



AARC Bulletin

Newsletter of the Albemarle Amateur Radio Club, WA4ITZ

APRIL 1994



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Albemarle Amateur Radio Club
P.O. Box 6833
Charlottesville, VA 22906

MEMBERSHIP RENEWAL
"ADDRESS CORRECTION"

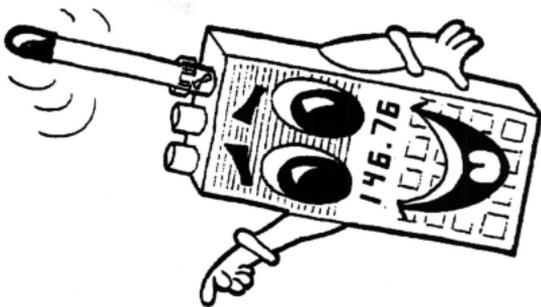
There was an error in the March newsletter that listed my address incorrectly. Some of your letters got through and your 1994 dues and your mailing label still indicates 1993 our files. We are taking measures to improve the process. at the top, do not worry. It will take a little time to update. Please contact me if you have any questions.

(phone 804 978-7342)

My correct home address is:

Sharon Duvall
1775 Tinkers Cove Road
Charlottesville, VA 22901

Thank You, Sharon Duvall, K04OC, Treasurer



Send articles for the AARC Bulletin to:

the Editor, Melissa Lang - KD4GRM or Co-editor, Ed Lang - KCAYLX.

DEADLINE for the May issue is April 15, 1994

Дирекция по развитию и связи с общественностью
Корпорации «Корпорация «Сбербанк России» - ЕОМЗ
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MEMBERSHIP SERVICE

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April 1994

AARC Calendar

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
4 7:00pm INFO Net	5 7:00pm AARC Tech/Board Meeting	6 8:00pm AAREB Net	7	8	9	10 Multiple Solicitors Walk	3 Daylight Savings - Start 1 Hour Earlier
11 7:00pm INFO Net	12 7:00pm AARC Meeting	13 8:00pm AAREB Net	14	15	16	17	
18 7:00pm INFO Net	19	20 8:00pm AAREB Net	21	22	23	24 March of Dimes Walk	
25 7:00pm INFO Net	26	27 Personnel System AAREB Net	28	29	30		

Month

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Month

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

The AARC Officers, Board Members and Chairpeople for 1994 are:

President - Greg Faust, N4PGS
 Vice-President - Rick Berman, KO4WQ
 Treasurer - Sharon Duvali, KO4OC
 Secretary - Melissa Lang, KD4GRM

Committees: Director Chairperson
 Fund-Raising - Bob Pattison Bill Hariu
 KM4DU N4ZZB
 Technical - Hein Hvatum Sam Gentry
 N4FWA N4WJQ
 Publications - Harry Dannels Ed Lang
 W2HD KC4YLY
 Education - Mike Duvall Bob Ross
 AC4ZQ WA2MFI
 Activities - Sam Gentry Hein Hvatum
 N4WJQ N4FWA

Committees Chairpersons for:

Digital - Roy Lane, W4OTF
 Recycling - Ron Richey, K4RKA
 Awards - Joe Fritz, KD4RWX

Other positions:

ARRL Liaison - Pat Wilson, NORDQ
 ARES/RACES Coordinator - Hein Hvatum, N4FWA
 ARRLVE Coordinator - John Gray, W6JUZ
 Trustee - Morris Jones, NM4R

EDITOR'S COMMENT



Ahhhhh, now we're into the April thing! The "official" First Day of Spring has come. April is known for the "showers" it brings. We've had plenty of cold precipitation here this winter, so at least the showers we're receiving now should be warm ones, awakening the plants in the ground and warming the trees for their new growth to start.

Just as the trees and plants have "slept" through winter, some of us have been "sleeping," doing very little with our Ham abilities. This is a great time to renew and refresh our Ham growth. The Club is also becoming renewed and refreshed with new members and new activities, strengthening the Club's vitality. We have the new hardware which has improved the 146.76 repeater, and work continues to make it even better. Then, there is the revitalizing of the 146.925 repeater with the old .76 equipment. Work is also being done to improve the 220 repeater and the change in the PBBS is "howling" packet with fresh excitement.

As spring and better weather advance into summer, we will see many beautiful things come into "bloom" that will strengthen our area Hams' ability to keep communication on track in the Charlottesville Community. Don't forget those community events that are stirring. There are the activities happening that Hams can participate in to help communication at the bike races, marathons, triathlons, etc., which are held to help our community.

So much renewal and growth. If you find that you have been one of those "sleepy" Hams, come join us. Begin or Renew your membership with the Albemarle Amateur Radio Club and bring your ideas and enthusiasms so that our Club continues its growth and renewal in our community.

Melissa Lay - KD4ERL

CALLING ALL HAMSS!

You may have missed, as we did, the "Behind the Call" and "Key Down" articles this month. Unfortunately, no one sent anything in for these to columns and so we had nothing to print. Please contact Joe Fritz, KD4RWX, with your information for "Behind the Call" and Melissa, KD4GRM, or Ed Lang, KC4YLD, with your "Key Down" issues. Thanks for your support!!

PACKET PACKET



The WA4TFZ PBBS has recently changed its 145.01 port to 145.61. This change has been made to allow users in the valley to gain access to our bulletin board via WA4BLD-2. This change will not affect any users in the Charlottesville area since they usually connect on 145.03 directly or via MACHO. Since the last Bulletin, the callbook feature has been reinstated on the board and can be accessed by either doing a "CB callisign" or going through the servers by using the "F-" command. As always, if you have questions or comments, about the PBBS, please send a note to me.

Ed Lay - KC4YLD



The T-Hunt for April will be held on Sunday, April 17th. The start time will be 1:30 p.m.

changed to 29.6 in 1985. The remote base was changed to 223.5 in 1987. Many very interesting contacts were made from these remote base stations.

The loss of the Club Room in 1989 caused these latter operations to be shut down until a new site was found. In order to continue to provide local coverage, the 146.925 repeater was relocated in the spring of 1990 and operated as a split site repeater between the residences of N4WJQ and N4KEI for a short time. After being converted to solid state by N4WJQ, it operated from K4RKA's home for several months until N4FWA arranged for a site on Observatory Mountain. It continues to operate from there and gradual improvements are being made. Parts from the old .76 repeater will be used to improve it even more in the future.

The formation of MARA saw another 2 meter repeater in the Charlottesville area. After a short period, the MARA repeater was sold to the AARC and the more modern solid state repeater put on Carter's Mountain on .16/.76. Just before this, the 450 repeater was completely rebuilt and the entire system arranged to operate from battery power. A packet repeater was installed and just recently a 220 MHz repeater has been added. The new controller on 2 meters has contributed to the ability to add an emergency phone patch which has been well received and has already proven quite useful. Thanks to the new equipment and lots of work by many people, the Charlottesville Emergency Amateur Repeater System can be proud of a well established and reliable communications network.

Res Risky - K4RKA

REMINER:
THE BOARD AND TECHNICAL COMMITTEES MEET THE FIRST TUESDAY OF EACH MONTH AT 9:00 AND ARE OPEN TO EVERYONE.

PRESIDENT'S LETTER

Is Ham Radio Dying?



Some articles in magazines and messages on the Internet might lead you to believe the end of Amateur Radio is in sight.

The number of amateurs -- as a percentage of the population -- has been in decline since 1968. In 1990 the average age of amateurs was 54, in 1989 it was 53 and in 1988 it was 52. What's happening? What's different now than 20 or 30 years ago, during the "good old days" so many people talk about? Is this the end? I don't think so. But it is the time for change. Maybe part of the problem is that there isn't enough difference between then and now. I remember a teacher once saying that all things must grow or die. Change is the natural order of things. Pick up any electronics magazine or trade paper and you see just how fast technology is changing. Sure, technology has changed, but what about our attitudes toward the hobby? Have our attitudes kept pace with these rapid changes?

What we may be seeing, for the first time since 1968, is a large influx of fresh amateurs entering the hobby. We're getting relatively large numbers of new amateurs who haven't been "socialized" into our familiar amateur practices. They talk about things like digital networks, spread spectrum, digital signal processing, a generation of computer-literate operators familiar with all sorts of arcane technologies. The technological feats that astounded our parents and grandparents are now taken for granted by those growing up in a world of TV satellites, FAX machines, cellular phones and laptop computers.

The big challenge of the future, the one that's going to make the difference between the life or death of our hobby, is bringing together the old and the new, joining amateurs rooted in tradition with those newcomers ready to "push the

envelope and explore new things. People not just interested in making communications work, but in what they can DO with it.

'Diversity' is the buzz word of corporate America in the 90's. It means taking all the different ideas and attitudes that make us unique and using those differences to generate new and better ideas. We must welcome the newcomers, have patience with them, listen to their ideas and in the finest tradition of Ham Radio, give them the fellowship, helpfulness and cooperation needed to help them grow. In doing so, the hobby will grow.

Ham Radio isn't dead, not as long as we all work together and lead the changes, instead of letting the changes lead us.

Greg Faust - N4FWA

PUBLIC EVENTS 1994

MSW1

Multiple Sclerosis Walk. Sunday 10 April 1994, 1400 EDT.

Walk in Charlottesville, Start and finish at the Omni Hotel.

DM1

March of Dimes. Sunday 24 April 1994, 1400 EDT.

Walk in Charlottesville, almost the same route as MSW1. Start and finish at the Omni Hotel.

Additional events that seem to happen annually are a triathlon, a biathlon, a diabetes walk, and one or two emergency exercises.

So be prepared, keep your batteries charged, and stay tuned.

File Name - H4FWA

Forestry Service, the repeater was moved to the Carter's Mountain location. Our Club was the first non-government group ever allowed on a Virginia State Forest lookout tower. The success of our installation opened the door for several other repeater groups across the state. Soon the growth of repeater stations dictated a change of the Charlottesville repeater to a "band plan" pair of 146.281/146.88 which was rapidly gaining popularity as the second most popular frequency pair. This was later changed to 146.16/146.76, which we are still using. By 1972, 11 Virginia repeater stations were listed in the ARRL Repeater Directory.

The increased activity of this type of station caused the FCC to establish a special category for stations designed specifically to repeat signals on a single frequency band. Charlottesville obtained the call WR4ADV which was changed around 1976 to WR4ATL due to a change of trustee. Another change by the FCC and the merger of the Charlottesville Emergency Amateur Repeater Society with the Albemarle Amateur Radio Club, resulted in a call change to WA4TFZR under which we are still operating.

Meanwhile the fun of playing with remotely operated stations resulted in a repeater on 444.251/449.25 out with remote base capabilities on 52.525 simplex. This station was put on the air in about 1977 and operated with the call WR4AYG from WA4FZV's QTH. The need for a 220MHz or higher control receiver on the 2 meter repeater spurred the development of a complete UHF repeater on the mountain which was put into operation in June 1980 with the input/output frequencies reversed to conform to the "southern" band plan. The loss of the remote base capability resulted in a second 2 meter repeater and remote base located in the AARC Club Room at the City Courthouse. This repeater operated with an input of 146.325 and an output of 146.925 with remote base capability on 52.525. It was put into operation in December, 1981 with master control from a telephone line interface. Remote base operation was

REPEATER STATIONS IN CENTRAL VIRGINIA/CHARLOTTESVILLE

-- a brief, limited history --

The earliest reported repeating station (as reported by Ken Sessions in the Radio Amateur's F-M Repeater Handbook, published in 1969) was an AM repeater located in Los Angeles. This repeater was established in 1956 and operated with 146.98 input and 145.22 output. The earliest repeater which is known to be operated in Virginia was a (presumably FM) repeater operated by W4DYE. It was located on Candler's Mountain near Lynchburg in the 1959-1960 era. This repeater station was operated with 146.68 input and 145.26 output and used GE Progress Line equipment.

By the mid to late 1960's, the most active repeating station in Virginia (from the FCC's standpoint, a remote base station, since REPEATERS were not recognized as yet), was operated by WA4VQH. It was located on Tobacco Row Mountain north of Lynchburg and provided coverage over a wide area, reaching from Cuipepper to Richmond and into North Carolina. The input frequency was 146.34 and the output was 146.94. It provided valuable service in August, 1969 during the famous Nelson County flood which was a result of the hurricane Camille.

The experience of the Nelson County flood encouraged many groups to establish repeater stations in their own areas for emergency communications. Charlottesville joined the activity in the spring of 1970 with a repeater station on 146.34/146.94 which soon changed frequency to 146.28/146.94 (since many early receivers were single frequency, a common output frequency was desirable). The repeater was first operated as K4RKA/RPT until a "Club" license, WB4KNX, was obtained. With the cooperation of the Charlottesville Civil Defense Office and the Virginia

VEED'S COLUMN



Hi, everyone. Just got back from four days in Orlando, Florida, where the weather is like what we will be getting in another month. Sunny, 80 degrees and very, very nice, but too crowded. We had a reunion of 140 NBC-TV retirees and it was good to see

people I had worked with for 36 years for the first time since 1987. A lot of them are Hams and still very active, but none of them are involved in community activities and public service the way we are. It made me proud to think of all the ways we use the medium of Ham Radio to help and serve. I think we should all give ourselves a big pat on the back when we realize that in addition to the enjoyment we get from the hobby of Ham Radio, and the teaching and learning that goes on because of our interest in the medium, that we also give to the community we live in and enjoy, some service to help. Not only providing communication for bike races and walkathons and triathlons, but also helping in keeping the police, fire departments, hospitals and the EOC augmented with communication and message forwarding during disaster drills, and if necessary the real thing. Lee Catlin of the Albemarle Police and the people at the EOC have all said how much they appreciate our assistance and ability to provide almost instant communications when their systems are overloaded and ours are not. I'm looking forward to our next meeting on April 12, when KC4YLX will be giving us a talk on the new Packet Bulletin Board.

Enjoy the good weather and see you at Bonanza or at the next meeting.

Rick Bureau - K04WQ

The April Meeting will be on Tuesday, April 12, 1994 at the National Radio and Astronomy Observatory on the UVA Grounds near Observatory Hill at 7:30 p.m. Everyone is welcome to attend.

TECH TALK

Packet Deviation Standards



Deviation is defined as the instantaneous change in frequency with a given input signal, or the peak value of the carrier departure from carrier.

The FCC defines narrow band fm as 1.8 kHz deviation. This seems to correspond with my observations of on the air signals that are showing values of 3 to 4 kHz. p to p. Most of the transmitters that have observed have their limiters set to about 2.0 to 2.5 kHz. The G.E. Royal Execs that are modified for the Ham bands are nominally set for 4.5 kHz with limiters at 5.0 kHz. This is compatible with the receiver's bandwidth of about 20 kHz. The discriminator is quite linear over this range and it is DC coupled through a 100k resistor to a test point and in the WA4TFZ 145.61/145.01 unit is available on a terminal strip. This is an excellent point to monitor with a scope since no de-emphasis is present. (use a low cap. probe) The transmitter audio is pre-emphasized the normal 6db per octave between 300 and 3000 Hz. The receiver audio is de-emphasized.

Modulation Index is defined as deviation divided by the modulating frequency. With the deviation set to 1.8 kHz, the index is 1.5 for the 1200 Hz low tone and 0.82 for the 2200 Hz high tone. Examination of the Bessel functions shows the need to include the 2nd order sidebands in the receiver's passband. This requires at least $4 \times 2.2 = 8.8$ kHz bandwidth. Most of the ham radios are at least this wide and some are over 20 kHz. The need for the wider bandwidths is to accommodate the difference in frequency settings of both transmitters and receivers caused by aging and temperature on xtals. The compromise here is obvious: The higher sensitivity receiver usually has the narrower bandwidth and requires greater attention to frequency tolerance and deviation.

regarding ARES/RACES and John, W6UZ who gave helpful information regarding DXing.

The meeting was adjourned at 8:54.

VE SESSION



The AARC VE Group will conduct a session covering all classes of licenses on the National Exam Day, May 14, 1994. The session will be held at the usual location, the Auditorium of the National Radio Astronomy Observatory on Edgemont Road on the UVA Grounds. The code exams will begin promptly at 9:00 AM, with the theory following as soon as possible.

Candidates are required to pre-register on or before May 10, 1994. Send a completed Form 610 (the new one dated November 1993 or later) along with a note indicating the elements you wish to take, plus a copy of your current license (if any), a copy of any CSCCE you hold, along with a check in the amount of \$5.75 made out to AARC: VE Session to VE SESSION, PO Box 6805, Charlottesville, VA 22906. Additional information and 610 Forms can be obtained from John Gray, 973-1094, or Pat Wilson, 978-4117.

John Gray - W6UZ

JOIN YOUR ARL MEMBERSHIP THROUGH THE AARC.

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\$9 TILL TWO HOURS WITH ONE STAMP!

SUPPORT ARL AND AARC!

ARRL Liaison: Pat Wilson, NORDQ, reported that the letter supporting the ARRL stand on instant licensing has been sent. Pat also announced that the ARRL has stated that VE pass exams cannot give out names of those who did or did not pass exams. They are only allowed to give numbers of how many passed which classes.

Also, there was a reminder made to renew ARRL membership through the Club as the Club gets \$2.00 for every renewal made through it. Please send membership renewals to Sharon Duvall, KO4OC, Treasurer, at P.O. Box 6833, Charlottesville, VA 22906.

A reminder was made for people to check license renewal dates as some will be expiring this year.

Awards: Joe Fritz, KD4RWX, reported on status of awards and announced that Bill Bearden, KC4TQF, won the last T-hunt and will hide the transmitter on March 20 at 1:30 p.m. Everyone interested is welcome to come out and search.

Digital: Ed Lang, KC4YLX, reported on the status of the PBBS. He also announced that he had sent the information for using the software currently running on the BBS to Roy Lane, W4OTF, who has made several copies and put them together as a handsome manual. If you are interested in getting a copy, contact Ed or Roy.

Greg reminded Committee Members who have not turned in budgets to do so.

Dues are now past due. It was requested to send out postcards to those who have not paid dues yet. The Club moved to have postcards sent.

No new business was discussed.

The program was given by Hein, N4FWA, giving details

The use of pre-emphasis of the transmitted audio stems from the desire to improve the S/N ratio of the high modulation frequencies by de-emphasis of the receiver discriminator output. This works with wide deviation fm and multiple tones. Neither is the case for packet and no improvement is provided.

In view of all the above, it appears best to transmit equal deviation signals on the air. Local users and PBBS settings should keep deviation settings below the 1.8 kHz level. For backbone systems, careful attention to frequency and higher deviations should be used to improve throughput seems to be a desirable goal.

For those Hams who have access to service monitors or spectrum analyzers, checking deviation is easy. For those who do not, the task can be more difficult. A very good check can be done with the aid of an all mode receiver. 1. Set the packet transmitter to a locally unused frequency and set the TNC to CALIBRATE. Use a dummy load on the TX if possible. 2. Set the receiver in the CW mode and tune for an audible beat note of about 500-600 Hz with no modulation on the packet transmitter. 3. Turn on the high tone (2200 Hz) and adjust the TNC level until the beat note is minimized.

The modulation index when the carrier is nulled is 2.4 (Bessel J0). With the 2200 Hz tone, this gives a deviation of $2.4 \times 2 = 5.28$ kHz. Using the 1200 Hz tone and the same procedure, the deviation is 2.88 kHz. Do not forget to include the effect of pre-emphasis on the tx audio if present. Setting the deviation by backing off the 2200 tone amplitude to one half will give a deviation of less than 3.0 kHz, about right for local use.

Ed Bezell - KB4JHI



AADC MINUTES

March 8, 1994

The meeting was brought to order by Greg Faust, NAFGS, at 7:30 p.m.

Everyone introduced themselves.

The Minutes for the February meeting were accepted as printed in the March AARC Bulletin.

Reports of Officers:

Vice President: Rick Berman, KO4WQ reported on the progress of the Field Day preparations. He also reminded everyone of the Children's Discovery Museum Special Event to take place on March 19. If you are interested in participating, see Rick for details.

Treasurer: Sharon Duvall, KO4OC, was not present, Mike Duvall, AC4ZQ, gave the Treasurer's Report:

Club	=	\$2,000.13
Packet	=	\$ 75.00
Repeater	=	\$1,165.86
Total	=	\$3,240.99

Greg reported on correspondence to the club: The upcoming meeting in Charlottesville. See Greg if you are interested in attending. Also, Hamfests in the surrounding areas, see Greg for details.

There were no new applications for membership.

Committee Reports:

Activities: Hein Hvatum, N4FWA, reported on last weekend's event and reminded us of upcoming events. He also requested that ARES members fill out the forms passed around to update their information.

Education: Joe Fritz, KD4RWX, reported on the ongoing Novice/Tech class at CATEC and invited people to join the group.

Fund-Raising: Bob Pattison, KM4DU, gave a report on the efforts toward fund-raising for the Club.

Publications: Ed Lang, KC4YLX, reminded everyone to send in their information for the April Bulletin by the March 15 deadline.

Recycling: Ron Richey, K4RKA, reported that there are plans are to clean out the barn when weather permits. Anyone interested can contact Ron Richey to help. Also, he mentioned that computers are now being offered for sale if anyone is interested in acquiring one.

Technical: Sam Gentry, N4WJQ, reported on the status of the .925 repeater upgrade and discussed the "gremlin" on .76 and what has been done to minimize that problem.

Special Committee Reports:

VE: John Gray, W6UZ, reminded everyone that May 14 is National Testing Day. There will be a VE Session held in Charlottesville. Reservations are required. Also, the new 6710s must be used. No old ones will be accepted. The address to send VE Session reservation requests or questions is to John Gray, W6UZ, P. O. Box 6805, Charlottesville, VA 22906.