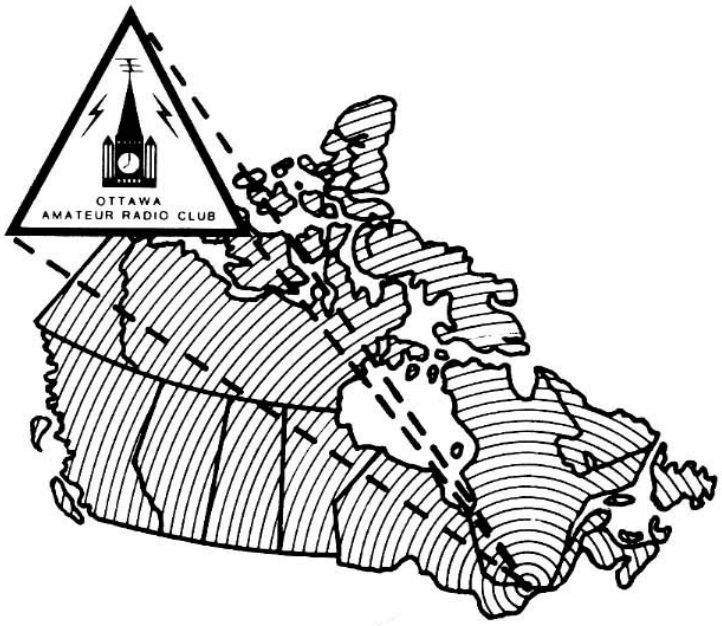
Nov 84

THE GROUNDWAVE



Club Call VE3RC **Repeater VE2CRA**

AMSAT

THE GROUNDWAVE
Official Bulletin of the Ottawa Amateur Radio Club, Inc.

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THE OTTAWA AMATEUR RADIO CLUB, INC. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the National Capital Area; and to the advancement and achievement of club members.

THE CAPITAL CITY NET meets every Monday at 2000 hours on the club repeater VE2CRA (.46.34/.94) to pass traffic and to make announcements of interest to Amateurs in the National Capital Region.

THE SWAP NET, is a service provided and conducted by Ed Morgan, VE3GX. This feature appears on the Capital City Net as noted in the foregoing paragraph. To list items and make inquiries, call Ed Morgan at 733-1721.

THE OARC EXECUTIVE normally meets on the second Wednesday of each month in the Board Room of CFRA, 150 Isabella St., Ottawa, at 1930 hours. Contact the President to confirm the date of the next meeting.

DEADLINE FOR COPY is 4 weeks before the next meeting. Make yourself better known to fellow members and other amateurs, too, by giving us an article, technical or otherwise, relative to our hobby. They may get reprinted in far away places; and the family will be proud of you.

REGULAR MEETINGS of the OARC, Inc., are held on the first Wednesday of each month (except July and August) at the National Research Council Auditorium, 100 Sussex Drive, Ottawa, at 2000 hours. A bulletin board is available for posting notices of interest to other members about 1915 hours. Further details about each meeting is elsewhere in this publication

MATERIAL PUBLISHED herein does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio or other publications provided that proper credit is given to the author and to the OARC, Inc.

SAFETY BELTS, 2-METER RIG AND AN ENGRAVING PENCIL are available for loan to club members. The 2-meter rig may be borrowed my members who are hospitalized. The engraving pencil (to mark valuables for identification in case of loss or theft) and the safety belts with pole straps are available to any member.

A $100 refundable deposit is required for the belts. Contact the President for the 2-meter rig or the engraving pencil; and Paul, VE3ICV, at 820-6643 (West End) or Brian, VE3JKZ, at 523-1535 (East End) for the belts.

RADIO AMATEUR CALL BOOKS are available at many local libraries. Ask at the information desk.

MINUTES OF THE OARC MEETING, OCTOBER 2, 1985

The meeting was called to order by the President at 2005 hrs. It was brought to the attention of the Secretary that the call sign of Joan, VE3FVO, was reversed in the minutes. The appropriate correction was made and, on a motion by VE3OWL, the minutes were adopted as corrected. Several visitors, some from as far as West Germany, were welcomed by the President. Fred Green was so impressed by the work of the Editor of the Groundwave and his crew that he initiated a round of applause. The audience responded warmly. It was a particularly well presented issue. Brett and the Packet Radio group have undertaken to run the flea market this year. The President declared himself satisfied at the prospect of seeing the tradition upheld this year. We will all be looking forward to some recycling.

Camille Tremblay has given tremendous help to Bruce in the preparation of the financial report. After a brief discussion generated by the display of columns and figures and, on a motion by VE3AYE seconded by VE3GVV, the report was adopted. Warm thanks went to Camille and Bruce for having worked so diligently and so efficiently to keep track of the club's finances.

It's the year of the directory. Under the guidance of Mark, VE3OWL, it will be published by the end of Spring 1986. You will be kept informed on the matter. Make sure you are in good standing so that your name may appear.

On the subject of EMI, VE3BBM has confirmed that CRRL and CARF representatives have contacted CSA who will in turn be collecting information on appliances susceptibility. Appliances that show some form of susceptibility may be retested. More information may be obtained from Ralph Cameron. The committee, according to Ralph, is in need of expansion. He would like to see 2 representatives in the west end and 2 in the east end to act as coordinators, in view of the number and complexities of problems being experienced.

Jack Ravenscroft whose name should be familiar to all of you by now took to the podium. He painted a sad but accurate picture of the situation besetting him as a hobbyist and a ham operator. Jack acknowledged the sympathetic attitude of amateurs all over the country and its tangible result as the JRSF. Jack is under an interim injunction, precluding him from even turning his equipment on. In summary, it is a sad state of affairs in which any of us at any time may find ourselves. The trial is yet to be set. Further development will certainly be relayed to you.

Samson, VE3JSP, needs some help in erecting a tower and testing his beam antenna. If you can help, please give him a call. The meeting was adjourned at 2210 hrs.

CANADIAN NATIONAL BOY SCOUT JAMBOREE, JULY 4-11

(This report on ham participation in the Boy Scout Jamboree held in Guelph last summer appeared in FEEDLINE, the bulletin of the Niagara Peninsula Amateur Radio Club. The author is VE3ISD, Eric Stabler, who is also the Editor of FEEDLINE.)

In response to an appeal in TCA (and with a little urging from FOI) I volunteered to assist in demonstrating ham radio at the Jamboree in Guelph. Much to my surprise there were about 10,000 scouts and about 5,000 volunteers (not all doing radio!!). If you ever needed your faith in the youth of today restored, you should attend a scout jamboree!

Apart from the fact that it took 3 hours before I found anyone who knew where the ham station was - plus the usual confusion regarding CB - it was a most enjoyable week. When I found the marquee it contained about 50 or 60 IBM computers, 5 video terminals and 3 ham radios. Would you believe... all the ham radios were rigged up for SSB. Well it didn't take long for me to convince the ham in charge, VE3MAX, that ham radio consists of CW... so the 40 metre set was converted to real ham radio' - sri abt typing!!! (sic) - the special call VE3SCJ was used. The scouts came around in groups with a leader and you tried to demo QSOs, etc., while talking and amid the noise, etc.

The only place that I could hear my sidetone was on the 20M rig behind me. One computer was rigged up to accept messages from the scouts to their parents. I didn't know about this until Wednesday by which time my rig was disappearing under the growing mountain of traffic. Never having sent traffic I was at a loss what to do with it until VE3KK answered my CQ and asked if I had any traffic. DID I HAVE TRAFFIC!

So we started. After a settling down period we were passing messages at the rate of one per minute for three hour stints. I simply couldn't send fast enough for the mysterious VE3KK, didn't know his name or QTH, just rattled away at 25 wmp-plus hour after hour. In three days we had disposed of 480* messages. What a slick operator, took me back to the 39/45 era.

They were going to pull the plug at about 4 p.m. Friday so I asked who he was. Well, it was Marshall Killen, VE3KK, of Waterloo, Net Controller for the OSN net (3655 10 p.m. local every evening), 81 years old, a ham for 66 years, ex GI2AU, I1XHF, EP3MK, VE1MK, VE3CDK. If you would like to improve your CW skills, check into the OSN net and you will be very pleasantly surprised.

Marshall lived in the Azores, working for Western Union, did work for Intrepid, then to Canada for training, then to the UK as an instructor at Cranwell, then to Algeria for radar, then to Italy, Canada and Newfoundland. After demob, it was back to the Azores. When the station there closed he left millions of dollars worth of equipment as scrap.

He uses his old Western Union key and can still get 30 wpm out of it. He actually shook hands with Lord Baden-Powell as a child.

*Traffic total later confirmed at 1,066 with 570 organizations.

CANADA'S OLDEST REPEATER

Toronto FM Communications Society celebrated the "20th anniversary of Canada's oldest FM Amateur Radio repeater" by scheduling a party and open house on the hill. Invitees were promised a look at the machine and at the 'magnificent' site, demonstrations of packet radio, satellite communications and other demonstrations, and many historical photographs of the early days.

While the party was scheduled for September 22nd, invitees were asked to consider the route as it might be in the middle of the night in the middle of winter so as to develop an appreciation for the people who have kept the repeater on the air for the past twenty years. The repeater, as suggested by the wording of the invitation, appears to share space with the Skyloft Ski Club. With that kind of an address, everyone at the party must have been high! Hi!!

With apologies to TFMCS

SPECIAL BULLETIN FROM CARF

The Department of Communications has released the following:

1. Power and frequency restrictions applying to Canadian amateurs on the 160 metre band have been removed effective 27 September 1985.

2. Canadian "commercial users" of the 18 MHz amateur band have been removed from the band. The process for changing the regulations for amateur use of this band has begun.

3. Most of the "commercial users" of the 24 MHz band have been removed. We expect the balance to be removed quickly. The process for amending the regulations for amateurs will be under way shortly.

4. CARF and CRRL representatives were scheduled to meet DOC officials 25 October to discuss the "Discussion Paper" regarding restructuring the Amateur Bands, examinations, and special calls.

NOTES FROM THE EXECUTIVE MEETING

1. We will be publishing a directory of Amateur club members (all area clubs, not just the OARC). Since you got this copy of the Groundwave, you know that you will be listed. If you know any "dropouts", remind them to renew their membership by November 30th so they will also be listed.

2. A certain executive member intended to photocopy an important document. He found out too late that a document shredder doesn't do that job.

SQUIRRELS

Recently, we have noticed a squirrel baiting some of the folks using the repeater. They reacted just like he wanted, they called him names, told him to get off the air, etc. This only egged him on. He was having his warped fun and the victims were the repeater users whose blood pressure was raised and surely had that part of their day ruined.

When these squirrels come on, don't fall into the trap. Don't mention that you even hear them. Carry on your QSO just like he wasn't there. If you have to make up things to make him think that you are copying solid, go ahead.

Remember, once either side of the QSO recognizes his presence, you have lost and he has won. If he can't get anyone riled he will go away. Sounds odd but it works!

de The RaRa Rag,
Rochester Amateur
Radio Assoc. Inc.

REMINDER

Remind your friends - if they renew their memberships before November 30th they can be in the directory.

de The OARC Executive

FOR SALE

General Coverage Receiver
Drake SSR-1 Clone (Analogue)
500 Khz - 30 Mhz continuous tuning
AC/DC $280.00

General Coverage Receiver
Realistic DX-400 (LCD)
150 Khz - 30 Mhz direct keyboard entry
AC/DC $325.00

Base Station Microphone (Swan)
Similar to Shure 444
$ 45.00

Ken Asmus, VE3MVV
2 - 215 Percy St.
Ottawa, Ontario
K1R 6E9

(613) 594-2811 (home)
(613) 996-5630 (office)
(Leave message)

* * * * * *

The U.S. built Cray computer employs 240,000 chips and delivers one billion calculations per second - while sending and receiving data from 36 disk drives simultaneously!

* * * * **

Now that the cooler weather is upon us we should all get to work earlier because now you don't have to wash your knees or above your wrists.

de FEEDLINE,
the bulletin of the
Niagara Peninsula ARC

RTTY TONES, SHIFT, AND SSB EQUIPMENT

BY:BILL HENRY, K9GWT,
P.O.B. 365
URBANA, IL 61801

A lot os us transmit HF RTTY by using SSB transmitters in LSB mode. AFSK tones are fed into the microphone jack and we adjust power output with the mike gain control. Is this AFSK? Only FSK is legal on the HF bands---What gives? Also, how come we use the audio tones we do and why LSB instead of USB? This article will try to clear up some of the confusion and give historical and technical reasons why and how RTTY works with SSB transmitters.

INDIRECT AFSK

Actually, the confusion stems from the "AFSK" label. When you put a single tone into a SSB transmitter, all you get out to the antenna is a single radio frequency carrier - not an audio tone. If you change the pitch (frequency) of the audio tone into the SSB transmitter, what goes to the antenna is a Different radio frequency, again NOT an audio tone. However, the difference between the two transmitted radio frequencies at the antenna is the same as the difference between the frequencies of the two audio tones. Thus, the SHIFT of the transmitted RF RTTY signal is the same as the shift between RTTY tones at the mike jack. Since all we are radiating is either one radio frequency for Mark or another for Space, this is indeed true FSK, or type F1 emission. I advocate use of the term "Indirect FSK" instead of "AFSK" to describe use of RTTY tones with a SSB transmitter.

Okay, this sounds good, but why use 2125 HZ as Mark and LSB instead of USB as on CW? The answers to these questions requires a little research of the history of Amateur RTTY. After many chats with the true "old timers" of Amateur RTTY, I find that tone choice and polarity are related as follows:

TONE FREQUENCY

The choice of 2125 HZ for Mark and 2975 Hz for Space goes back to some choices made by ATT/Western Union/Bell Laboratories engineers slightly before World War II. These tones fit already defined "standard" phone company filters and where compatible with long-lines bandwidths, particularly for the transoceanic cables. When the Army Signal Corps asked Bell Laboratory to figure out a way to send RTTY on radio, the engineers chose 2125/2975. These tones (and all other "standard" RTTY tones) are related to harmonics or sub-harmonics of the "RTTY standard" 425 Hz tuning fork - another strong consideration. When WWII ended, U.S. Hams took-up operation using the 2125/2975 Hz tones on VHF, maintaining Mark as the lower tone (2125). To this day, the U.S. Mark standard is the lower tone of 2125 Hz, regardless of shift. All demodulators built in the U.S. since WWII have set Mark for the lower tone.

POLARITY

When HF FSK RTTY was first used in the early 50's, we all used AM/CW transmitters with FSK diode keyers. The shifts and polarity were totally unpredictable! The RTTY JOURNAL, led by first Merrill Swan (W6AEE) and then Dusty Dunn (W8CQ) started campaigns for standardized RTTY polarity and shift. Also, new international regulations were then being defined by the CCIR for HF RTTY. The upshot is that "it was decreed" that when transmitting HF FSK RTTY, the higher radio frequency would represent the Mark (machine rest) state. Therefore, Space is represented by the lower radio frequency transmitted. For years, the RTTY JOURNAL ran the acronym "LSMFT- Low Space Means Fine Teletype". This was obviously then "borrowed" by Madison Avenue types for other commercial purposes - HI!

SSB EQUIPMENT

The introduction of the Collins S-Line and other very stable HF equipment caused a further revolution in Amateur HF RTTY. Most of us wanted to use this fine equipment and were understandably reluctant to mess with adding shift diodes, etc. to the "unbelievably" stable VFO's. So, the use of AFSK tones into the mike jack was adopted by most of us and still reigns today as the simplest way to send HF RTTY. It was desirable to use the same demodulator for VHF and HF so the 2125 Hz Mark, 2975 Hz Space standards were retained. To get the RTTY signal "rightside-up" we used LSB because of the sideband inversion; the lower audio tone (2125) became the higher transmitted radio frequency.

The greater stability of the SSB equipment also allowed us to reduce our demodulator filter bandwidth (signals didn't drift around as much) and it wasn't long before Dusty at the RTTY JUURNAL had a new slogan- "Broad Minds Use Narrow Shift" (no acronym that I know of). We all then

RTTY TONES, SHIFTS, AND SSB EQUIPMENT CONTINUED

converted to our present standard of 170 Hz shift --- 2125 Mark and 2295 Hz Space--.

OTHER RTTY STANDARDS

The "LSB on HF" standard is by no means universal and gets downright "muddy" when you look at commercial and international practice. The U.S. and international standard for marine radio teleprinter (SITOR and RTTY) REQUIRE use of USB and Mark is still represented by the lower audio tone frequency - upside down by U.S. Amateur standards. Thus, Amateur AMTOR copies upside down on commercial SITOR equipment. There is also a standard in Europe in which the tone sets are defined in reverse to the convention in the United States. According to a recent BARTG Journal, the Space tone is considered to be the constant tone and the Mark tone varies frequency with the shift. They also use USB so it all works out in the wash if you think about it (except for dial calibration, of course).

WHICH TONE FREQUENCIES SHOULD I USE?

As I said earlier, the U.S. convention of 2125 Hz Mark dates clear back to WWII and U.S. Amateur RTTY equipment has always been built for 2125 Hz Mark with Space at 2295 (170 shift), 2550 (425 shift), or 2975 (850 shift). This is NOT the international CCIR standard. The CCIR standards were set AFTER stable and narrow-bandwidth SSB equipment was introduced in the 1950's and 1960's (S-Line, etc.). This equipment positions the narrow filters in the transmitter and receiver for optimum voice communications frequencies - 300 to 2400 for the usual 2.1 kHz filter bandwidth. Obviously, the U.S. "High-tone" 2975 Hz Space for 850 shift will not go through such a radio. Therefore, CCIR standards defined a new set of RTTY audio tones that are lower in frequency. The CCIR standard tones are 1275 Hz Mark and 1445 Hz (170), 1700 (425), or 2125 (850) Space frequencies. These are virtually the only tones used for European RTTY.

At times you may see an article or a firm advocating adoption of the CCIR tone standard for U.S. Amateur RTTY. This makes a lot of technical sense but is impractical because of the very large number of existing high-tone RTTY demodulators already in use by U.S. Hams. The low-tone demodulator will work fine on HF RTTY (just turn the receiver dial to tune the other guy in, regardless of tones used), but low-tone and high-tone demodulators are incompatible on VHF (no BFO to change the tone pitch). To prevent having to buy or build separate demodulators for VHF and HF, the high-tone U.S. standard is likely to continue. Some equipment such as the CT2200 and CWR 6850 include demodulators for both sets of tones.

There are many other tone standards used by commercial and military systems. 850 Hz shift is common for U.S. military as are multiplexed multiple tone sets. ALL marine services (U.S. and international) use 1685 Hz Mark and 1785 Hz Space (170 shift, and centered on 1700 Hz). This is decreeded in parts 81 and 83 of the FCC Rules and Regs., following CCIR recommendations for marine services. These tones are used for marine RTTY, SITOR, and sometimes FSK-CW.

CONCLUSIONS

So, there it is - not so complicated after all. We use LSB instead of USB to maintain compatibility between HF FSK RTTY standard of "LSMFT" and the demodulator 2125/2295 Hz standard. Low tones may be a lot more logical, but U.S. Hams will not be able to talk to their buddies on VHF unless they use high-tones. Besides, all Amateur RTTY today uses 170 shift and 425 and 850 shift are only needed when you want to listen to short-wave broadcasts. Buy a receiver or transceiver with Pass-Band Tuning (PBT) and use all three shifts with high-tones. The PBT feature is one of those features a RTTY station really needs anyway!

BIBLIOGRAPHY:

"HIGH TONES, LOW TONES, MODEM TONES," by G.W. Henry, Jr., CQ, November, 1982, pp 42-48.

"LET'S GET ON FREQUENCY! HOW TO TUNE IN RTTY SIGNALS," by G.W. Henry, Jr., CQ, November, 1983, pp 78-80.

OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO

This article by Bill Henry, K9GWT, is reproduced from the October 1985 issue of the RTTY JOURNAL.

ELECTRONIC GOODIES

The following is a partial list of the items carried in stock by B&M Electronics:

1. For those that have trouble blowing fuses, we have 30 amp. fuses marked 3 amps.

2. Antenna tower holes. We have these in assorted sizes and depths. Why dig when you can buy a ready made hole? Notice that we have improved design of some by threading them. Now when you move, you can unscrew them and take them along. Millions of small sizes have been sold to golf courses.

3. Antenna grease. One application is all that is needed. Standing waves are lucky if they can hang on laying down.

4. Everett Dirksen lozenges. A fine product that makes SSB sound like AM. These lozenges provide a golden voice, compared to silver voices of William Jennings Bryan lozenges sold by our competitors.

5. Smoke signal kit. This kit will modify any transceiver so it will send smoke signals. Just ask someone who has one of these, loading a Drake TR-3 on 40 metres into a 20 metre antenna.

de THE GROUND WAVE,
Saint Paul, Minnesota

Bruce Lauer,
Treasurer,
Ottawa Amateur Radio Club Incorporated,
P.O. Box 8873,
Ottawa, Ontario,
K1G 3J2.

Dear Bruce:

Please consider this the Auditor's Report for the Ottawa Amateur Radio Club for the Nine-month period ended August 31st, 1985.

I have examined the Balance Sheet and Statement of Income and Expenditures of the Ottawa Amateur Radio Club for the Nine-month period ended August 31st, 1985.

I am of the opinion that these financial statements present fairly the financial position of the Club as at August 31st, 1985 and the results of its operations for the nine-month period then ended, in accordance with generally-accepted accounting principles.

C.P. Tremblay

Ottawa, Ontario
September 16th, 1985.

C.P. Tremblay, C.G.A.

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Award Manager	VE3JKZ	Ottawa, Ont., K1H 7H7	996-7885