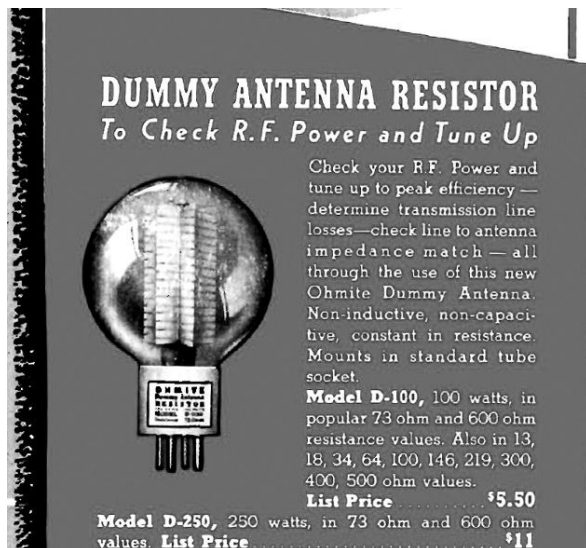
In my 65 years as a ham, I had never come across an actual Ohmite bulb, or the Bud assembly until this past February 2022. Naturally, I scooped the available item up and it is now on display with my antique radio collection.

John DeMajo



The Demise of the Southeast D Star Weather Net

In 2009 I acquired my first D Star radio, a handheld Icom ID 92AD. RARC had a VHF D Star repeater at the time, but no internet connection so no linking of repeaters. Knowing that many D Star repeaters were being linked via internet connections, I began to carry the HT with me when I was traveling. On a trip to Tampa some years ago, I dialed in the local D Star repeater frequency on a Sunday night and heard the Southeast D Star Weather Net for the first time. There were about 20 D Star repeaters linked to Reflector 004A from Texas to Florida and up the east coast to North Carolina. I was impressed at the coverage and the crystal clear digital audio. I could see how this type of network – essentially a wide area repeater -- would be valuable in the event of a hurricane along the Gulf and Atlantic coasts. When the W4FJ repeater connected to the internet in about 2013, we connected the VHF module to this net every Sunday night at 9:00pm. Some of our local D Star users would check in occasionally, and I know many listened. The net was run by a group of hams in Georgia, known as Georgia D Star. I learned recently that the Southeast D Star Weather Net is no longer. They posted an announcement that the net had been discontinued due to the inability to attract enough net control operators. I was surprised because as recently as last December, I heard around 40 stations regularly check in to the net



on Sunday nights.

There are still a number of regular nets that D Star users can participate in, either by using a hotspot device connected directly to a reflector, or by linking one of the W4FJ modules to a reflector. For a list of D Star nets, check out dstarinfo.com/nets.aspx. Despite the competition of other digital modes, D Star is still growing, just not as fast. There are now 959 D Star repeaters in the United States. Icom continues to release new D Star radios, as well as a new line of D Star repeaters. Look for a D Star repeater in the Williamsburg area to be on the air soon. And see the listing in this newsletter for other times and nets that W4FJ participates in.
Win - W4WIN

RARC Remote Control Station Redo

Users of the club's remote control station have reported periods when it would freeze on transmit. It was most frequent on 40meters and occasionally on 80meters always in SSB at full power. There would be no failure for months and then lockups day after day for a month. We put ferrites and toroids on all the Ethernet and USB cables to no avail. Finally we decided to rearrange all the gear in the cabinet to put everything emitting RF at the top and everything else in the middle and bottom. In the process K4RKO found a PL-259 connection that had been partly melted. It appears that the coax had been twisted, broken some of the strands, and was overheating and causing enough of a meltdown that the coax was opening up. That would leak enough RF to get into the computer or the cables leading to a computer causing a freeze in transmit mode. Obviously, we fixed that.

The club bought, and we installed, an HF coax choke and several ferrites to make sure we killed and buried any RF on the lines. We used lots of cable-ties to cinch tight every cable we could. It will be many weeks of faultless operation before we can say for sure that the coax fitting was the root cause of the failure. It makes sense but you know how "makes sense" works in the radio world!

The picture shows how it looks now. We think it looks very nice. Credit for the afternoon of work goes to Mike Owens, K4RKO, Tom Flippin, KC4CMK, Ken Leidner, WV0L, and me.
Bruce MacAlister, W4BRU

Radio Body

Radio control head

Computer, display with keyboard on side

FCC-required Internet power switch Router

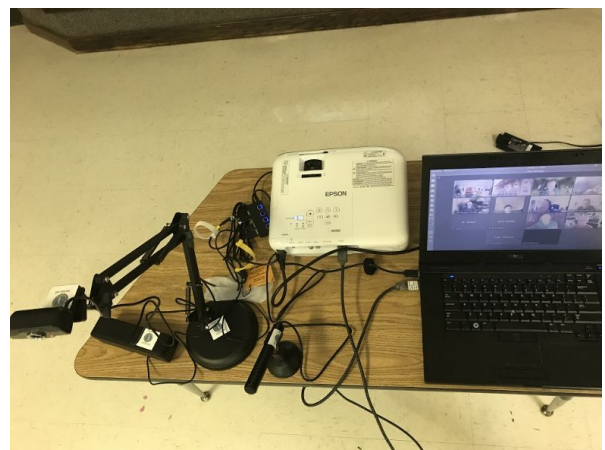
Power supply with UPS diverter relay

In back, UPS for computer



RARC-Zoom-hybrid-meeting-setup

this is the Zoom-audio-video gear used at a club meeting



New Hams Workshop offered April 30

Hams with their new Technician licenses often tell us it's difficult to figure out what to do about antennas, what radio to buy, what do these ham code-words mean, etc. Our 2022 approach is a streamlined teach-to-the-test class followed by a workshop to cover the issues new hams bring up. (Credit for this idea goes to the Nashua and Milwaukee ham clubs.)

We sent email notices to all the recently licensed Tech hams and in-class students offering them first choice to sign up. Now it's open to any ham who wants to attend. We can handle up to 40 people. It's at the railroad museum and costs \$15. That covers entrance to the museum and supplies. Folk register at

<https://rarclub.net/seminar-registration-form/> . We will stop registration when 40 people sign up or Sunday, April 17 th whichever comes first. (We need a count and time to order supplies.) Once registered, we'll send those registered more information by email.

Topics:

Antennas: building simple 2m and 70cm antennas, connectors and adapters, cutting coaxial

cable, installing connectors, J-Poles both pipe and roll-up, using antenna analyzers, and answering your antenna and feedline questions.

Ham community: clubs, repeaters, meetings and gatherings, ARES, Skywarn, saying "listening" vs "CQ," simplex vs repeaters, regular nets, ham radio lingo, and answering your questions.

Digital VHF-UHF: intro to DStar, Fusion, and DMR, nets in-town and around the world, programming VHF-UHF digital transceivers, digital hot-spots, and answering your digital radio questions.

HF: getting an inexpensive SDR receiver and listening, PSK, FT8 and other digital modes, demo of remote controlled radios, Raspberry Pi radio control computer, and answering your HF questions.

Picking gear: cost vs function, new vs used, vendors, loading frequencies, and answering your purchasing questions.

Satellites: review of VHF-UHF ham radio satellites, kinds of communication, equipment required, demonstration, and answering your questions.

For questions contact Bruce MacAlister, W4BRU, <mailto:w4bru@arrl.net> .

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.**

Estate Sale! I have a long list of Ham equipment I am going to sell either locally, on QRZ or eBay. Hams can email me at n4nqy@arrl.net for a spreadsheet of what's for sale. Included is HF equipment, VHF and UHF mobile radios and handheld radios (both analog and DMR) and various accessories. JB Edmonds, N4NQY.

Test equipment, misc. Electronics: An acquaintance of Scott, AE4TC is trying to clean up his dad's collection of avionics, electronics, test equipment, racks, transceivers, receivers, surplus etc. This is Mr Sternheimer's collection, he owned the A&N stores here in Richmond. There's several rooms full of equipment. Some new stuff still in the box. There's ham equipment, meters, cable, and so on. He is looking to get rid of this stuff and looking for people who can appreciate it. Please contact him directly, his name is Zach. zastarri@comcast.net

For Sale:

1. Ameritron AL-80A linear amplifier. Very good condition. Bought 3 years ago (used) and I never used it. Made full power when I got it. \$500. IF interested, call Dennis, KG4UT, cell (804) 709-5717.
2. MFJ Kilowatt dummy load. Bought new, never used. \$75. If interested, call Dennis, KG4UPT, cell (804) 709-5717.
3. Boonton Model 250-A Impedance Bridge. Very Good condition. I replaced filter caps. This reads the parallel combination of resistance and reactance over the range of 500 KHz to 250 MHz. I bought this for a project I was working on, and it did fine, but no longer have a need for it. \$75. If interested, call Dennis, KG4UPT, cell (804) 709-5717.

For Sale: Yaesu 857 with LDG YT-100 Autotuner. \$700.00 Contact David Robinson at (804) 833-3351 or thedarbinian@comcast.net.

ANTENNA ROTATOR FOR SALE:

THIS IS A YAESU G-800SA. IT IS BRAND NEW NEVER REMOVED FROM THE BOX. NEVER HOOKED UP OR USED. SOLD AS IS. COMES WITH A GC-038 BRACKET AND 125 FEET OF NEW 8-CONDUCTOR ROTOR CABLE. PRICE: \$ 550.00. Contact JERRY WILLIAMS, KJ4IT. 804-730-0221.

Thought For The Day

A bargain is something you don't need at a price you can't resist.

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		

Report of the First Annual RATS/RARC Virginia QSO Party

Held March 19, 2022

Prepared by Jim Rubin, W4PKR

March 20 th , 2022

Date Held: 3/19/22 1200-1700hrs Local Time (1600-2100 UTC)

Location: Bon Air United Methodist Church

Set-Up Crew on 3/18 & 3/19/22: Jim W4PKR, Bill N4WLC, Judi N4JDI, Dave W4IIA, Tom KD4CMK (RARC)

Attendee Count: 15

HF Contacts Made: 36, with 34 that will be verifiable (see notes below)

VHF/UHF Contacts: None Attempted

Equipment Utilized:

- 1) HF ICOM 756-Pro feeding an end-fed 100', up about 15ft across the parking lot.
- 2) HF ICOM 756-Pro* fed to a 40' horizontal loop we set up about 4-5' above the church's roof.
- 3) Yaesu FT-991 transceiver (owned by David, KO4RNT) which replaced the non-functioning ICOM 756-Pro (see notes, below).
- 4) Kenwood TM-D71 Dual band VHF/UHF transceiver fed to a dual band J-pole on the roof of the church.

*Notes:

Things went very well, considering that the idea for this event did not occur until less than two weeks before it happened! The most important thing is that fun was had by all. In addition, we discovered a lot about the RATS equipment that has been in storage and what works, what doesn't and what we will need to improve and tweak for the next event, which will be Field Day, coming up in June.

The most important discovery is that one of the Icom Pro-756 transceivers would not transmit. It received quite well, however. We tried what we could think of at the time (including, of course, the "power" knob on the front panel), but no joy, we could not get any signal out at all. We tried two different mics. It was suggested later that maybe a "factory reset" is in order, so we can give that a try. The rig may have been used for digital previously and did not want to see a mic input being used.

The Icom was replaced with a Yaesu FT-991 belonging to David, KO4RNT, eventually, but it turns out that the loop antenna on the roof didn't want to hear any local signals, but was doing great for DX. I responded to a couple of DX contacts (Slovakia & Germany!), but they were not in the QSO Party and frankly, I forgot to write down the frequencies I contacted them on, so they won't count for anything.

Meanwhile, on the other table, Bill, N4WLC and company were raking them in and counted a total of 34 contacts, almost all in VA. I will look up how to get those contacts to SPARC.

VHF/UHF: None of us were really interested in using the Kenwood. I think for next time, I will give it "the old college try" just to see if anyone is listening, but we never heard a peep on the frequency that SPARC suggested for VHF. Dave's (W4IIA) J-Pole didn't want to see UHF and he concluded that was because of all of the metal on the roof below it. The Astron power supply that came with the Kenwood blew two fuses, so we used the power supply I brought.

Computer issues: Because of the limited time frame involved, we never had time to figure out how to hook up the RATS laptops to the Icoms and in any case, we also had no time to figure out how to set up the N1MM program to log the VA QSO Party. This is why we have hand a written log. Dave, W4IIA has our two RATS Lenovo laptops, currently, and will bring them up-to-date as they need to be. Speaking of those two Lenovo laptops, both have non-functioning batteries. Bill, N4WLC, is looking into the costs of replacing them.

Conclusions:

This is not news, but we need to do an inventory, and soon! With Field Day around the corner, this is an imperative. I am confident we can pull it off, after having done this QSO Party on such short notice, but we need to really sit down and have a full accounting of what we have that works and what needs to be replaced, and what we made need that we don't have in the first place. We can certainly do Field Day with the Icom 756-Pros, if they both work. They don't have all the fancy bells and whistles, but they can get the job done, we just need to make sure they work and that we know how to get them hooked up to the PCs and so on.

As far as doing the VA QSO Party again, I would love to do this next year, now that I now know when it is and I will plan ahead accordingly. As well, I don't think we'll do it at the church, as it limits our antenna possibilities.

I'd like to give a special thanks to our fearless leader, Jim K8OI, for the idea in the first place and for his support. Thanks very much to John DeMajo, K5HTZ and Tom Flippin, KD4CMK of RARC to helping to make this a success and making the church facilities available. Also, thanks to Kathy Blaska at the church for allowing us to use the facilities on such short notice. Thanks again to a great RATS team: Judi, N4JDI (great sammiches!), Bill N4WLC, Dave W4IIA and David WD30 (who helped me get the equipment loaded out on Thursday, 3/17!).

Respectfully Submitted,

Jim Rubin, W4PKR

Have your own Radio Station!

**Learn
AMATEUR
RADIO**



AT HOME IN YOUR SPARE TIME

Get your Amateur Radio license and "go on the air." NRI, leader in Electronics home training for more than 50 years, offers a choice of training plans leading to required FCC licenses, ranging from Basic Amateur Radio for the beginner to Advanced Amateur Radio for the ham who already has a license and wants to move up.

HAM RADIO EQUIPMENT INCLUDED

NRI's beginner's course includes your own Novice Class 25-watt transmitter, 3-band receiver and transistorized code practice oscillator with code key and headset. You learn code using special LP records. Choose from 3 Amateur Radio courses. Low tuition. Monthly payment plans. Get all the facts. Mail coupon. No salesman will call. NATIONAL RADIO INSTITUTE, Washington, D.C. 20016.



.....MAIL COUPON TODAY.....

NATIONAL RADIO INSTITUTE 53-039
Washington, D.C. 20016
Please send me information on Amateur Radio training.

Name _____ Age _____
Address _____
City _____ State _____ Zip _____

ACCREDITED MEMBER NATIONAL HOME STUDY COUNCIL

