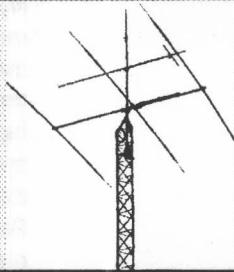


The AARC Beacon



*Amateur Radio News For
Charlottesville and
Albemarle County,
Virginia*

Volume 2002, No. 1

January 2002

Inside this Issue

- 1 Meeting Notice
- 1 AARC Dues are Due for 2002
- 1 Dinner Meeting In January
- 2 The President Speaks
- 2 Veep Peeps
- 2 Help Fill The Well
- 2 Calling All Interested in Contests
- 2 Club Business
- 3 A Hybrid Crystal Set Design
- 7 AARC Classified Ads
- 7 Area Hamfests
- 7 Birthdays This Month
- 7 FCC Database Updates
- 7 VE Session Schedule - 2002

Meeting Notice

The next regular AARC meeting will be held on January 6, 2002 from 6 to 9 PM at the Ponderosa Steakhouse off 250 at Pantops. ***** This is the annual AARC Winter Dinner meeting *****. We have the Banquet room reserved for this time period. See you there!! (Tx Josh, KG4NGV)

AARC Dues are Due for 2002

AARC Dues are due January 1, 2002.

The dues are the same as this year. \$20 per individual adult and \$25 for family (2 or more adult Hams who are Members.). Additional donations are welcomed.

Dues are payable to AARC and should be mailed to:

Ralph Traylor, K4CFE, 4535 Woods Edge Road, Troy, VA 22974 or hand delivered to him at the January Club meeting.

Dinner Meeting In January

The Winter Dinner meeting will be held on January 6, 2002 from 6 to 9 PM at the Ponderosa Steakhouse off 250 at Pantops. ***** This is the annual AARC Winter Dinner meeting *****.

Watch for further specific details in the January newsletter, Listen to the nets for specific details.

HAPPY NEW YEAR!

The President Speaks

Bob, K4DU

No VP column available at press time

Veep Peeps

No VP column available at press time

73, Vic

Help Fill The Well

Harry, W2HD

There's another of his crazy, confusing titles! Not necessarily folks... in fact this one is very easy to figure out. The well is the source of knowledge and assistance which most of us have needed during our Ham Radio lifetime. At the beginning, it takes the form of our instructional classes and "Elmers" (those people who have assisted us in our Ham Radio progress.) Perhaps some of you studied strictly solo for your examinations, but most of us have had the help of others. My Elmer was my Father, the late W2GG.

At any rate, most of us have gone to "The Well" many times. It doesn't end with the formal training in the class room. How about the questions we hear so frequently about antennas and equipment? There are frequent requests on the air on these subjects. A response is usually obtained from someone whose experience or training provides the necessary answer. "Elmer" has come forth once again.

OK, Harry, what has that got to do with me? Simply, the answer is that you may now be in a position to help fill the well from which you have made many withdrawals. Perhaps you have completed formal training or have had experiences which answer questions. Do not remain silent, but offer your encouragement and response.

Better yet, how about taking on the role of instructor in the club's beginner level classes at CATEC? At the last AARC meeting there were more than a half dozen members who desired a General Class course. We would be unable to handle a beginner class and a General class at the same time unless additional instructors come forth. Please don't say you aren't qualified to teach. Have you ever tried? Remember, there was a time when you weren't licensed yet you learned the material to pass the exam. It is not too difficult to pass along your gained knowledge to someone else in a classroom. You have the benefit of an instructor's guide and your own ability to explain. You might wish to pair up with an experienced instructor until you gain confidence. Help fill the well!

My days as a Naval Reserve instructor are recalled with fond memories. After all, I was an officer in the Navy... didn't that make me a qualified instructor? Far from it, folks. The thought of getting up before a classroom of a dozen or more high school grads was almost terrifying! However, after a session or two that all changed. It was apparent that my experience as a Ham was a partial qualification. Remembering what a former high school teacher had said to me, "Next to knowing is knowing where to find out!" helped considerably in hurdling an occasional obstacle.

My water jug was overflowing before long and the satisfaction of putting water back into the well was a most gratifying reward. At the end of the first course there was the great feeling that kids who didn't know an ohm from an amp were on their way to becoming electronic technicians in the service.

How about it, fellows and gals? How about giving it a try? Those of us who have been down the trail before will be around to assist. There is no greater pleasure than seeing your students succeed at course's end. AND... you did it!

73... /s/ Harry, W2HD

Calling All Interested in Contests

Bob, K4UVT

Anyone out there interested in ham radio contesting? This includes anyone from the casual few QSO's in a contest on an occasional basis to the ham who participates in contests regularly and going for a win! I personally know of 2 or 3 members who are active in this phase of the hobby.

This is simply a poll to ask who may be interested. We are considering forming a local chapter of the Potomac Valley Radio Club (PVRC) if we have enough members to keep such a chapter viable and active. Pse let me know if you have any interest in this area.

Club Business

AARC Board Minutes December 4, 2001

Present: Stan Hazen, K2SSB, President; Vic Vickery, N3DFS, Vice President; Joe Fritz, KD4RWX, Secretary; Elmer Scott, KF4UCI, Director; Dick Mulikin, W4BZW, Director; Mike Colburn, N4HRO, Director; Greg Faust, N4PGS, Director.

Visitors: John, KX4P; Hein, N4FWA; Dave, K4DND; Jimmy, K4JMY; Marty, AG4DN; Steve, KD4HBX; Bob, K4DU; Peter, KG4JLL; Josh, KG4NGV.

Joe mentioned that he believed that the committee which had been working on Bylaws should continue their work.

Indicated that he needed this year's Public Service participation information in order to prepare certificates. He is preparing the Secretarial records for transfer to Marty, AG4DN. The new President will need to make preparations for doing the newsletter activities for the coming year. He volunteered to continue to maintain the Club database and provide the appropriate label support as he has in the past. He would provide the Secretary with Membership lists. Also, he would continue to do the Master copy of the Directory, which is fundamentally associated with the database.

Elmer reported that the 440 repeater had been repaired. The part was \$41.05. He recommended that the 7K Controller on the .925 repeater be moved to the .760 repeater at Marshall Manor. This would remove the Autopatch capability (which is seldom used) and permit a linking of the 440 and two meter repeaters.

Vic restated that the next meeting would be a question and answer format.

A reminder that the next Board meeting would be on January 2nd at the Downtown Library.

A motion was made to move the 7K Controller as stated above and to change the input tone to the 146.760 Repeater from 88.5 to 151.4. The motion passed.

A Request was made for a letter to be sent to Dennis Hahn at the Albemarle County Police Dept. He was the speaker at the previous meeting. The Secretary will do that.

The meeting adjourned.

The Officers-Elect and Directors-Elect who were present at the meeting were asked to remain for a quick informal meeting.

Regular Meeting November 13, 2002

Stan, K2SSB, President presiding.

Previous Minutes were approved.

The Treasurer, Ralph-K4CFE reported the current revenues were \$1,829.00. The current expenditures were \$1,640.43. The Current balance is \$2,162.69. He asked that all outstanding requests for repayments be submitted prior to December 31st. The Treasurer's Report was approved.

The Chair of the Technical Committee, Elmer, KF4UCI reported that the 7K Controller on the .925 repeater will be moved to the .760 repeater at Marshall Manor. This would remove the Autopatch capability (which is seldom used) and permit a linking of the 440 and two meter repeaters. That a change in the input tone to the 146.760 repeater from 88.5 to 151.4 will be made by February.

Stan mentioned that 2002 Dues are due on January 1st.

Josh, KG4NGV indicated he was looking into the Ponderosa as a possible Winter Dinner site.

Tom, W4RAE reported on the Education Committee's recent classes. He suggested new classes will be held early next year. Watch for announcements. A count of hands indicated that seven (7) individuals would like to participate in a General level class.

Greg, N4PGS reported that two Boy Scouts had been awarded Radio Merit Badges. He expressed appreciation to Harry, W2HD and Dave, K4DND for their valuable assistance.

Harry discussed classes.

Dave, K4DND mentioned that electronic QSL cards are possible with limitations as to the acceptability for ARRL awards. This can be checked out at <http://www.eqsl.org/qslcard/>

[NOTE: Joe-KD4RWX checked it out and found he had two cards sent to him. One from 1992 and one from 1993 contacts. One of those was from an Italian contact.]

Question and Answer session Program followed.

Submitted by Joseph D. Fritz, Secretary

A Hybrid Crystal Set Design

Joe Giovanelli, W2PVY

I was fascinated with radio from my very early childhood. When I was five, I moved our console radio away from the wall to see where those voices came from. I was, well, shocked, to find some rather hot, glass things, and an oddly shaped paper "thingie" which was kind of shaking with each sound coming from the radio. I put all of this in the back of my mind, knowing that some day I would understand these new discoveries!

Two or three years later I was given an elementary crystal set, earphones and all. It was a design which was often used at that time. I'm sorry that I could not find a photograph of this type of receiver. In essence, it was nothing more than a coil whose inductance could be changed by moving a "slider" up and down the coil. In such a circuit, tuning was accomplished by the capacitance between antenna and ground, and the inductance of the coil. I don't have to tell you that the Q was low and, therefore, selectivity was awful. One station would occupy much of the "real estate" of the BC band. I was glad to hear three stations, when connected to a decent antenna and ground.

During high school I designed more advanced sets, employing variable capacitors. Tuning was much less dependent upon stray capacitance. With a primary winding which accepted the signal from the antenna, performance was considerably improved. Of course, the primary was coupled inductively to the secondary winding of the coil--the one which was connected to the variable capacitor.

I remember clearly in 1950, during my college days, that I wanted a reasonably high fidelity AM radio, and the crystal set immediately came to mind. Because of its poor selectivity, none of the sidebands were likely to be reduced, so relatively high quality could be had, depending on what the AM station offered.

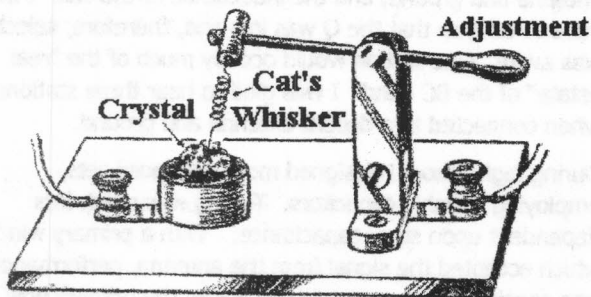
I still had to face selectivity problems if I was to hear all the stations which were on the air in Syracuse at that time. I used a two-gang variable capacitor and two ferrite-tuned coils (permeability tuned if you prefer). I had to play some tricks to obtain good coupling. I could align these circuits using trimmer capacitors at the high end and the slugs in the coils to trim the low end. This got the two tuned circuits to work together. I recognized that such a design was not without cost in output, so I substituted a resistor instead of the headphones and connected the output of this detector to the input of an audio amplifier. This circuit worked well, and, if you can locate such coils today, I recommend this as a simple and effective project for a beginner. Use a 1N34A diode and not the old galena detector, shown in Fig. 1.

It has been fifty years since that design. I stumbled on a website that you might look at if you have any interest at all in the design and operation of these basic radios. The URL is: <http://www.thebest.net/wuggy>.

I suggested to one of my old radio buddies from New York that he check this out. I challenged him to develop a better radio than mine. He's more knowledgeable about electronics than I am, so I wondered what he'd come up with, assuming he took the bait. He did!

His design included three tuned circuits, with a fancy voltage doubler. I have not seen one of his radios, but from what he tells me, it did out-perform my design. Well, I didn't feel like being out-done, so I started looking into my junk box.

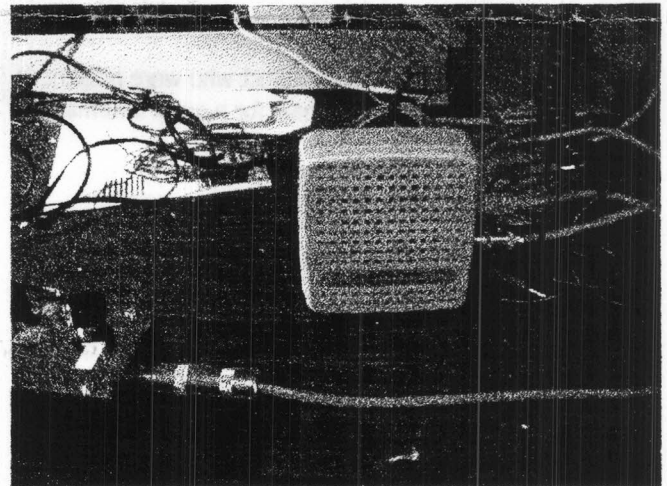
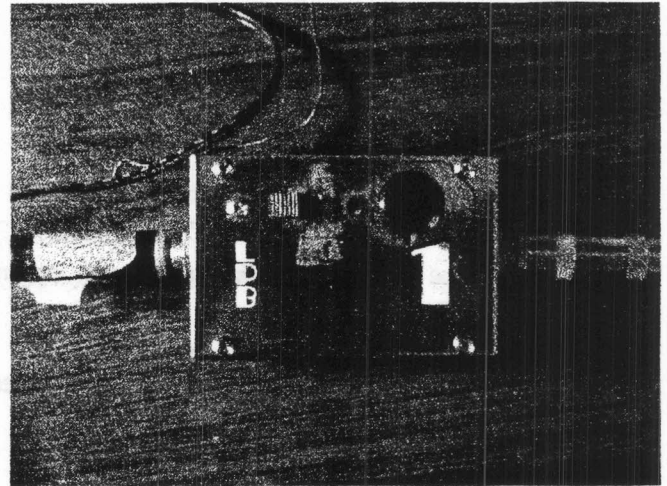
That junk box proved to be bare. I only had a single gang capacitor, and I knew it would not do much. Then I got thinking about what I did have. One item is called the Justice Twin-Coil antenna. This is a device consisting of a tuned loop, followed by an RF amplifier. This is shown in Fig. 2.



I wired up a detector using a piece of wood to mount all components. I used wood screws with reasonably wide heads. This gave me a way to mount components and secure them. Again, I knew I would need an audio amplifier

to pick up the weak signals from this circuit. This is a little Radio Shack unit, shown in Fig. 3.

I received one station rather weakly. It was a start, but what could I do now? I realized that the output impedance of the Justice unit is 33 Ohms. I don't have a clue what the input impedance of a diode detector might be, but I knew that it must be several thousand ohms. I wound a coil which is really an autotransformer. It is tapped 10 turns from the ground end, and I would 60 more turns after that.



The Justice unit was connected between the tap and ground. The diode was fed between the high end of the coil and ground. (low end of the coil).

Results were quite a bit better, but I still didn't have much audio. I went in two directions at this point. First, I needed more audio gain, so I used what some musicians call a "power booster." This is really a voltage amplifier, and I had at least one of these on hand. This is shown in Fig. 4.

At least one station came in nice and loud with this, but I didn't hear all the locals. So my second direction was to add a ferrite rod from a discarded portable radio. Boy! That sure made a difference. At the low end of the band I could now hear a rather weak signal from Harrisonburg. Response was not flat over the band. This coil is shown in Fig. 5. The wires of different colors means only that I ran out of wire so used what I had.

I wanted more performance, and again looked at what I had on hand. I had what is called a Select-a-Tenna by its manufacturer. This is a 12-inch diameter loop, tuned by a variable capacitor. Here it is in Fig. 6. This device is to be placed near an AM radio and when tuned to the same station to which the radio is tuned, reception can often improve up to 20 dB. (Some old-timers in our club will remember my demonstration of this device.)



I coupled this to the tuned loop of the Justice unit, and I did notice an improvement. I didn't quit there. The Select-a-Tenna has an output jack designed to feed into the input of home Hi Fi AM tuners, which are notoriously terrible. This unit makes them come alive. This jack is wired to a one-turn link which, in turn, is wound on the cold end of the loop. Well, maybe the maker called this an output, but I called it an input, and used it to connect my 252-foot long Carolina Windom. Using both the little amplifier and booster, I could then hear 17 stations, count 'em, 17, during daylight hours. At night I obtained incredible reception.

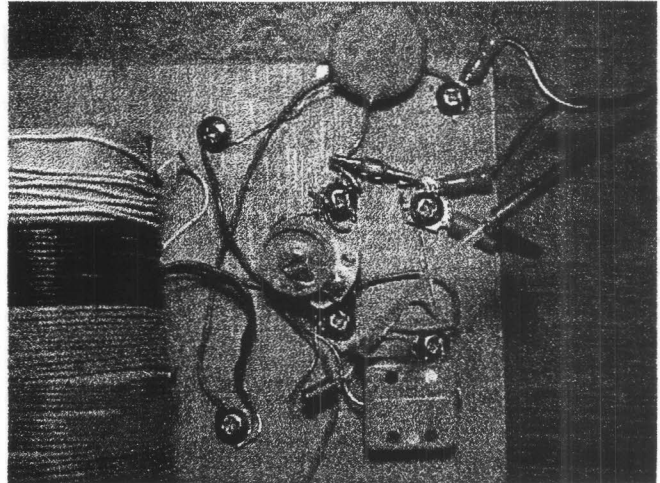
Much of the success of this arrangement is the result of the added selectivity of the select-a-tenna added to that of the original Justice unit. Had it not been for this, the added signal would have overwhelmed the Justice loop and the increased gain would have been offset by the lack of selectivity. I would have heard many signals, but they would be received all at once!

This arrangement worked so well that I presented this version to the Club. The received strength of the local

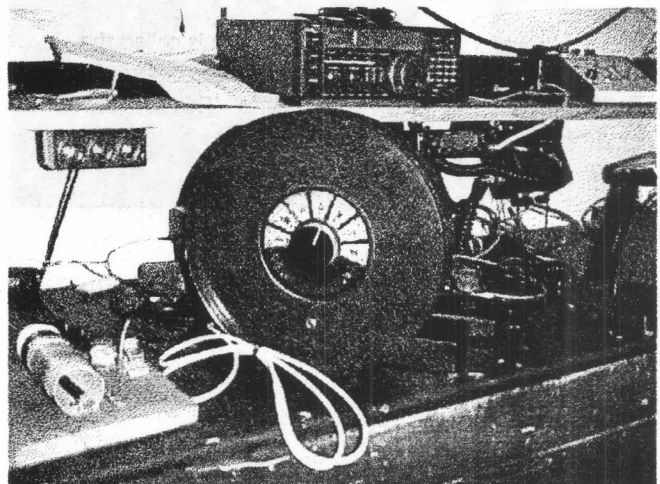
stations was too great, and they covered the whole band. A single tuned circuit could not handle this. Even with the addition of the Select-a-Tenna did I overcome that problem. Club members could at least hear one or two stations booming. I didn't need the booster.

Here are two views of the project board as demonstrated at that meeting. See Figs. 6 and 7. The entire setup shown at the meeting is shown in Fig. 8.

Since the meeting my mind still was working over-time. I



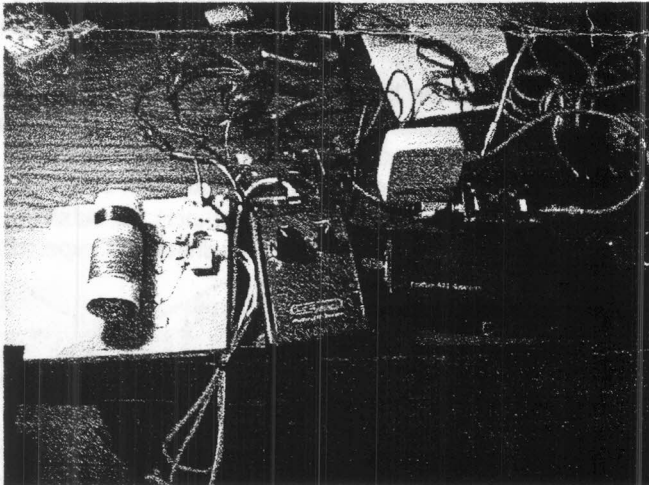
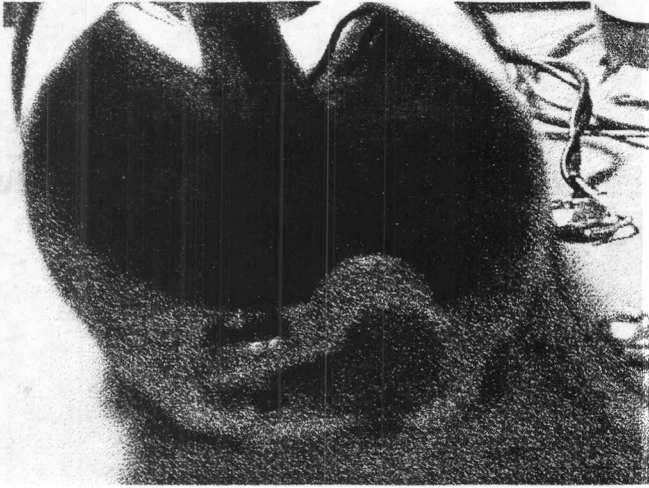
knew that I would not get a good impedance match using that coil. Further, I realized that the impedance would vary with frequency. I gave up on it, and built an RF amplifier. The output from the Justice Twin Coil antenna was fed into the base; the collector fed the diode detector. Results: I no longer need the booster. Signals received with only the Justice unit are as strong or stronger than what I received with the outside antenna. I still can connect the outside antenna, and the RF stage is not over-driven as I expected.



Although I received stronger signals, there wasn't near the advantage as was true of the original design. In the day time, using that outdoor antenna, I can now receive in excess of 20 stations. You know there aren't that many

locals. I am hearing signals from as far away as Washington, D. C. Harrisonburg and Roanoke are locals!

In closing, I will leave you with the thought that when you see a piece of gear, you should look at in ways which the maker never considered, the way I did with both the Justice and the Select-a-Tenna units. (Both devices are available, and manufactured, by the C. Crane Company. Phone is 800-522-8863. Web address is <http://www.ccrane.com>.



AARC Classified Ads

All items must be related to amateur radio and must be surplus to the owners operation (i.e. no dealers or for profit). Price may be listed if desired. **Note:** Check also the WA4TFZ/AARC web page at <http://www.people.virginia.edu/~ejd4e/aarc/>. Please note that all small letters must be used for this address. New Ads may be placed directly to the Editor: 434 990-2659 or via E-mail to the Editor at k4uyvt@yahoo.com Please **let K4RKA know when items can be deleted from this file.** Updated 9/20/01.

11/29/01 FOR SALE: Tower/Beam/Rotor	Ben, W4SXH, offers for sale a Rohn Tower, 3 x 10 foot sections plus top section w/rotor plate. (will throw in beam if wanted). 10-15-20 Meter beam (probably a TA33Jr), needs work (\$25). Also HAM II control box with water damage rotor thrown in (\$75). Call him at 804 973-3703 or see at 110 Kerry Lane
12/13/01 WANTED: Microphone	Millard, KG4JAO, is looking for a microphone suitable for use with a Swan 350 transceiver. If you have one, contact Ron, K4RKA on the air or at 973-3640.
12/13/01 FOR SALE: Dual Band Base Antenna	Rick, KO4WQ, has a dual band Ringo Ranger for sale. Covers 2m & 440 MHz. Call 823-1128.

Area Hamfests

February 10 FrostFest 2002	*** Virginia State Convention *** Sponsored by: Richmond Amateur Telecommunications Society http://www.frostfest.com Contact: Pat Wilson, W4PW 4416 New Kent Highway Quinton, VA 23141 Phone: 804-932-9424 Email: w4pw@arri.net
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Birthdays This Month

Jan 1	KC4TQF	Bill
Jan 2	K4TY	Charles
Jan 6	K4NZ	David
Jan 8	KF4NOO	Frank
Jan 8	KE4DDR	Don
Jan 17	KA4JJD	Mike
Jan 19	KF4UTD	Ed
Jan 24	WB5BNT	Tommy
Jan 25	KD4SOC	Bill
Jan 29	W2BR	Bob
Jan 31	K4MTX	Casey

FCC Database Updates

New Calls

KG4QHZ	Kenneth Smith Jr., Charlottesville
KG4QIA	Walter Parsons, Palmyra
KG4QIR	Daniel Bateman, Louisa
KG4QJC	Richard Wardwell III, Palmyra
KG4QVO	Ronan Lynch, Ruckersville
KG4QVP	Benjamin Mills, Charlottesville
KG4QWR	Jeffrey Seay, Mineral

Upgrades

None reported

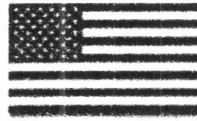
VE Session Schedule - 2002

January 8 Madison (ARRL VEC) Madison VE Team	John Berry (540) 543-2580 Email: af4cy@arri.net 9:00 PM (Walk-ins allowed) War Memorial Building Main St. Madison, VA 22727
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Albemarle Amateur Radio Club
P.O. Box 6833
Charlottesville, VA 22906
<http://www.people.virginia.edu/~ejd4e/aarc/index.htm>



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ISSUE DEADLINE - 23rd of each month

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K4uvt@yahoo.com

KA4JJD G 2001

CURRENT MEMBER: 2001

Michael F. Rein
109 Sturbridge Rd.
Charlottesville VA 22901

*** Next Club Meeting *** January 6 - 6-9 PM Winter Dinner

CLUB MEETINGS and NETS

REGULAR Meeting: Second Tuesday of each month at 7:30 P

BOARD & TECHNICAL Meetings: First Tuesday of each month at 7:30 PM

Meetings are held at the National Radio Astronomy Observatory (NRAO) building on Edgemont Road (UVA)

LUNCHEON: Wednesdays -- Area hams gather at the Wood Grill Buffet on Rte 29 North from 11 AM - 1 PM

Monday Night Information Net - Each Monday at 7:00 PM

YL Net: First Monday of each month at 8:30 PM

Northern Piedmont Emergency Net / Swap Net / Technical Session: Each Thursday at 8:00 PM

All Nets are held on the 146.760 repeater

AREA REPEATERS

INPUT/OUTPUT

146.160/146.760	88.5 Hz
146.325/146.925	88.5 Hz (if enabled)
223.160/224.760	No Tone
449.250/444.250	151.4 Hz (if enabled)
145.030	MACHO Node
145.030	CHO Packet Bulletin Board

Other Area Repeaters

145.410 (-)	100 Hz Tone (if enabled) -- AF4CY (Madison)
442.075 (+)	151.4 Hz Tone -- KF4UCI

AARC CALENDAR OF EVENTS

DATE	EVENT
January 8	Winter Meeting
February 12	Regular Club Meeting
March 12	Regular Club Meeting
April 9	Regular Club Meeting

AARC - PUBLIC SERVICE SCHEDULE

DATE	EVENT
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Please sign up at meetings when the SIGN UP CLIPBOARD is passed around. You can also send an email to Greg (N4PGS) indicating your interest in working particular events.