ZERO BEAT

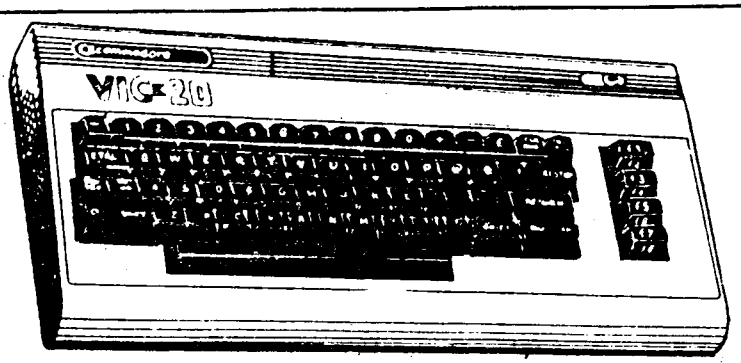
AMSAT

Hampden County Radio Association

Springfield, MA — February 1985 ARRL Affiliated, 37th Year

NEXT MEETING:*
FRIDAY FEBRUARY 1st

Feeding Hills Cong. Church
Center of Feeding Hills
Routes 57 and 187
Doors open at 7:30 PM
Meeting starts promptly at 8:00 PM



VIC 20 COMPUTER TO BE RAFFLED!
3 CHANCES FOR ONLY $1.00!!!!!

WILL BE ALL ABOUT:

Packet Radio

Amateur Digital Communications

by Bob McCormick KA1KPH

Last month we described the setup of an Amateur packet radio station and some of its features. If you are not familiar with packet radio and didn't get last month's issue of *Zero Beat* drop Jeff K1BE a line and ask for a copy of the January 1985 *Zero Beat*. His address is P.O. Box 346, Southwick, MA 01077. The supply is limited.

As you may have guessed after reading last month's article the range of packet radio (on 2m) is limited by the reliable propagation. As with VHF voice communication, packet has overcome the distance limitation by the automatic retransmission of signals - repeaters. The unique thing here is that, in fact, every packet station can act as a repeater. Packet radio repeaters, or digipeaters as they are called, only require one frequency; that is to say these digipeaters are simplex repeaters. Let's explain this further.

In Figure 1 AC1T and KA1KPH maintain 2m packet stations in their shacks. They live several miles apart and have no problem connecting their TNC's together. If AC1T wished to connect to KA1KPH he would mearly type: CONNECT KA1KPH on his terminal.

Figure 1

In Figure 2 KA1KPH wants to connect for a QSO with K1BXE. KA1KPH can't connect directly because of a large hill between the KA1KPH and K1BXE QTH's. AC1T can connect directly to K1BXE because he does not have the problem with the hill and he has more power and a better antenna than KA1KPH. KA1KPH can cause the AC1T TNC to "digipeat" the KPH packets over to K1BXE by typing the command: CONNECT K1BXE VIA AC1T.

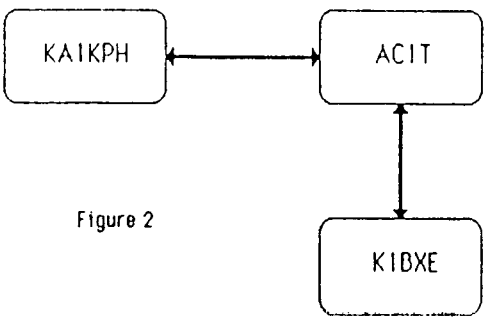


Figure 2

Dues are $9.00 per season, September thru June. Please mail to: N1AEH, Greg Stoddard, 1500 Mapleton Avenue, Suffield, CT 06078. Thank you!

Last month we noted that the TNC is always monitoring the activity on frequency. Note the addition of the keyword VIA followed by the AC1T call in the connect command. When the initial connect request is broadcast by KA1KPH it contains AC1T's call in a "digipeater list" (you may specify up to eight digipeaters!). If AC1T's TNC is listening on frequency it will receive the KA1KPH connect request packet. When it sees that its own call is in the digipeat list it will wait for the frequency to become quiet and retransmit the packet. K1BXE did not copy the initial connect request broadcast by KA1KPH but will copy the re-broadcast packet from AC1T. And it all occurs on one frequency!

Some important things should be noted here: This will continue to work fine as long as AC1T's station is on the air. KA1KPH and K1BXE can QSO using AC1T as a digipeater. But if AC1T turns off his TNC/rig ... you guessed it! No more connection. The fact that AC1T is performing the digipeater function will not in any way interfere with his station. In fact, the only way he would know that he was digipeating packets would be the occasional click of the t/r relay in his rig.

As with normal voice repeaters, you would not expect that an effective digipeater could be located anywhere but on top of a mountain. So the real digipeaters utilized in the north east are, of course, located atop some of the higher peaks. Figure 3 shows some of the digipeaters currently on the air.

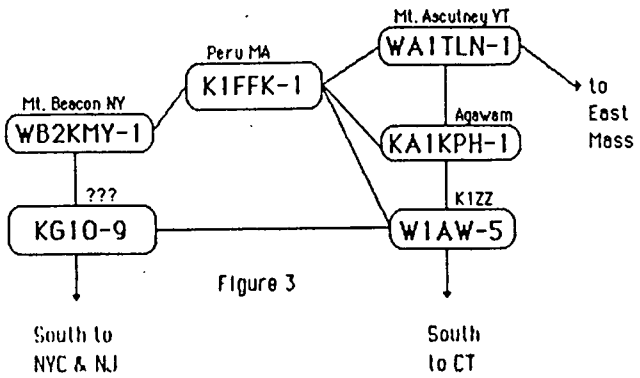


Figure 3

The KA1KPH-1 digipeater is currently located at the W1KK/W1NY QTH on Art's new tower. The antenna is a new ringo ranger topping out at about 100 feet and is fed with 7/8 hardline. The TNC is a GLB board setup to run as an unattended digipeater. The rig is a Drake TR33 and a KLM amp with about 80 watts output. It operates on 145.010 mHz but will only come on the air by receiving a packet with its call in it. It is hoped that come spring we will find a mountain top QTH for the digipeater with the goal being to provide coverage out to eastern MA without having to go up and through Mt. Ascutney.

As you can see in Figure 3, if you are in the coverage area of any of the indicated digipeaters you can connect to anyone else within a reasonable range of an adjoining digipeater. For example, KA1KPH has connected to stations in New Jersey VIA W1AW-5, KG10-9.

A limited access channel is available on the AO-10 satellite for packet. Contacts have been made between the US and New Zealand using this path. Packet shares 145.812 mHz equally with 50 baud RTTY, CW and the 400 BPS PSK telemetry. Access to the satellite is limited because of the orbit, sun angles and other user requests. The modem required is a bit more costly than the standard on-board TNC modem. But have no fear! The FCC has authorized a dozen or so stations to act as gateways or teleports under full automatic control. One of these stations is W1AW. This means that you will be able to go through the W1AW digipeater up through a satellite and down to some other distant area. Now how is that for networking!

Future satellite projects will even involve more packet activity. Word has it that a modified Phase-3C bird will be built for an Ariane-4 launch. One of the additions to this Phase-3C satellite would be a packet radio computer and beacon unit. The computer will have one million characters (1mb) of storage which will give it the ability to store and forward messages. Just think: you connect to this satellite and leave a message for a DL ham friend who later retrieves it when the satellite is over Europe. There is also work occuring on PACSAT, a packet radio satellite. It is expected PACSAT will be launched in mid 1986.

Getting back down to earth let's look at some meteor scatter packet radio experiments. Those of you who are avid VHFers know meteor scatter contacts are difficult to complete, the problem being to catch the meteor scatter at the right time. Often these bursts only last a few milliseconds and go unnoticed. Here's where packet radio comes in.

A packet radio transmission at 1200 baud, with 8 bit characters, figures out to about 150 characters or 30 words *per second!* This is about 6 times faster than human speech. After you factor out the overhead for the AX.25 protocol the speed is still about 25 words per second!

K1HTV in Maryland and WØRPK in Iowa made what is believed to be the first two way meteor scatter contact during the peak of the Perseids meteor shower on 12-Aug-84. At 0354Z 4 seconds of a 12 second burst were strong enough for reception of packets containing signal reports. Later at 0545Z a packet containing the "rogers" was copied. One of the reasons it took so long to complete the QSO is the high signal to noise ratio needed by the FM ASFK packet modems. Needless to say, there is now a group working on other modulation schemes to improve signal reception as well as better hardware and software to facilitate meteor contacts.

With the availability of the low cost Xerox 820 computer boards, many hams have built PBBS - Packet Bulletin Board Systems. For those of you who are not avid PC hackers, a BBS is a computer that has special software that allows you to access the system, leave and read messages and even upload/download software. Most PC BBS are accessed by dialup telephone. Packet radio BBS are accessed by (yes, you guessed it) packet radio. Instead of connecting to another ham's TNC and having a QSO you connect to a TNC that has a computer running PBBS software.

Hank, WØRLI, in Westford MA has written what is becomming the standard PBBS software utilized all over the country. WØRLI and K1BC maintain PBBS machines in eastern MA accessable via WA1TLN-1 on Mt. Ascutney. In Hyde Park NY WA2RKN also maintains a PBBS with WØRLI software. Down at the league a Xerox 820 also runs a PBBS but with software written by the League.

On a PBBS you can read messages, leave a message for an individual or general QST information. For example, AC1T sits down at his packet station and tries to connect to KA1KPH. But KA1KPH is working late and not on the air. So AC1T connects to W1AW-4, the League's PBBS, and leaves a message for KA1KPH. Later that evening, KA1KPH comes home, connects to W1AW-4 and is notified that he has pending messages. The message is read, deleted and a reply left for AC1T. Sounds like electronic mail!

Another feature that has been recently implemented on the PBBS is the forwarding of messages automatically. For example, KA1KPH could connect to W1AW-4 and leave a message for KA1T. A table of calls maintained at W1AW-4 indicates that KA1T usually is found on the WØRLI PBBS. So, in the middle of the night, when the activity is light or non-existant, the W1AW-4 PBBS will come on the air and connect to the WØRLI PBBS, through a number of digipeaters. W1AW-4 would transfer the message for KA1T and any other messages for users on WØRLI. Likewise any messages on WØRLI bound for Newington would be tranfered.

CQ DX

by

W1DGJ

January 1985 VHF Sweepstakes - W1NY

The January 1985 VHF Sweepstakes are now history. Although we didn't see the band openings that occured in the fall sweeps we were truly surprised and very delighted to see the vast numbers of local hams participating in the Hampden County area. For those of you who participated and kept logs please remember the HCRA will award *YOU* a certificate for your participation in our club effort. If you have not yet sent in your logs, mail them to Jeff K1BE (his address is the return address on Zero Beat) and Jeff will send them to the League. Don't delay; do it today! There is a time limit involved. If you've already sent your logs to Newington either drop a copy or note to Jeff and we'll get you on our lists.

As we previously mentioned, we will be giving awards at the annual HCRA club meeting in June. These awards will be very unique and sure to become collectors items! Don't miss your chance to get your hands on one. Send in your logs (or a copy thereof) today!

In years past the HCRA club effort, led by scores from Frank WA1RWU and many others, has placed first in the country. The goal this January was to again put the HCRA at the top of its class; number one in the country! But more inportant is not whether you submit your logs with HCRA affiliation but that you did get on and operate. It was truly amazing the amount of people on the air helping out with points and multipliers. Thanks and good luck to all!

The HCRA club station, W1NY, was active on 6m, 2m, 220 mHz and 432 mHz. W1NY is located at the QTH of the trustee, Art W1KK. W1NY had been active with a minimal effort in the last few VHF contests with enough interest being generated to give it a more serious go this January. A new tower was erected this fall to the height of about 85 feet. Frank, WA1RWU, designed an H frame to hold four 17 element yagi antennas and an azimuth elevation control to allow the operation of 2m EME (moonbounce) for the station. The 2m array was fed with multiple coax cables and a tower mounted gaas fet pre-amp. Down in the shack we used a Drake C-line with a TC2 and SC2 and a 4CX1000 KA1APR power amp. On FM we had an FM Jr. Boomer at about 90 feet (under the packet radio digipeater antenna) with a FT102, TC2, SC2 and a 8877 based amp for 300 to 500 watts output.

Fred, KA1APR, did much of the setup on 6m, including rebuilding the 6m antennas. One 6 element yagi was mounted on Art's original tower at 50 feet and another 6m antenna (5 elements) at 30 feet. The station consisted of a TR5, TC6, SC6 and a 4-1000 KA1APR amp.

On 220 FM we used a Midland 13513 and a home brew groundplane antenna mounted on the 2m tower. On 432 mHz we had a TS830S with a MMT432/28 transverter and a 8321 (4CX350 eqv.) KA1APR amp. A single K2RIW 19 element antenna was mounted at 60 feet on the 6m tower.

Well, that is about it for the hardware end. Behind the mics and keys you found Fred KA1APR, Scott WB1CAC, Phil K1DFC, Art W1KK, Bob KA1KPII, Shawn KA1MCA, John AC1T and Dave WA1UOC. Thanks to all the ops for a fine job well done! Many others also came by for a visit during the contest: we were glad to see you and thanks for the support!

	QSO	Points	Grid	Score	
50 MHz	188	376	41	15,416	50 MHz
144 MHz	312	624	26	16,224	144 MHz
220 MHz	9	36	2	72	220 MHz
432 MHz	70	280	15	4,200	432 MHz
Total All Bands	579	1,316	84	110,544	

Grand Total
110,544

NEWINGTON: ARRL to decide on Cyprus split (ZC4-5B4)... BOUVET: No operation this winter...PITCAIRN ISLAND: VR6BR now active...WASHINGTON: ARRL to petition FCC for phone operation below 7.1 mhz...SOUTH SHETLANDS: CE9AP active on 20m ssb...RODRIGUES: 3B9CD until end of February...FRANZ JOSEF LAND: RZ1OWA & UA1OT both active...LORD HOWE ISLAND: VK3NM until February 3rd...

160 METERS: GEORGIA UG6GAW 1.832 04Z...AUSTRIA OE1DH 1.835 03Z...ISRAEL 4X4NJ 1.827 02Z...CAPE VERDE D44BC 1.847 03Z...SVALBARD JWØEQ 1.840 00Z...DENMARK OZ7YY 1.837 07Z...

80 METERS: SENEGAL 6W1DY 3.800 07Z...INDONESIA YBØWR 3.795 22Z...SWAZILAND 3D6AN 3.776 03Z...ASCENSION ISLAND ZD8CA 3.795 04Z...GIBRALTAR ZB2EO 3.506 23Z... GUINEA 3X4EX 3.797 23Z...

40 METERS: FAROE ISLANDS OY7ML 7.001 12Z...DOMINICAN REPUBLIC HI8JT 7.040 02Z...CUBA CM8AR 7.006 02Z...

20 METERS: COMOROS D68AR 14.237 18Z...MACQUARIE VKØGC 14.216 13Z...FALKLAND ISLANDS VP8BAZ 14.211 02Z...

15 METERS: MAURITIUS 3B8FK 21.022 14Z...TANZANIA 5H3HM 21.297 13Z...IVORY COAST TU2BS 21.252 15Z...

10 METERS: Sorry, no reports!

Dear CQ DX: I want more information about where I can find new DX countries that I need. ANSWER:For the best up-to-the-minute information, try a weekly publication like - DX'ERS MAGAZINE, (P.O. Box Drawer "DX", Cordova, SC 29039), LONG ISLAND DX BULLETIN, (109 Willow Ave, Huntington, NY 11743), QRZ DX, (P.O. Box 834072, Richardson, TX 75083), DX BULLETIN, (Andover, CT 06232).

It would not be fair to close without mentioning the kind of effort this really took. Although the actual contest lasted only one short weekend, and the 6m openings only lasted a handfull (or two) of minutes, much time and effort was expended to make this possible. Frank, WA1RWU, not only provided the much needed assistance with his expertise derived from years of VHF contests in Washington MA but much of the hardware and feedline to make it work. John, AC1T, spent many hours getting the pieces together, integrating things so they really do work. Although the station didn't conform to a MIL spec, without his talents I'm sure we would have never accomplished what we did and in such a short period of time. Fred, KA1APR, who has spent part of his life playing with high power RF equipment cranked it all up for the W1NY effort. His amps help put the extra punch into our signal - and heat the shack at the same time. The temperature was between 80F and 85F during peak operating periods! Thanks also to all those other individuals who went out of their way to lend a hand, it was much appreciated.

A special thanks goes to Art, W1KK. Not only has Art provided W1NY with a unique home, but his moral, physical and $$$ support really made this whole thing possible. I could write more but I know he would rather I not ... Thanks, Art from all of us at the W1NY VHF SS effort.

Hope to see you all again in the spring VHF SS!

This could be the beginning of the NTS of the future. KA1T has been working on software running on a DEC PDP-11 to handle NTS traffic. Messages can be left on a PBBS system and picked up by traffic handlers to be distributed through the system. As the packet network grows and high speed inter-city links are built the error free transmission of NTS traffic could occur on packet radio. This will come a reality as Level III is built.

Currently packet radio, using the AX.25 protocol, implements layers one and two. Layer I is responsible for the physical communication; rigs, modems, bit protocols and baud rates. Layer II, known as the Data Link level, is mainly responsible for taking the features of Layer I and making it error free and dividing the bandwith among the users.

The third layer, Level III, is the Network layer. This layer will be responsible for routing packets between two stations. We currently do this with the VIA keyword followed by the list of stations (digipeaters) used to reach the desired distant station. Although the final details of Level III are not complete, Level III will automatically route packets between two stations. Level III will also re-route packets in the event one of the relay stations terminates operation.

In many areas of the country experimentation with high speed modems has yielded links of 9600 baud (9.6kb) and even a 1.5mb link in the San Francisco bay area. Of course, because of the bandwith of these high speed digital signals, you are limited to the higher VHF bands. Frequency coordination is now underway to allocate channels for high speed packet links.

Packet radio is an evolution. It is as much a communications mode as AM, SSB or CW. Its capabilities are only bounded by the imagine of the user. Within a short time the network of packet stations and digipeaters will be the backbone of a communications system who's size would only be exceeded by Ma Bell & Co. High speed links will move data in large volumes between major population centers. Slower speed links (2m) will provide inexpensive access to gateway nodes.

If you are interested by all this computer technology then you may be interested in attending the next HCRA meeting Friday 01-Feb-85 where the topic is packet radio. The first half of the meeting will be a discussion and presentation on packet and the second half will be a live demo. A computer will also be raffled off; three chances for a dollar. Maybe you'll go home with a starter system that will get <u>you</u> on packet!

Finally, I'll elaborate on what is available for TNC equipment. The first TNC's were developed by Doug Lockhart VE7APU and VADGC in Vancouver BC. When the FCC finally allowed ASCII digital communications in the US a group of interested hams formed the Tucson Amateur Packet Radio Corporation (TAPR).

TAPR offers a TNC that handles both the AX.25 protocol as well as the older VADCG protocol. Although VADCG protocol still exists and is in use still in some areas, the AX.25 protocol is the accepted standard. The GLB people in Buffalo NY also have a packet TNC. AEA is currently offering a TNC which is a TAPR TNC fully assembled and supported by AEA.

My first TNC was the TAPR board. This is a kit taking a little over 8 hours to assemble. I've built a lot of Heath gear and the TAPR hardware and documentation far surpasses anything I've seen from Heath. The engineering quality is parallel to that of some of the work I've seen from DEC. Not bad for a non-profit organization!

I ordered a GLB TNC for the KA1KPH-1 digipeater for two reasons. First, it came assembled, and second, it cost less. Needless to say I was (and still am not) very happy with the GLB product. They quoted two week delivery and took two months to deliver; in the meantime they had charged my credit card. Many phone calls were made to gain shipment. Upon receiving the GLB TNC the PROM, which should have had my call burned in it, had the call OA1OPH burned in instead. I have had to obtain a number of software updates because of bugs. This requires exchanging PROMS with them. I am not impressed with the quality of the board; the documentation is poor and the user interface is cryptic. Guess you get what you pay for!

To quote Harold Price NK6K, who implemented the TAPR software and who is now working on PACSAT ... "Take the [TAPR] kit, $240, and 11 hours construction time. ..... Want the security offered by a reputable commercial dealer? Spend the money. [AEA] Like to build? Buy the kit."

"Only got $150.00 but want to get on packet? ... Buy the GLB. Got only $150.00 but want to run 300 baud HF, Oscar 10 with on board filtering, or experiment with 4800 baud? Want a 240 page manual/tutorial on packet radio? Save up some more money [and buy the TAPR TNC]."

I couldnt' have said it better!

WE NEED VOLUNTEERS
TO HELP WITH THE
LICENSING COURSES!!!!

WE WOULD LIKE TO RUN CLASSES FOR GENERAL, ADVANCED & EXTRA, BUT NEED INSTRUCTORS! CONTACT ART, W1KK AT 786-9115 TODAY!!!!

VOLUNTEER EXAM REPORT

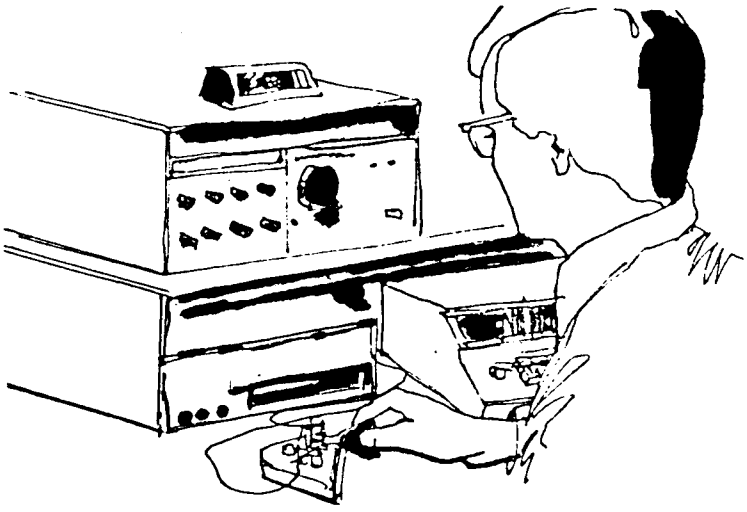
by K1BXE

The Hampden County Radio Association hosted its first VE session on January 12th. We had 36 hams sign up to test for upgraded or novice licenses. Two new novices passed their tests with perfect scores, and one got his tech that day with only one answer wrong!

The Official Session Examiners were K1BXE, WA1EYF, and K1BE. They were assisted by: W1JP, W1KK, K1ZQB, N1SR, WB1ETS, WB1FIQ, WB1GLX, W1DGJ, KX1F, KA1FHX, KA1XN, and Reine, XYL of KA1KPH, who supplied the complimentary coffee. The session could not have been so efficient without the help of these wonderful volunteers!

The testing generally ran smoothly, the only surprise was the amount of post-session paperwork. It took 3-4 hours to complete the papers just on this small session. (With K1BE lamenting the passing contest hours the entire time!) We are planning to expedite the CW testing. The impression hams had was that the CW portion was too drawn out. During the next session we will run the CW tests back-to-back, correcting one grade while the next is running. We will also schedule the hams that don't require a CW test to come at a later hour, so they won't have to sit while the CW testing is going on.

We are looking forward to the next scheduled HCRA session on May 18th!



NOVICE RADIO CLASS (AND UPGRADING!)

A Novice radio class will begin on Tuesday, February 26th at the Agawam High School sponsored by the Hampden County Radio Association. These classes will run concurrently with the adult education series. Starting time is 7pm, and will run about 11 weeks. (Just in time for the next VE exam session on May 18th!) The instructors we have signed up at this time are KX1F, WB1GLX, WA1ZKT, AC1T, K1BE, WA1GVV, KA1JJM, WA1EYF, and KA1KBN. W1KK is the resident "Academic Dean"!

The course will be using American Radio Relay League publications- "Tune in The World", and "The Radio Amateur's License Manual, 80th edition". Students will be able to purchase these through the course. To sign up, contact Art Zavarella at 786-9115 or John Balboni, AC1T at 786-2438. More help is needed from hams, and all skills levels will be put to use. If you're interested in upgrading to general class license, please phone and let us know. Let's see a good turn-out of new novices and future generals!

SHARE ZERO BEAT WITH A FRIEND!!!!!

LIFETIME RADIOTELEPHONE CERTIFICATES AVAILABLE.

In a December 21, 1984 Public Notice, the FCC announced that a special lifetime General Radiotelephone Operator License Certificate will be available in 1985 for anyone holding a First Class, Second Class or General Radiotelephone Operator License issued or renewed between **January 1, 1979 and June 14, 1984.** The Commission will eventually discontinue issuing diploma-form General Radiotelephone Licenses and replace them with a card-form lifetime license. Certain license holders are being offered an opportunity to obtain a diploma-form lifetime license.

If your license was issued before January 1, 1979 and has not been renewed since, do not apply for the special certificate. You may, however, renew your license within five years of its expiration date by submitting FCC Form 756 to a Commission Field Office.

If your license was initially issued or renewed after June 14, 1984, do not apply. Your license is already a lifetime certificate.

To receive your special lifetime license certificate, you must send your request to the **same FCC Field Office that issued your last license,** whether it was a renewal or an initial license. Include your name as it appears on your license, your date of birth and your license number. Write the words "Lifetime License" above the Field Office's address. If your present license has an endorsement, you must submit a copy of that license with your request.

The Commission asks that you enclose an SASE with your certificate request. The SASE should be at least 4 1/8 by 9 1/2 inches with the appropriate first-class postage. If you want your certificate delivered unfolded, enclose a 9 1/2 by 12 inch SASE.

FOR SALE: Radio gear and accessories from the estate of WA1YYW. Contact Charlotte Melbourne at 525-7652 or Art Zavarella, at 786-9115 in you're interested in any of the following:
Tempo 2020, HF xcvr; Yaesu FT227R, with Drake TT mike; Regency Programable Scanner, MDL-R1040; Trimline wall mount telephone with dial set; TWO-2 meter mobile mounted antennas; Operating desk, 4 feet long, 3 ft wide, 28 inches high, with lower cabinet and upper shelf.

FOR SALE: YAESU FT901DM HF xcvr with all the goodies, including factory service manual. $550.00 or BO Jeff K1BE evenings before 9, 569-6739

FREE: You pick up - About ten years worth of old QST's from about 1972. Jeff K1BE per above number.

MY TURN EDITORIAL by K1BE

I'm sure now that someday I'll quit amateur radio. The bitching-complaining-do-know-nothings will push me out. I write to you today to expose a vicious calumny. People seem willing to repeat the most absurd gossip. No proof, just accusations and heresay. Repeater jammers stike a raw nerve in radio hams. Is that what makes it so easy to spread vile falsehoods?

Ray Weber, KA1JJM, is a new member of the HCRA. Ray is also being crucified as the infamous jammer on the .94 machine, "KA1JAP". Did you accept that story at face-value? No thought, just a connection between your ears to your mouth? It is a lie! It is unfair and unethical to accuse someone without a shred of evidence! I want to say right here in print- Ray is innocent! I ask all fair-minded hams to judge him not on smear tactics, but in an even-handed way. I beg you to rise above pettiness, gutter-talk, and spitefulness. Ray Weber is a problem-solver, not a problem-maker! Persecution of an innocent has no place in our radio fraternity. I highly recommend KA1JJM as a ham and a friend.

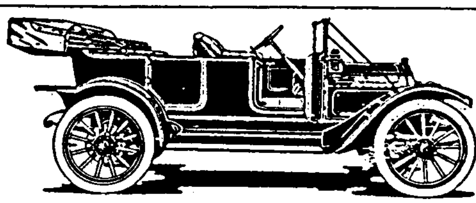
de Jeff

%%%
19 ARRL INTERNATIONAL DX CONTEST 85
%%%

There they are! A complete set of logs for this famous contest included in your issue of ZERO BEAT. You're all welcome to get in on the fun. Exchange is simply a signal report and your section. You can get in on just the cw or just the SSB or both! Logs will only be printed in this issue of ZB. They will be at the February and March HCRA meetings, if you need extras. See you on the air!

CW February 16-17 SSB March 2-3
(Complete rules are in QST)

Look for these club members in the contest:
W1MM W1DGJ K1IJU KA1DNX W1RED WA1CQF K1BE



VHF SWEEPSTAKES REPORT

It was a blast! KA1MDA/KT and KA1MEW/KT went from the exam session and put their new privilages on the air. Good for you, Tom and Jeanette! Band conditions were mediocre. The FM simplex activities made up for it, though. Some calls were really out of the woodwork. (Are you listening, K1TF?)

W1NY put on the biggest effort ever! Did you work them? WB1ETS and N1AEH got two meters installed on the new tower, no time to finish the other bands. WB1FIP, KA1CTM, K1JDL, KA1KRJ and KA1CRX had loud signals at my QTH. W1JWV worked W1VD down in Connecticut again, using only a mag mount on the kitchen table. KA1DNX drove up Wilbraham Mountain to operate portable.

Send your logs in today, c/o the address on Zero Beat. Everyone counts and we want to hear from you. Many thanks for your strong support!

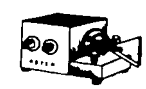
NOTICE

THE HAMPDEN COUNTY RADIO ASSOCIATION WILL SPONSOR AN ARRL AMATEUR RADIO VOLUNTEER EXAMINATION TEST SESSION ON SATURDAY, MAY 18, 1985 AT 9:00 A.M. AT THE HAMPDEN-WILBRAHAM REGIONAL HIGH SCHOOL, 621 MAIN STREET, WILBRAHAM, MASSACHUSETTS.

EXAMINATION FOR ALL LICENSE GRADES WILL BE OFFERED.

INTERESTED CANDIDATES SHOULD OBTAIN AN APPLICATION, FCC FORM 610, FROM THE FCC OR THE ARRL. SUBMIT THE COMPLETED FORM 610, A PHOTOCOPY OF YOUR CURRENT FCC LICENSE, AND A CHECK FOR $4.00 MADE OUT TO "ARRL-VEC," TO:

YORKE PHILLIPS, K1BXE
235 AMES ROAD
HAMPDEN MA 01036



COMPLETED APPLICATIONS CAN BE ACCEPTED UNTIL THE EXAMINATION CUT-OFF DATE, APRIL 18, 1985.

FOR SALE- Kenwood 2500, mint condition, with speaker mike, wall charger, belt clip, earphone, wrist strap. Ken nickolls, WB1BZH 596-8476

WANTED: Dip meter Curve Tracer Sweep Generator
Ken Nickolls, WB1BZH 596-8476

FOR SALE: 75S3A with crystal pack, $400.00 Collins receiver with double board Joe, WA1LES, 733-2077

FOR SALE: Kenwood TS830S with cw filter and spare finals. $650.00 Fully metered and overvoltage protected 20A 13.8 voltsDC power supply $90.00 WA1CQF Gent Lam 413-783-8537

NOTICE:
Enfield Radio Amateur Group, Enfield, Connecticut is sponsoring a Novice class starting March 7th, 1985 at the Pearl Street Library, Enfield, CT, at 7:30 pm.

NOTICE:
The Pioneer Valley Repeater Association in cooperation with the Enfield Radio Amateur Group is holding an FCC/VEC amateur radio exam at the Asnuntuck Community College, (room 212), 170 Elm Street, (Rt. 220), Enfield, Ct, at 9 am, Saturday, March 9, 1985.

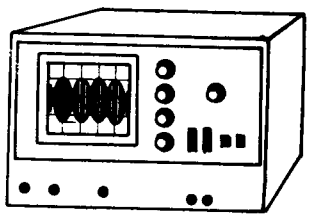
A new 610 form, a copy of your present license, and a check made out for $4.00 payable to the ARRL/VEC must be sent before February 7th to Paul Lombardo, W1VMY, 67 Collier Rd, Wethersfield, CT 06109

ON SSB "SIGNAL CLEANLINESS"

-HOW TC WATCH FOR AND ATTAIN IT.

On the subject of SSB signal cleanliness and how to achieve it...Let us discuss this since any signal that takes excess bandwidth can cause serious interference to adjacent commercial, military, or other users. An improperly adjusted station can radiate a signal with effects out of its subband. We all know how such side effects can interfere unjustifiably with communication on our frequencies! SSB signal cleanliness can be defined in terms of RF bandwidth, carrier suppression, unwanted sideband, and intermodulation product suppression and audio frequency response over the desired bandwidth.

First let us look at some causes of "unclean" signals. Many of the manufactured equipment is reasonably clean, if adjusted at the designer's instructions and operated properly. Some hams build their own gear, so how can we avoid bad signals? What should we watch out for?



Avoid too high setting on the audio gain.

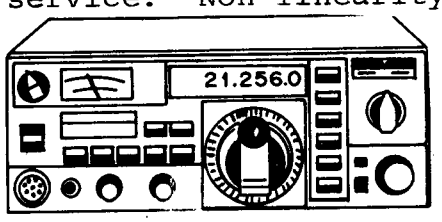
1. The most common cause of unclean signals is overdriving. This can result from setting the audio gain in an SSB exciter too high, by a faulty ALC circuit, or by too much dependence on ALC with high gain control setting. (I hear SSB signals that cause the signal-strength meter on my receiver to stand still, Voice peaks cause little fluctuation! This condition is always accompanied by spurious products extending many khz on each side of the passband.)

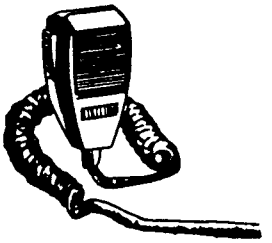
This type of signal is caused by ignorance or indifference. The operator talks too loud, or turns up the gain, to be heard better, (so he thinks!), by the DX station. The result is OVERDRIVING, peak flattening, and a spread spectrum. The signal is less readable than a clean signal and disrupts QSO's on both sides of this.

2. The plate current meter of the final amplidier in an SSB transmitter should swing no more than 50% of the peak envelope reading with the average human's voice. (see W1DF's article, p. 11, November 1982 QST.) Use of an audio compressor ahead of the SSB exciter will do more to avoid generation of spurious products than will ALC, Whose adjustments can change with loading or frequency. The compressor can prevent overdriving all the the way through and give about 3 db more "talk power".

Other sources of trouble.

One cause can be non-linearity in the transmitter. Any non-linear device is a source of cross-modulation between two frequencies. The bias can be wrong, or a resister can change value. Load impedence can be wrong, there can be a leaky by-pass capacitor or poor plate voltage regulation under varying load. Tubes can age and lose their peak emission capability. A tube can be fine for class C or cw, but not have enough emission for the peaks in SSB service. Non-linearity can happen in any stage.





The microphone should not have undesirable peaks in its response curve as these can cause spurious product generation. If the response is not smooth, changes should just drop off at the ends of the audio range. Peaks in the filter passband can cause overdriving, even when the dc plate current does not seem to be swinging too high, making for overdrive and unclean signals. There should be enough gain in the equipment to modulate fully with the mike at least six inches away from the face. One cause of poor audio is the practice of putting the mouth right on the microphone while speaking!

Measuring or Monitoring for linearity.

How do you measure the cleanliness or linearity of your SSB transmitter? One common method is to use an oscilloscope, with its familiar triangular pattern. This is generated by feeding audio input voltage to one set of scope plates and rf output to the other set. This will show overall linearity. This is fine, as far as it goes. However, there can be a non-linear stage with a droopy curve and another in the opposite sense with unwanted coupling or feedback, and the output will still have spurious products generated in these stages.

Using the receiver as a monitor, transmitter into a dummy load.

The useful suggestion is that every SSB station use a receiver as a monitor of its' own signal. The transmitter is fed into a dummy load. One way to check it is to play music into the transmitter, (Make sure the dummy load can't radiate!), and listen to it on your receiver. Any distortion will be apparent. If your SSB rig sounds clean and pure with this test, the chances are that it'll be clean on the air are very good!

W3JHR in the NAVY MARS BULLETIN
Taken from THE OSCILLATOR, VARC, Dec '67

AUTO ACCIDENT

I left work on January 10th bone-tired, and weary of the cold weather. My Datsun hadn't even warmed up when I came upon a two car, head-on crash on Caldwell Ave. I called "MAYDAY" on several repeaters before WA1LES came on to help via K1ZJH/RPT. I asked Joe to call the Springfield Police and have them quickly send two ambulances. My prognosis of injuries were that they both had cracked ribs and internal damage, with possible bleeding, broken bones, trouble breathing, and were going into shock. As I administered emergency first aid, Joe called and relayed the message and then kept the repeater clear for my use. As the injured had more difficulty breathing, I asked Joe to relay that to the police. The ambulances arrived with the cruisers and I helped extricate the woman who'd been hurt. (Neither wore seat belts!) After field prepping, they were rushed off to the Mercy Hospital. Quick response via K1ZJH/R and WA1LES saved the day! Many thanks, Joe Chistolini, for your quick action!

de K1BE

HCRA

Board of Directors

1984-1985

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75 Robinson Road
West Springfield, MA 01089

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KA1KBN
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K1BE
Jeff Duquette
P.O. Box 346
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WA1ZKT
Paul Kress
216 Eastwood Drive
Westfield, MA 01085

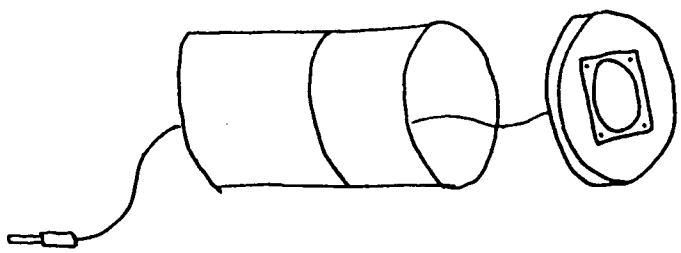
A MECHANICAL FILTER

by

GENT LAM WA1CQF

Here's something to help you pick out stations in our crowded spectrum. First dig up two one-pound coffee cans and one of those plastic covers which you use to close the can after cutting one end off. Cut the ends off of the cans. (Both ends) Dig around in the junk box and locate a small speaker (about 2½" to 3" will do) which will fit in the coffee can. Cut a round hole the size of the cone and mount the speaker on the plastic cover. Tape the two cans together with some kind of tape, electrical or masking is fine. (The type of tape you use doesn't affect the performance!) Solder the leads onto the speaker lugs and terminate the other end of the wire with a connector for your receiver. Drop the leads through the coffee cans and push the plastic cover on one end.

If you haven't figured out what this is yet, it's a speaker mounted in a resonant baffle. My particular "filter" resonates at about 500 cycles which is excellent for cw. It sounds as if there is a 200 cycle in the receiver IF. Try different size cans and fool around with how many you put end-to-end. Norm Forest, N1PF, gave me this idea and he built his for sideband work. Try it, it costs almost nothing and makes the rig sound like one of those expensive ones from Cedar Rapids!



Tnx, VARC

re-printed from THE OSCILLATOR, Nov 1965

LIST OF PARTICIPATING STATIONS

TELECONFERENCE RADIO NET

Last Update 9-15-84

Supplied by Rick Whitting, W6TN
CompuServe ID 71445,377

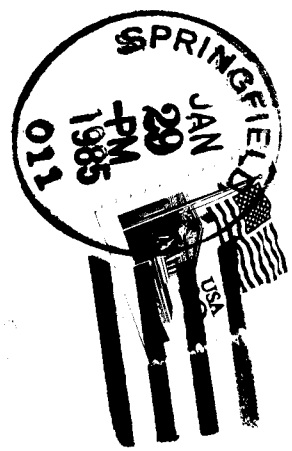
City	St	Call	Frequency
Burlington	CT	WA1UQC/R	147.150
Milford	CT	WA1CVW/R	146.925
Billerica	MA	W1DC/R	147.120
Sharon	MA	W1TEA/R	146.865
N. New England	NH	K1OIQ/R	146.655
Burlington	VT	K1VT/R	146.850

The Basketball Hall Of Fame will open its new facility in the spring. What do you think about operating a special event station there that weekend????? Let us know.

FIRST CLASS

[redacted]
AC1T E Y 10/85

Hampden County Radio Association
c/o Jeffrey J. Duquette K1BE
P.O. Box 346
Southwick, MA 01077



Schedule of Events

January 27	NOBARC meeting 7PM Polish Community Center in Pittsfield MA
February 1 Friday	HCRA February Meeting *** Win a VIC computer *** KA1KPH presents packet radio - the new frontier
Feb 16-17 Sat-Sun	*** ARRL DX Contest - CW *** Will we see you on the bands?
March 1 Friday	HCRA March Meeting Amateur Fast Scan TV - Live and in color...
March 2-3 Sat-Sun	*** ARRL DX Context - SSB *** The challenge continues...
April 12 Friday	HCRA April Meeting NASA space suits - how they are designed and built for use on the Space Shuttle.....you won't want to miss!
May 5 Sunday	HCRA Spring Flea Market West Springfield Lodge of Elks
May 18 Saturday	HCRA & ARRL - FCC Exams Wilbraham, MA
May 19 Sunday	NOBARC Flea market American Legion, Route 9, Dalton, MA
June 7 Friday	HCRA Annual Meeting Awards Ceremony
June 22-23 Sat-Sun and	*** Field Day 1985 *** HCRA field day W1NY club station Western Mass Law Enforcement Academy (AC1T) HCRA field day W1TM Middlefield Fair Grounds, Middlefield, MA (WA1ZKT)

ARRL Exam Sessions registered as of 31-Dec-84

Session Date: 09-Mar-85 Deadline: 07-Feb-85
Connecticut Valley FM Assoc., Windsor VT
Contact: Conrad Ekstrom, WB1GXM, P.O. Box 428, Claremont, NH 03743

PVRA & ERAG, Enfield CT
Contact: Paul Lombardo, W1VMY, 67 Collier Rd., Wethersfield, CT 06109

Session Date: 16-Mar-85 Deadline: 14-Feb-85
Fairfield ARA, Fairfield CT
Contact: John Ronan, K3ZJJ, 114 Old Redding Rd., Weston, CT 06883

19 / 79 ARA, Lynn MA
Contact: Robert Kalustian, WA1DVR, 36 Columbia Rd., Arlington MA 02174