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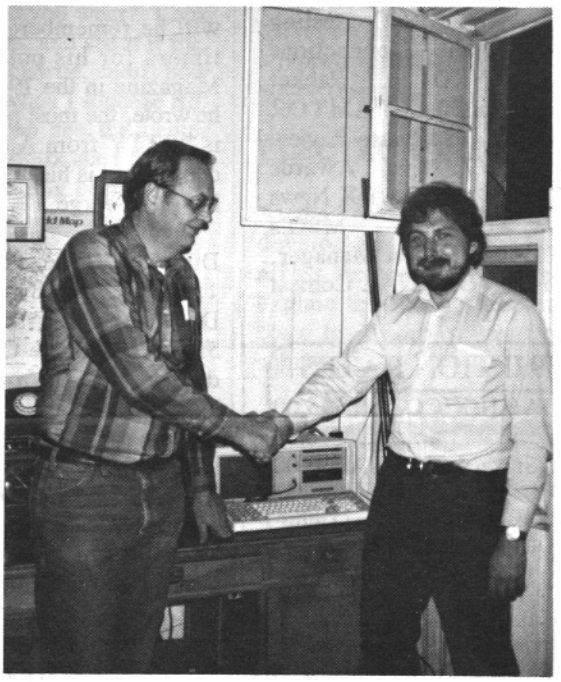
Peace Corp Volunteer:

# David, KK4WW, Visits USSR

## IN THIS ISSUE





*David, KK4WW (left), presents computer to Victor, UB5WE.*

# Crusing with Ray, AG3L

*Ray, AG3L, making last minute preparations for sea voyage.*

**RTTY** *JOURNAL*—

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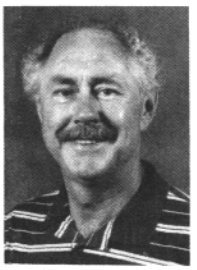


# HITS & MISSES

Dale Sinner, W6IWO
9085 La Casita Ave.
Fountain Valley, CA 92708

## The Passing of a Legend!

On March 1, 1991, Durward J. Tucker, W5VU, became a silent key. His son George Tucker, WA5NVI, passes along this information about his father. Durward will be remembered by many of the old timers for his published works in CQ Magazine in the 1960s and for the books he wrote, the most popular to us RTTYers is "RTTY from A to Z." (Still have my copy) Here is his obituary as submitted by his son George.

Durward J. Tucker, W5VU, died March 1, 1991 at age 84 after a brief illness. Durward was first licensed in 1924 as 5AKX at Wolfe City, Texas. He held degrees in E.E. from Southern Methodist University, was a registered professional engineer, and was associated with radio stations WRR-AM and WRR-FM, Dallas, Texas, for more than 40 years, serving as managing director from 1951 until his retirement in 1973. He was former director of radio communications for the city of Dallas, Texas, director of Civil Defense communications for Dallas and Dallas County, member of the board of directors of the Mutual Broadcasting System, director of the Texas Association of Broadcasters, and chairman of the State Industry Advisory Committee to the FCC for Texas. He was a long standing member and held executive positions with the IRE, AIEE, and IEEE. An active DXer, Durward described himself as a member of that fraternity that operates his transmitter only five or ten minutes for every hour that he operates his receiver. His publications included "Introduction to Practical Radio" (Macmillan, 1945), "RTTY from A to Z" (Cowan, 1970), and "Changing Energy Picture." (1976) Durward was also a rancher for more than 50 years, and after his retirement founded and operated a small petroleum exploration company. He is survived by his wife, Lee of Dallas, Texas and two sons, George Tucker, WA5NVI, of Newton, Mass., and Glenn Tucker of Dallas.

## ARRL Committee on Digital Communications

The next meeting will be held May 25-26 at ARRL HQ in Newington, Connecticut. I will be attending this meeting and taking along your suggestions and recommendations. Thanks to all who responded to my request for input. However, there is still time for more input, so, those of you have not written and were planning to, please do so NOW. I have asked for this input the past two months here in this Column and as your representative I want to be able to present the issues you feel most important. But, if I go ill equipped to the meeting without substantial backing from the fraternity, then I can only do my best to represent the rank and file with the information at hand. Don't wait another day to write and please don't wait until the last minute because I will need time to compile all the input for proper presentation. This will be your best opportunity to speak out on those subjects that are bothering you about our hobby. I don't mean this to sound like "speak now, or forever hold your peace" but this is the first meeting of this year, so now is the time to speak up. The next meeting will not be until late in the year and that would not be the best time to speak out with the year so far gone. So this is my final plea for input and thank you for helping me be your representative.

## RTTY JOURNAL MATERIAL

Last year the *RTTY Journal* send out a Reader Survey Card to determine what type of articles the readership found most interesting. The survey ranged from the technical side to the humorous. So for these past few months I have tried to diversify the information to meet your requests. That has caused some unhappy readers and also some very happy ones. So as your Editor, I guess I'm on the right track. From what I've heard from others in this business, it is impossible to satisfy everyone. But here comes the rub.

*Continued on page 4*

# CONTESTING

Hal Blegen, WA7EGA
2021 E. Smythe Rd.
Spangle, WA 99031

## THE GOOD, THE BAD AND THE SWAMPY

I've been bitten by a snake, not a scaled, fangy critter, but by a long, black, rubber snake (coaxus reptilicus) that ambushed me from in plain-sight in my back yard. When somebody uses the word GOOD and COAX in the same sentence, I start looking for a loud Cuban running 40-wpm CW with no chirp. They can't be talking about wire.

Using RG8/U at 28 MHz, half my power goes to feed the snake. The coax data table told me which snake had the smallest appetite. For about $1.80 a foot, I could bring home a friendly variety of HELIAX. This, garden-hose diameter creature also requires a $30 connector on each end. When I installed a tower 200 feet from my shack, I wasn't planning on feeding it with a silver spoon.

At $.60/ft, 9913 was a good compromise and reduced my losses to less than 2db. Unfortunately, 9913 is a rheumatoid snake. Only slightly more flexible than a rake handle, it requires small sections of a more agile species to be connected on each end in order to attach to your rig or to any antenna that waggles around on a rotator. This means that there is a (shudder) coax connector, outside, at the top of the tower.

The efficiency by which 9913 (aqua thirsticas) drinks water through the tightest, multi-taped connectors and its unique ability to store vast quantities of water by filling the entire length of its hollow dielectric makes it uniquely adapted for life on the moon and other very dry places where humans cannot survive. A word to the unwary, if you accidently step on it, it will bite you, every time.

In winter, my coaxes hide under the snow. Five or six will be intertwined (for warmth) in big boa-constrictor clumps as they slither out to the towers. During contests, I have to make many trips out to the towers to remove bits of smoking debris caused by over enthusiasm. Each spring, having spent fall and winter abusing my antennas, my contest operators return to the scene of the crime to make fun of my coax.

"Hal, what size boot do you wear? Look at this mashed, flat spot and see if it fits, ho ho ho!" "Hey Hal, (chortle, snort) how come this spot gurgles when I squeeze it?" "Wow, yuk-yuk! I can see the center conductor here. You gotta start feeding your porcupine something besides rubber."

## TECHNICAL TERMS

In order to understand the genus and types of the various rubber-coated serpents properly, it may be useful to understand some of the associated manufacturer's jargon.

### NON-CONTAMINATING JACKET

It is my understanding that NON-CONTAMINATING means that none of the thousands of animals that subsist entirely on a steady diet of coax will develop heart burn.

### VELOCITY FACTOR

If you dip the UHF connector soldered to one end of a 10-wavelength section of 9913 into a pan of water, the time in milliseconds that it takes water to drip out of the other end is called VELOCITY factor. It will vary only slightly if the coax is running up hill.

### ELECTRICAL LENGTH

To be calculated as a function of the velocity factor by carefully measuring the distance from the shack to the top of the tower and then cutting the coax 9 feet, 4 inches too short.

### DIELECTRIC CAPACITANCE

Closely related to velocity factor, this characteristic refers to the quantity of water contained in a coaxial 9th wave.

### IMPEDANCE LUMP

Until recently, I had never heard the term. In coax, this describes a very large change in RF reactance occurring over a very short physical distance. This can be caused by a supportive neighbor who installs a pin in your coax or in the case of 9913, by any attempt to bend into a radius smaller than that required for a freight train to make a U-turn. At higher frequencies, such as those exceeding DC, an IMPEDANCE LUMP can occur at any barrel connector, especially if it has been wrapped with enough tape to be over 50% water resistant.

### ELECTRON VORTEX

As they pass through the coax, electrons develop a negative pressure coefficient across the connector. This does much to explain the enhanced ability of a spliced coax to absorb water from the atmosphere.

### COAXIAL OBEDIENCE

Everyone I know has their own method of installing coax connectors. A frustrated plumber taught me the one I use. Remove the rubber jacket for the length of one coax connector. Completely tin 1/2 inch of braid beginning at the end of the rubber jacket. Using a SHARP tubing cutter on the tinned area, remove the braid 1/4 inch from the jacket. With a little care, you can also cut through enough dielectric to strip the center conductor at the same time. Scrutinize the cut on your tinned braid to ensure that it is clean and is not smashed into the dielectric. Now thread a silver plated, teflon connector onto the prepared end until the tinned braid is well past the holes on the side of the connector, trim the tip and solder (ALL FOUR SIDES). Test for continuity and shorts. Cheap connectors require excessive heat to bond the braid. This melts the dielectric which can cause losses and failure. Incidently, white does not necessarily mean teflon. The chances of a botched coax connector failing increase in direct proportion to its height above ground. Although water somehow seems to get into coax, no matter what you do, I have found that a good (Scotch brand) electrical

tape, double wrapped so it begins and finishes at the up-hill side of the connector, is a start. A coating of clear silicon caulking on top of the tape will keep it tight and intact through the weather. DO NOT put caulking directly on metal connectors as some brands utilize an acid curing process. All methods that I have tried that sealed a connector effectively were also difficult to remove. Drip loops look like they should help, but once you get water in your coax, it will migrate along the braid, in complete disrespect for gravity.

N-type connectors have a supposedly waterproof seal but, at least in my part of the woods, N-type barrel connectors are not easily found and some types of coax, like 9913, require a special tip, or some filing down of the center connector diameter.

## CONTEST CONSIDERATIONS

Having multiple beams on a band may have some merit to permit phasing for extra gain and to allow the operator to select the right height for the optimum wave angle to a given area. There is also the "honey" factor which has to do with the ability to attract contest operators to your effort but the real motivation for hanging more than one antenna on a band lies in the time required to rotate the antenna. It is simply more efficient (and a lot less wear and tear on the rotator) to lock different beams on various directions and switch antennas.

There is a caveat on switching antennas. Even if both antennas have acceptable SWRs at the operating frequency, slight differences in loading can cause large variances in grid current in expensive final tubes which have very tight tolerances.

Broad banded baluns help to equalize antennas by reducing the tendency for the SWR at the shack to be sensitive to the coaxial feed length but baluns in themselves present a high failure factor with high-power RTTY. I have heard good things about W2DU baluns. Coaxial impedance matching baluns while virtually indestructible, are frequency specific and may actually exaggerate antenna loading differences. It might be helplful to run the coax through enough ferrite beads (at the antenna) to decouple RF from the outer shield, but I have no idea how many "enough" might be.

One solution is to use a tuner on one of the antennas to duplicate the loading precisely between the two antennas over the desired range of frequencies, but this requires a separate feed line for each antenna. Another method is to equalize them at the tower and use remote switching of a single feed line. The cost of a high-power switch and cabling is usually less than running multiple feed lines. Remember, though, remote antenna switches come in two categories: those that see 52 ohms, and those that make smoke.

The most effective tool I have found for "at-the-antenna" adjustments is an MFJ antenna bridge. Unfortunately, it is only half of the tool. The oscillator calibration is such a joke that MFJ thoughtfully provided a frequency output jack that will work nicely with a small, portable counter (about $60 worth.) You don't need 9 digits to 600 MHz. Since reasonably accurate frequency measurment is a must for most purposes, I'm surprised that MFJ hasn't incorporated a cheap digital counter into their package. (?)

Keep the feed line between each antenna and the switch equal length and as close as possible to a multiple of an electrical half wave. If you can reach the driven element match, at the antenna without putting your life on the line, attaching the MFJ bridge to the antenna feed point will give you a very accurate method of adjusting it to 52 ohms but there is usually no sane way to adjust the matching network after installation. Do the matching at the input of the antenna switch (at the base of the tower).

This is an antenna balancing procedure only. It assumes that the switch is seeing a comfortable load on each antenna before we start. Since a tee-fed match won't do much to increase the net impedance (resistors in parallel), select the antenna with the lowest impedance at the desired operating point and precisely dip the meter.

Using a tee connector, join an electrical 1/4 wave coax stub connector on one end, open on the other, to the antenna with the highest impedance. Without changing the settings on the bridge, begin trimming the coax stub while continuing to switch between the two antennas until the readings are identical.

To save a lot of trimming, I use various lengths of jumper cables from the shack to arrive at a rough length and then cut from there. The final stub will usually be much shorter than the original 1/4 wave. A final trim or two may be required when you actually test the two antennas with the amp. When you're finished, seal the open end of the coax with tape and silicon, coiling it so the end is clear of all metal and pointing down.

I'm sure there are more scientific ways of determining matching stubs. This method worked for me but if you are interested in why, or would like better to understand the principles and misconceptions concerning SWR, W2DU explains it all in his book, "Reflections" (ARRL 1990).

73, GOOD LUCK AND GOOD CONTESTING.

de **HAL, WA7EGA** ■

*HITS & MISSES* *Continued from page 2*

I know there are many who have little pet projects or designs that make things easier around their shack. Why not share those ideas and projects with all of us? Write it up, take a couple of photos and send it in to the *RTTY Journal* office. If it needs some extra work done to it, I can obtain help from our staff. Don't worry about the language or grammar, we'll try to get it right. How about that great picture of your shack, or maybe pictures of some DX station or DXpedition? I always have room for pictures here and there and also short stories. So don't be bashful, submit yours today. For example, the last issue contained material submitted by three fellow digital Hams who wanted to share their stories with us all.

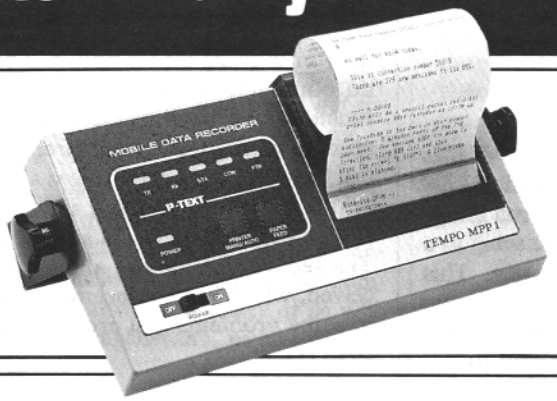
I keep banging away on this subject because your input is what keeps the Journal going. This is your publication, I'm only the Editor-Publisher. What you submit, I try to publish and I will continue that policy as long as I own the *RTTY Journal*. So how about it? Give me your story or pet project for publication. In return, you get the recognition and maybe some of our readers will even write to you and thank you for telling your story or presenting your idea.

It would be unfair of me not to mention how I appreciate the stories that have been submitted up to this point. I have published many of them in the past five years and to those Hams my special thanks for your input.

That's all for this month. 73

**de Dale, W6IWO** ■

# HENRY RADIO IS THE PLACE
# . . .THE BEST PLACE
# to fill all your data communications needs

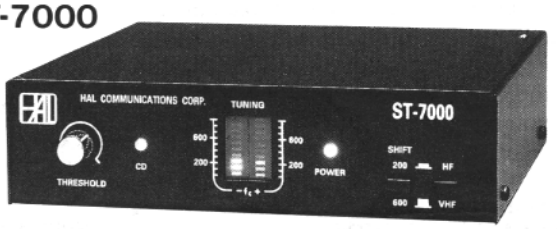


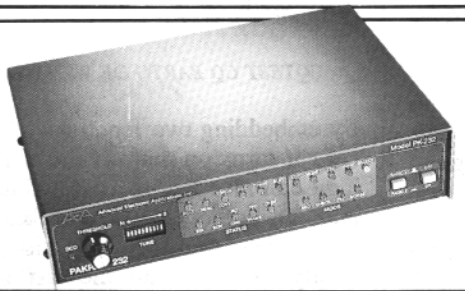

## The TEMPO MPP1

. . .a unique new mobile data printer, includes a packet controller and a 13.6 VDC printer that interfaces with any mobile radio. in a recent user test it proved to have about twice as much audio level range tolerance as other TNCs. It is also an ideal unit for emergency work and a commercial version is perfect for dispatching service, emergency and police vehicles.

## HAL Communications' ST-7000

HF-Packet Modem. . .a high performance modem designed specifically for 300 baud HF-Packet. It offers no-compromise performance to assure optimum operation under the most demanding signal conditions. Techniques developed for government and military use are used in the ST-7000. AGC-controlled AM signal processing provides a wide dynamic range. All filters and detectors are optimized for 300 baud HF-Packet. It offers the 200 Hz shift mode and a wider 600 Hz shift mode, each supported by separate 6-pole input filters and a 40 db AGC system.

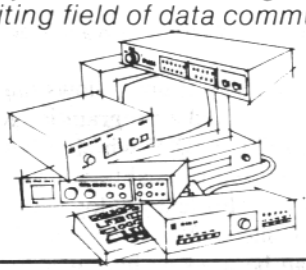


## The PK-232 by AEA

. . .the only controller offering Morse Code, Baudot, ASCII, AMTOR, Packet, and facsimile Transmission & Reception plus the ability to monitor the new Navtex marine weather and navigational system. . .7 modes in one controller. The PK-232 makes any RS-232 compatible computer or terminal the complete amateur digital operating position. All decoding, signal processing and protocol software is on ROM. Only a simple terminal program (like those used with telephone modems) is required to interface the PK-232 with your computer. **Watch for the new and exciting AEA FSTV-430. Have fun on amateur TV!**

*Obviously, we can fill in a system that you have already started. Or we can furnish a complete system to fit your needs and budget. For example, here's some suggestions for the amateur just entering the exciting field of data communications, or: for the amateur who wants the best available.*



**NO. 1** For the fun (and very affordable) mode, VHF Packet, AEA PK-88 with personal mailbox, 8K programmable memory and TCP-1P compatability.
For serious 20 M world-wide DXing on Packet, 200 or 600 Hz shift. . .add the superb HAL ST-7000.

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# SOFTWARE

**Jay Townsend, WS7I**
**P.O. BOB 644**
**Spokane, WA 99210**

Most of the Packet messages that have arrived in the Mail Bag are from overseas. Thanks to all for the input. LZ2MP sent in the Apple Information that I was looking for and it is listed to this issue. Bob, KE8DM (7J6CAS), reports that he is settling in at the new QTH in Arizona and should be up and running again soon. I am sending him a Flesher TU-170 which should make his RTTY life a little easier.

## COMPRTTY II

This month we are going to examine the PK232 version of David Rice's CompRtty II program. You might remember that the CompRtty II was one of the first software packages that I reviewed for the *RTTY Journal.*

COMPRTTY II — $65 to 95
David A. Rice, KC2HO
144 N. Putt Corners Rd
New Paltz, NY 12561

The PK232 version of CompRtty II uses the host mode of the 232 which means that it takes the work out of talking to the PK232 as far as commands go. It supports all of the modes that the PK232 uses, Baudot, AMTOR, ASCII, Packet, Fax, and CW. CompRtty II uses default entry files so that any number of different setups can be saved for the user. We will get into how important this feature will be a little later.

## INITIAL TEST

First thing that I did was fire up the version that David sent, without reviewing the documentation or any of the files. I typed in Comprtty II, that runs the program. The PK232 wasn't hooked in but I had the modem in the slot which generally fools the program enough to get to the first screen. Surprise! My [A:] drive light went on and after a bit I got a DOS failure message. This is the message from DOS about A)bort R)etry F)ail that occurs when there is no floppy disk in the drive. Drat, here I am at work and taking a minute from a busy day to see what the thing looks like in color and no luck.

## THE TEST

Well I then took a look at the list of files and saw the Default.cfg file which I assumed ran the program. It did run things and that were hard coded in the setup as a reference to drive A:_sr\comprtty. This means that David was running his source there! Anyway, I changed that little gem and re-fired things and it again didn't work. Guess I need the PK232!!

After installing the software at home with the PK-232 and reading the basic parts of the manual, I ran the program through its paces. All of the essential parts of the program functioned fine. I copied some RTTY and the algorithm that David uses does a nice job. AMTOR, CW, and Packet were tried and the unit works quite well and in line with all of the programs that run on the PK232. There are some nice screen features and it takes but a minute to get used to the Function Keys. CompRtty II has excellent file editing and handling capabilities as well as a nice logging feature. I believe that David Rice probably led in the logging department software development. His program now has limited use of a Mouse included in the latest version for transferring things to the log.

## NEW DEVELOPMENTS!

The major change in the CompRtty II program is a little feature that I have been working on with David for a couple of months. He now has added CONTEST support to his program and it is available in both the PK232 version as well as the regular terminal/TU type version. Since I was doing this review, he has sent me only the version that runs on the PK232 which I will discuss in some depth.

For the BARTG contest I was going to run this software as a single operator and single band contest. Unfortunately, the software didn't arrive on time due to Postal Service delays. (Express Mail is guaranteed by 3:00) — pretty tough to get it when it doesn't arrive until 2:40 PM. Sheesh, and at the prices they charge!

So I ran the standard software which sends on the PK232 and logs on one computer, while a separate receive computer and terminal unit is used. I made 400 QSO's on 15 and had a great time, thanks to all who stopped by and the DX was great, FH, P29, FJL, TY, just to name a few.

In order to make the CompRtty II program do contests, David has added a lot of functions. I have tested many and all seem to work great! I am sure, however, that there will be many changes after a few real contests get worked and input gets shared between the users and the author. The second version has already been received, which has enhancements and fixes to some problems that cropped up in the BARTG.

## FEATURES

New program features include: Automatic transmit for message keys (Alt keys..) There are 26 of these keys available. This will automatically fire the key when it is pushed. He used the ability to embed keys and functions in keys. An example:

*=CQTEST CQ BARTG DE WS7I WS7I W7SI &*

By embedding two functions in the message it turns on and off the transmitter. You can also use the date, time, serial number, and other pieces of data to setup a complete exchange! It also has the ability to retransmit the last message. This enables the same message to be sent and keeps the serials numbers in order.

*% DE WS7I 599 NUMBER # AT @@@@ HOW BK &*

CompRtty II now allows multiple log file support and a program is included called LSETUP.EXE which allows logs to be modified to enable your own setup for logs. This lets you log what you want for a contest. You can set up defaults which can be used by hitting <Enter> when running the log or can be over-written if you so desire. This helps eliminate key strokes while contesting. You set up for the contest mode by entering "contest mode" in the setup.

David's program uses callsign buffers and since most of the ideas on functions came from me in a paper that I have circulated

to a number of software authors, it performs a lot like the MBATOR (AEA) program as I used it for contesting. Finally, contesters have a program which sends, receives, and logs with serial numbers and other support that RTTY contesting needs.

KC2HO has risen to the occasion and implemented a special version for contesters. I am working with him on development of this program and plan on using it in some contests, so that those of us who support Digital contesting can have a fine tool. He took the first step....hopefully, more contesters will buy it and get involved in CompRtty II's improvement.

This concludes my second look at CompRtty II. One thing that has become apparent to me is that a lot of software developers have a love for Digital communications as deep as many of us who are the users, ragchewers, picture senders and Dxers.

## APPLE SOFTWARE

- MILEN POSTADSHIEFF, LZ2MP
  P.O.BOX 237
  7000 RUSSE BULGARIA

(LAST UPDATE: JANUARY 1990)

*APPLE II HAM-RADIOVPROGRAMS*

### RTTY PROGRAMS

1. SUPER-RATT 4.3
2. SUPER-RATT 5.1
3. HAMSOFT FROM KANTRONICS
4. MACROTRONICS
5. GALFO
6. EGBERT

### AMTOR PROGRAMS

1. HAMTEXT FROM KANTRONICS
2. SOFT AMTOR/RTTY VERSION 6.6
3. HERMES BY F6FLT /RX ONLY

### MORSE PROGRAMS

1. MORSE BY WA6EKG
2. MORSE BY PA0KLS
3. MORSE CODE TEACHER KELTZ
4. MACROTRONICS

### PACKET RADIO

1. DL2MDL AX25 VERSION 3.1986

### FAX/HELL

1. HELL BY PA0KLS
2. APPLE FAX /RX ONLY

### SSTV PROGRAMS

1. DK6OV RX ONLY
2. GALFO
3. PA0KLS
4. LZ2KIM

This is a simply great list of Apple software by one of the leading digital guys! Thanks Milen. If others of you have sources for software, please send them to me via packet or on my BBS and I will share them.

## SOFTWARE FRUSTRATION

Yes, I know this is a rather unique title, but it seems that the growing involvement in digital communications, and especially in digital contesting, requires that some comments be made. A growing group of contesters is being formed in Spokane (called by one gentleman, WB7RBJ — THE RTTY CAPITAL OF THE WORLD) and with this expanded interest comes a set of problems.

Contesting can lead to a lot of frustration and, as a result, I think that a few words of wisdom need to be spoken. (Jay on the Mount!!) Software for contesting, like all software in general, needs to be completely tested, setup, and implemented before using. A good example of this was seen on my recent trip to HC5J, where I was going to use the program which sends and logs on the PK-232. I spent most of a Sunday setting up, configuring and testing the software before going to Ecuador. The author ONLY made one little change — I didn't re-test — the result was several days of complete frustration prior to the contest START. I bagged the idea of using the software only hours before the test. I missed checking the 40 meter amplifier interaction with the computer. This cost me thousands of points.

The time to test is not the afternoon of the contest, the time to use a new program is two weeks before. If you have the author and the source code in the shack while contesting you can afford to be sloppy, otherwise, MURPHY strikes. In using logging software, about 10 test QSO's need to be entered in the log a couple of days before the contest to make sure that some quirk in the program doesn't exist. Then just zero out the logs and you will be confident. I didn't do that for this BARTG contest and it took 5 QSOs before I realized, YUK, I need the time in the exchange! It also helps to read the rules. This brought out a bug in the software I was using, which luckily I got resolved before doing the next 400 QSOs. A multi-operator group wasn't so lucky and has a rather garbage-looking log as a result.

## THE BEST IS LAST

I received from Europe a fantastic package of software that will do AMTOR on a regular old TU. It looks great on first examination, but will take a little interfacing which I will do after holiday. I am looking forward to playing with it for a month or so. We will return to the PK-232 one final time in summer for a hopefully in-depth report on its mailbox abilities on Packet.

73 and remember, programs are fun!

de **Jay, Ws7i** ■

**Packet addr.WS7I @AH6AA.ID.USA.**

The *RTTY JOURNAL* is looking for a few good stories to publish. Whether it be construction, humorous, technical, or adventures in RTTY, submit them along with pictures (if available) and the *JOURNAL* will provide the recognition.

*Ken, K6IR, chats with Ralph, K0IR, before VP8SSI DXpedition.*

# PACKET

**Richard Polivka, N6NKO**
**7052 S. Friends Ave. Apt J**
**Whittier, CA 90602**

## ABOUT LAST MONTH...

Last month's article proved to be an interesting one, to say the least. I have now had time to study the ramifications that the subject entails for myself as a user of Packet and BBSs that are accessed by Packet. There is one school of thought that the people who relayed the message should not have been hit with the violations, just the originator. There are others that say all people should have been served with the violations. I have my thoughts as to what should happen in the future with people that use Amateur Radio for commercial purposes.

For example, I was listening to a radio station give out a traffic report and they said that the report of a particular situation was courtesy of an Amateur radio operator. The question here that comes to my mind is how was the information relayed? If the call was made by a cellular phone, the report was legal. If the call was made by autopatch, (Amateur radio for profit) the profit of the radio station using the report and/or service that provides the traffic reports to the station should be considered.

It is so amazing how one incident can shed so much light on a subject that you take for granted because of your familiarity with it.

## MODULATION

Recently, I was having a discussion with a fellow ham on some of the modulation schemes that are being used to carry Packet transmissions. We came up with Frequency Shift Keying (FSK) and Audio Frequency Shift Keying (AFSK) as being the main modes of transmission. There are several variants to these two basic schemes but they are almost the same depending...

What is meant by the term "Audio Frequency Shift Keying?" The term comes from the process of representing a mark (or logic 1 or high) as one tone and a space (or logic 0 or low) as another tone. With classic RTTY and AMTOR, the mark tone is usually 2125 Hz and the space tone is usually 2295 Hz. These two tones are switched back and forth to represent characters sent. The resultant pattern is sent over a carrier as modulation to the carrier. The best example of AFSK that I can think of is Packet over VHF. This is genuine AFSK where the carrier is modulated by the two tones.

Now where does "Frequency Shift Keying" come in? You are probably saying that what I described above is FSK. That is correct. It is FSK using audio tones on a carrier. Now comes the fun part. Let's say that you transmit the same RTTY tones over your HF radio using SSB. Is that AFSK or FSK? Well, let's look at it step by step. For the sake of the discussion, using a carrier frequency of 14.090000 MHz, LSB, the mark tone, 2125 Hz, is sent over the radio. The resultant signal will be 14,090.000 KHz minus 2.125 KHz or 14,087.875 KHz, which is the mark frequency. When the space tone of 2295 Hz is sent, we have 14090.000 KHz minus 2.295 KHz, or 14,087.705 KHz being sent by our radio. Interesting how two audio tones yield two separate carrier frequencies. What happens is that you are inputing AFSK and the radio is converting it to FSK because of SSB operating principles. The above example would be considered AFSK modulation since the information to the radio is sent in the form of audio tones. Some radios out there, like my IC-720A, have an FSK input port. What happens here is that I send the data to the radio in digital form and the radio generates the two frequencies that are needed to convey my information.

So, to sum this up, if you hear someone saying that he is using AFSK, he is sending out audio tones. On the other hand, if he says that he is using FSK, you can assume that raw data is getting to the transmitting radio. One of the benefits of using FSK on the HF bands rather than AFSK is that the audio distortion and possible audio clipping is eliminated and you end up sending out a cleaner signal. A problem could be generated when someone thinks turning up the mic gain or useing a compressor will improve their signal. All this does is add distortion to the transmitted signal, which makes it harder to copy and causes splatter. That is why I prefer using FSK where this can't happen, since all I am sending, is a carrier and not an audio tone.

So, If you are using AFSK on HF, set the gain to where the ALC needle just barely moves off the pin and then tweak it back a hair. That will be a good setting to use. Clean signals make for better copy and better friends.

## 1200 BAUD HF

I was cruising around the 10 meter band a couple of days ago, now that I have my station working again, and I happened upon some 1200 baud Packet. I do not recall the frequency that I was at, but it was quite busy, which was probably what attracted me to listen. While listening, I could not help but notice how bad the signals sounded. There were a few recognizable signals out there but the majority were bad. The major problem that I noticed was distortion (More audio, better signal....nawwwww!) I tried to copy the signals and look at them using a scope as a tuning meter and that made the mess look even worse. I could only copy maybe one or two stations when my PK-232 heard clean signals.

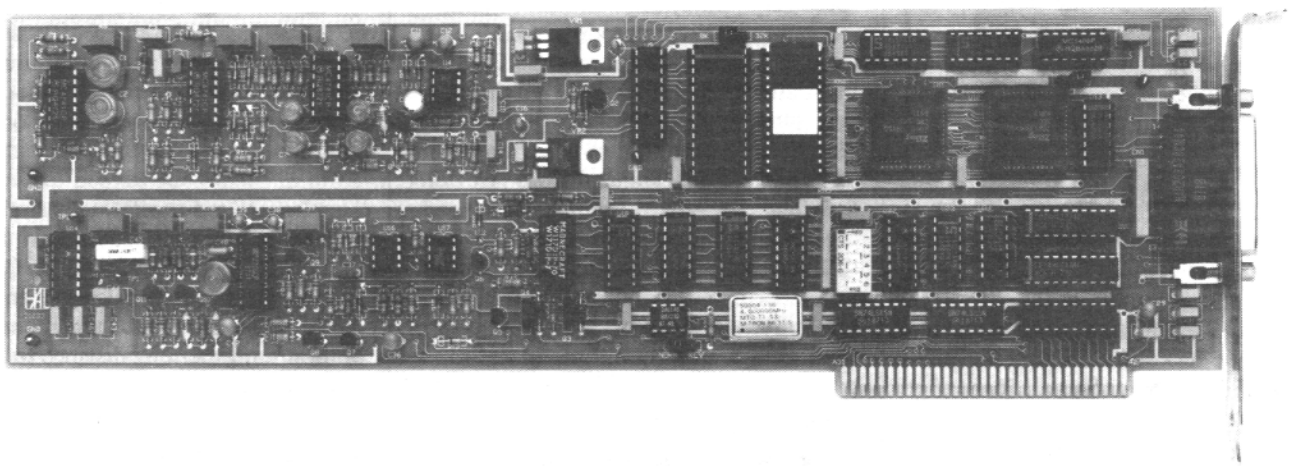
Here again, transmitted audio distortion strikes again. I can't visit all of the stations that use 1200 baud HF packet to make sure that they are propagating good, usable signals. That responsibility lies with the control operator of the station. Here again, the ability for the receiving station to copy a signal lies with the transmitting station. The HF bands are known to take a perfectly good signal and trash it up big time. Why send out a signal that already has two strikes against it? Less signal tends to be better to copy.

## NEXT MONTH

I would like to devote next month's article to answering readers questions. So, just drop me a QSL card with the question on it and I will try to answer it or get it answered. Until then....Peace

de **Richard, N6NKO** ■

# A Winning Combination . . .
# The PCI-3000 and SPT-2 from HAL!



The HAL PCI-3000/PC-AMTOR system is designed to put your PC on the HF bands with outstanding performance at an affordable price. Amtor allows you to get through when other methods fail. If you've ever been DX-ing with someone on Amtor when 20 meters dies out in the evening, you know what we mean. Things may slow down, but you can usually keep up the QSO!

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If you want to communicate on HF, do it right with the PCI-3000! Call HAL Communications—your AMTOR source—and put your PC on the air today!


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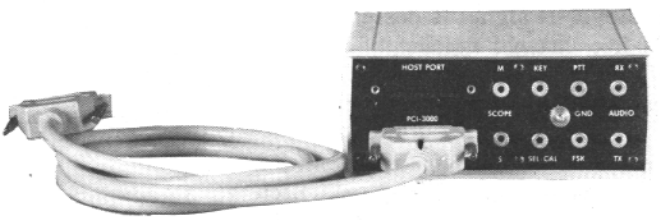
For ease of tuning your PCI-3000, add the SPT-2 Spectra-Tune. The Spectra-Tune lets you tune in CW and RTTY signals quickly and accurately with a calibrated linear 30-segment bar graph. The bar graph represents a 600 Hz range of the audio spectrum, centered at 2210 Hz for RTTY and AMTOR, and 800 Hz for CW. Calibrated marks indicate the proper frequency for AMTOR, RTTY, and CW tuning.

A cable is included with the SPT-2 for providing power and control from the PCI-3000. The rear panel of the SPT-2 provides convenient "RCA" phono connectors for all radio connections. This avoids having to make radio connections directly to the PCI-3000. Enhance your PCI-3000 system with the SPT-2 Spectra-Tune Today!

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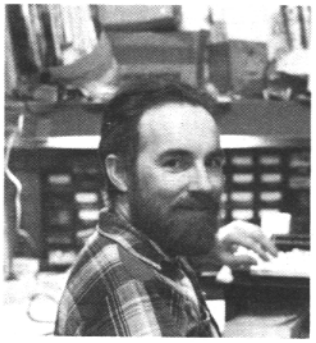
(Low tone export models available.)

CIRCLE 58 ON READER SERVICE CARD



*Ray Petit, W7GHM, POB 51, Oak Harbor, WA 98277*

## CLOVER (last chapter)

### Clover-II Sets New Speed Records!

In a new series of on-the-air tests in late February, AK0X and I verified the performance of a 4-tone version of the Clover design. Ed and I chatted for several hours on the 7, 14, 18, and 21 MHz ham bands at peak error-corrected data speeds from 80 to 400 bits/sec.

This is five times the speed of the original (single tone) Clover signal. Ed and I used the Clover "Broadcast" protocol, which is similar to AMTOR FEC or packet UNPROTO. Ed's rig was a Kenwood TS-940S and I used an ICOM 735. We were able to use our existing radios because the Clover-II design includes a frequency-offset compensator which corrects for differences of up to 10 Hz. The "breadboard" Clover controllers also provided tuning indicators which enabled us to "zero" the other's signal to within 1 Hz from an initial offset of as much as 50 Hz.

### Some Technical Features

The Clover-II signal is designed for a QRM-free channel spacing of 500 Hz. The four smoothly-shaped pulses are spaced 125 Hz apart.

The ensemble fits nicely into the passband of a high-performance CW filter. Each pulse has a duration of 32 milliseconds. The pulses are interleaved in time: one of them peaks every 8 milliseconds in an ascending-frequency sequence which repeats 31.25 times per second. Four "phase-only" modes and one "amplitude-only" mode are defined, and combined amplitude-and-phase modes are being evaluated. Diversity methods with the four pulses promise robust performance in the really rowdy conditions.

The "connected" protocol emphasizes courtesy and efficiency. Transmitter power output is automatically held to the minimum essential to move the data at the speed required by the data source. When a communication is established, all other Clover controllers hearing the QSO remain silent, giving the QSO a clear channel. No time is wasted during a connect: One or the other station is sending over 90% of the time. Transmissions last from 6 seconds to perhaps one minute, depending upon band conditions. If the data sources are exhausted and other stations are waiting, the connect terminates promptly. A "slottime-persist" scheme then gets a new QSO going with low probability of "collisions," or "doubling."

### See You at Dayton!

I'll deliver a technical paper on the Clover system at Dayton. My time slot is 1200 hours, Saturday, in room 4. Also stop by the HAL Communications booth and see a demonstration with a pair of Clover-II controllers. I'll be there to answer your questions. If you're a programmer and you want to write networking software or fancy terminal programs for Clover, let's examine the interface!

Thanks, Dale, for offering space in *RTTY Journal* for this series. And my thanks to Dave, N0DET, and Dick, K7QQF, for your assistance in local tests, and to Ed, AK0X, for your great support and collaboration with the long-distance tests.

73, de **Ray, W7GHM** ■

# MSOs

**Dick Uhrmacher, K0VKH**
**212 48th ST.**
**Rapid City, SD 57702**

Here it is the first of March, snow every place, the wind howling, and I see it's supposed to be ninety degrees today in Texas! MSO SYSOP Brownie, K5FL, Denton, Texas, tells me that the trees are all in bloom, and that he's about to exercise his "green thumb" in his garden. There are times that I wonder if I don't live in the wrong place!

This months issue of the MSO Column will be mainly devoted to new users, in the hopes that it will provide a little insight on how more easily to exploit the MSO systems. We do see quite a few new users on the National Autostart Frequency, (14 085 625 Hz Mark frequency), and we encourage anyone interested in utilizing the MSOs, to jump in and get their feet wet.

### MSO HINTS AND KINKS:

The CBMS (computer based mailbox systems) on the National Autostart Frequency, namely those maintained by Jay, KB0ATQ, and Ernie, W6ZRR, have a time-saving feature that all of us should exploit. It's possible to have the MSO system "scan" its directory of files immediately upon being accessed, rather than having to issue both an access code, wait for the system to reply, and then issue a directory (.SDIR) command. When first logging onto either of these systems, just tag your callsign, (or any callsign), onto the system access code, and the system will automatically scan the MSO directory for any message to or from that callsign. For example, if you access the KB0ATQ MSO with MSOATQ/KD9BS, the MSO will be activated, and it will output the filenames of any files from or to KD9BS. This obviously saves you time, saves wear and tear on the MSO equipment, and also frees up the frequency sooner for other users.

For those of you using a Kenwood TS-440S, experience has shown that this transceiver, although completely adequate for RTTY, AMTOR, etc., does have a bit of warm-up drift, and this must be taken into account when first using the transceiver. My experience has been that the TS-440S drifts upwards in frequency about 60 Hertz in approximately the first 30 to 45 minutes of use. If you have "memorized" your favorite MSO in the TS-440S memory system, and attempt to

recall the memory and access the MSO immediately after you have turned the rig "on," you most likely will get the "idiot treatment" from the MSO. Receiver and demodulator selectivity being what they are these days, a frequency error of 60 Hertz while attempting to access one of the MSOs will most likely end in failure. But, all is not lost. I have found that turning both the transceiver RIT (receiver incremental tuning), and XIT, (transmitter incremental tuning), on, and tuning out this 60 Hertz proves successful in most every attempt. Once the transceiver warms up during use of the MSO, it is a simple thing to re-tune the RIT/XIT while the MSO is transmitting, thus insuring that you always stay within the MSO receiver/demodulator selectivity curve. Finally, keeping your transmitter/receiver on frequency is important. It's not unusual to see some of the older transceivers drift off frequency as they transmit longer files to the MSOs, the end result again being the "idiot treatment" from the MSO when the ".ENDFILE" command is ignored. If you have these difficulties, it's better that you send smaller files to the MSO, and frequently re-tune to the MSO's frequency.

Many of us have experienced the frustrating "FILE NOTE SAVED" response from the various MSOs, and it's usually caused when the MSO does not receive a valid ".WRITE" command. QRM on the frequency, QSB, etc., can cause the ".WRITE" command to become garbled when received by the MSO, and all resulting data to be ignored. One can never totally eliminate this problem, particularly when bad band conditions are being experienced, but there is a way to insure that your ".WRITE" command is accepted and processed better by the MSO.

First, send at least one CR/LF, (carriage return/line feed, or pressing the ENTER or RETURN key on your keyboard), immediately followed by your callsign, and two more CR/LFs. (Don't worry about using a lot of "paper" on the other end of those CR/LFs, as most everyone uses a video monitor these days, and the days of line/printers is long gone!) Sending your callsign, along with the CR/LFs, accomplished two things. First it causes the demodulator to start printing valid digital data, (the "autostart" function is activated). As we all know, only commands that are fully left- justified, (meaning that the command must be received on the left most margin), and prefaced with a "period," (.), are processed as commands by the MSO. All other text is processed as ordinary digital text. Secondly, it properly identifies your station in accordance with the FCC rules.

At this point, include two ".WRITE (filename)" commands, instead of just one. Many times the first ".WRITE" command will be clobbered by QRM or lost in QSB, but the second ".WRITE" command is received perfectly by the MSO, thus insuring that when the ".ENDFILE" comes along, the system will store the file as planned. The whole string is: CR/LF, CR/LF, YOUR CALLSIGN, CR/LF, .WRITE ABC:XYZ, .WRITE ABC:XYZ, the text of your message, CR/LF and .ENDFILE.

For ease of reading, editing, and deleting files in a MSO, it's important to give each file you store in the MSO a distinctive "filename." This is particularly true when you are addressing more than one file to the same station. If you address two files, with the same filename, (such as JRQ:KOZ and JRQ:KOZ), the addressee may have difficulties in reading and deleting the correct file. It's much better to address your files as JRQ:KOZ, and JRQ2:KOZ. The "2" in the second file name alerts the addressee that he has more than one file in the MSO waiting for him and it is easy for him to read and/or delete either file.

The "carriage return/line feed," (CR/LF), is the item which "executes" the various MSO commands. Many times new users fully left-justify a command, and spell it correctly, only to leave off the CR/LF. Whether it's a directory request, a "write (filename)" command, or an endfile, all must be immediately followed by a CR/LF to cause the MSO to execute that command.

Be sure to close (.EXIT) one MSO before you open another. One of the advantages of the National Autostart Frequency is that several MSOs are grouped together on the same frequency, making use of these MSOs very easy. However, when one forgets or neglects to close one MSO, and then opens another, it gets just a tad confusing when two MSOs are executing your commands at the same time!

Finally, don't be shy or reticent about using the MSOs. You can't hurt them, and they are maintained for any and all to use. We were all novices at MSO use at one time, and we all survived the ordeal of firing one up, checking to see what it contained that interested us, and closing it up. So, jump in, get your feet wet, and exploit the MSOs any way you would like.

## MSO RAMBLINGS:

Dennis, WA8ZRK, Dearborn, Michigan, is the proud owner of two HAL RMX-3100 Multiplexer units, and desires to utilize these units more fully on VHF and HF RTTY. Dennis would appreciate any and all information on how others are utilizing the RMX. He can be contacted by leaving a note on any of the MSO's on the National Autostart Frequency.

We're all glad to hear that John, TG9VT, recentlymade it through some very tricky surgery, and hope that by the time this is published, he is well on the road to a full and complete recovery.

Al, N1API, Meridan, Connecticut, has been working the "late shift" recently, and has not had his MSO up and running as per his usual schedule. However, he will return to his normal schedule soon, and we'll see that big signal from his MSO again.

Don't forget to place your reservations for the "RTTY Dinner" with Bob Foster, WB7QWG. This gala event is the highlight of the Dayton Hamvention each year for us RTTY buffs, and if you haven't attended in the past, your missing one heck of a good time.

That's it for this month Gang! Spring is just around the corner, and I hope to see many of you at Dayton in April. Best — 73 de **Dick, K0VKH** ■

*Dennis, WA8ZRK, adds MSO capabilities to his station.*

# DX NEWS

**John Troost, TG9VT**
**444 Brickell Ave., Suite 51-265**
**Miami, FL 33131-2492**

It seems like an awful long time since I wrote the last DX Column for the *RTTY JOURNAL* in the January issue, in fact three months of "Vacation." Really it was not such a great vacation, as I spent six weeks of that time in Boston, at the Massachusetts General Hospital, getting operated on my head (high time, some of you would say) and in Recovery. These months were kind of an ordeal and would have been worse, had it not been for the hundreds of Well Wishers and Prayers, that reached me at the hospital, via APLINK thru the wonderful help and dedication of two Boston Hams, David, KB1PJ and Jack, W1DXQ. These two noble gentlemen kept checking the mail for me and then delivering it to my room, at considerable sacrifice of their free time. Plus, I enjoyed their company, not only since visitors were scarce, but because they are nice and pleasant guys to be with. Jack even went so far, when I was released to recover at home, to pick me up at the Hospital and take me to the Airport, place me in a wheelchair and get me loaded on a plane for Guatemala.

And what do you know, at my short lay-over in Miami, who is there, but George, KB2VO, and his lovely XYL, Maj-Britt, to make sure the Airline treats me properly? Thanks all, including the hundreds who sent me QTCs at the hospital.

Now, getting back to Guatemala, I was allowed to spend a couple of hours a day on the radio; but I guess the thing went bust while I was away, as no sound or diddle or chirping would come out of it. What happened? After checking with a few local Hams, I found that I was not the only one having this problem, but 2 meters was great on real DX. Turns out that I just hit it right at the biggest geomagnetic storm in the current solar cycle, causing major Black-outs in the HF Bands.

Soon, I noticed, however, that the Black-outs did not last 24 hours a day and that now and then there was some real nice DX around. A Japanese team has an Expedition at mid-March to the **Comeros, D68**, and to **Mayotte, FH**. And sure enough for a number of days here is D68TS booming in almost every day at 0100Z. But as they go to Mayotte, FH/JJ3IMY, during the BARTG weekend, propagation drops out again, and all they are able to do from that very rare spot is some 45 RTTY QSOs, mainly with Japan, short path. What a pity! Don't think anyone in the U.S. or Central America worked Mayotte on RTTY.

## MARCH HAPPENINGS

Between all the Black-outs, there was some good DX to be had. My first luck was **MALAWI, 7Q7LA**, 599 on 15 meters with **IRDXA** gear.. Robert, 3B9FR, has also made this exotic **RODRIGUEZ ISLAND** less rare; we sure appreciate their efforts. Then, at the end of the month, an unexpected surprise was the appearance of **ALGERIA, 7X2DS**, almost daily on 14.084, around 0100Z.

Principal goodies of this month include 7S3OWG, UC1AWW, UC2OF, UG6GG, UF6FJ, RH8AX, UM8MTF, UL7BJ, UQ2HO, 4K2OIL, 4K2BDU, LY2WW, RA9YO, VQ9RB, CN8BX, KG4CO, ZK1AP, VP2EE, 9K2DZ, 9K2EC, HZ1AB, VP5VDV, P29MI, P29BT, 5V7DP, TR8JH, TY1PS, 9X5LJ, V73AT, ZL9DX, BY4RSA, V85GA, D69YN, 5W1KM, T77T, J39BS, TJ1MR, TU2BB, PZ1ER, FG4FI, 3DA0BW, A22BW, Z21GZ, V51P, XO1DK, PJ7JC, VP8RHF, OH3AC/OH6, RV2OB, 7Q7HP, PZ2AC, NHA/KA6NAL, 5U1AH, 3X1SG, plus many more if you just have the time to spend on the radio and the breaks in propagation are with you.

## RAMBLINGS

Sometimes I think that RTTY is losing some enthusiasts, but then I get a nice note from Spain, advising that there will be a Spanish All RTTY Contest on 15 June, and that renews my faith.

Carl, K6WZ, writes me that he was looking for P29BT, but the bands were dead in the morning; however, he decided not to go back for an extra hours sleep, and called CQ on 20 instead; and what happens? P29BT comes right back to him. Shows that maybe one should not take a dead band at face value all the time. If no-one calls CQ, or makes any other noise, how else can a band be but dead? Try a CQ on a dead band, and maybe it is not so dead after all.

Jim, N2HOS, told me this nice story about Robert, 3B9FR: "Robert sent me his QSL Card the other day for a January QSO and returned mine, cause I made it out for 1990, instead of 1991. He also enclosed an IRC so I could send him a corrected card. You gotta believe that Robert is a very special guy!" My hat off to Robert, seldom does this happen these days.

As to the **MOST WANTED COUNTRY SURVEY**, I had hoped to publish the results in this issue, but the replies are still coming in, a bit slow this year, especially from outside the U.S.A. That and the state of my health, will force me to put the results of the Survey in the next issue of the *RTTY JOURNAL*. Anyway, I will see that Dale, our esteemed publisher, will have the results available in Dayton.

## 73, THE BEST OF DX

This column is definitely a bit on the short side, but I am not back to my former self yet. That will take another month or two. Nor do I have all the information yet that I need to give you a "Crystal Ball of DX." Not a chance of going to Dayton this year, but I will miss the fun and games. Maybe before the next column I should drink a glass of vinegar to regain some of my ability to be critical, if not vitriolic!

Many thanks to Jules, W6JGR, and Don, W6PQS, for doing the February and March Columns and both doing an excellent job of it. Shows you what well informed dedicated DXers can do!

Many thanks to all of you who helped me gather information to make this column possible, including VK2SG, I5FLN, W2JGR, VU2JX, K6WZ, N2HOS, KB2VO, W6PQS, EA1PJ and JA1ACB thanks guys!

With that, I wish you 73/88, as appropriate, and I hope that the May Column will show the gradual increase in my health, which will make this Column more readable.

God Bless you all and give you the DX to keep you happy.

de **John, TG9VT**, and all the Guatemalan Volcanos.

# DX COMINGS by John Troost, TG9VT

I guess the major news of the month is negative. Jim Smith, VK9NS was granted a license for BANGLADESH, S21U, but after a lot of hassle, the license was limited to SSB. This, in spite of the fact that CW and RTTY were preliminarily authorized, providing that Jim would bring duplicate computers and radios along, which would permit the Bangladesh security staff to monitor all contacts. Maybe once the authorities get confidence in Ham Radio they will lift some of those restrictions. Boy, we RTTYers sure have permanently crossed fingers and toes.

Ron Wright, ZLIAMO, will return to **WALLIS ISLAND** as **FW0BX** from 10 to 24 April. He hopes to take the Lap-Top Computer with him, donated my N2HOS and the KAM from **IRDXA**. This delays his expedition to **ZL8, KERMADEC ISLAND**, which is re- scheduled for later this year. Stay posted.

**P29BT, PAPUA NEW GUINEA** is very active again with is **IRDXA** RTTY. He made many people happy in March.

The RTTY gear that the **IRDXA (INTERNATIONAL RTTY DX ASSOCIATION)** had scheduled for YA0RR, but got to Japan too late, was finally diverted to the **FRANZ JOSEPH LAND** Club Station, **4K2OIL**.

**ETHIOPIA, ET2A**, is now being provided with RTTY gear by IRDXA.The operator, Jack, W4IBB is now on leave in the U.S. but will return to Ethiopia in May, hopefully with the **IRDXA** gear.

This may be a bit far away, but **IRDXA** is supplying RTTY gear for WA2WIJ'S expedition to **CLIPPERTON, FO0**, for spring 1991.

OX3EW, will activate **WAKE ISLAND, KH9**, also with **IRDXA** gear. As you will note, **IRDXA** is most instrumental in getting many rare spots on RTTY. They cannot do that from thin air. They need your support. Please contribute with either $$$ or used RTTY gear to: **IRDXA**, *356 Hillcrest Street, EL Segundo, CA 90245.*

It seems that WA4JQS and group who last year had to cancel their trip to the **SOUTH SANDWICH, VP8**, because of astronomic transportation cost, due to the oil crisis, now has lined up feasible transport for late this year: of course with the original **IRDXA** RTTY equipment.

The QSL Cards for last October's expedition to **CY9CF, ST PAUL'S ISLAND** seem to be now printed and FP5DX hopes to receive them Mid April, to begin the chore of replying all Cards he received.

More on QSL cards: don't be in a hurry to receive a QSL from Kyoko from **ZK3KY, TOJELAUS**, last October. Kyoko has been away for many months to many places and when she gets home there will be some 30 K cards waiting for her and those will take a bit of time to attend to. As she is not a member of the Japanese radio society, she cannot receive QSLs via the Bureau.

**THAILAND** now has a reciprocal licensing agreement with the U.S., but this still does not make things less complicated, as all Thai rules and regulations have to be adhered to, which makes it practically only possible to operate from a Club Station. The DXCC is now recognizing RTTY Contacts with **HSIBV**.

Jim Smith, VK9NS and his XYL, Kirsti, VK9NL are still all set for their expedition to **BHUTAN, A51JS**, early May. It may well be that Bhutan will become a less rare Country with the enactment of "The First Amateur Radio Policy in the Kingdom of Bhutan" according to a copy of a letter from the Ministry of Communications, which crossed my desk, dated 16 March '91. This new policy will also set the rules for guest operators.

**IRDXA** RTTY gear is now on the way to the **SOUTHERN SUDAN, ST0DX** (ex TZ6MG). It is in Nairobi as of this writing and with a little bit of luck, Dennis could be on RTTY in early to mid May. It seems that this is the first time that ST0 has ever been on RTTY.

As Don, W6PQS, reported last month, the planned trip by Martti, OH2BH, to **MALYIJ-VYSOTSKIJ, 4J,** is definitely postponed until the unrest in that area is settled, somehow or other.

The Natal DX Group is still doing all possible to activate **ST PETER AND PAUL'S ROCKS, PY0**, for early May. But they have severe financial problems. Please send any possible donations to PS7KM.

With end of the occupation of **KUWAIT**, Kuwaiti stations are again plentiful on RTTY and AMTOR. Watch for Mohsin, 9K2EC and Abdul, 9K2DZ.

**XU1DK, KAMPUCHEA,** has returned to the air after fixing his transmitter problems. 21088 at 1300-1400Z is a good time to look for them. Boo and Phet have no commercial power, but are using spare energy from an old power plant that is operating at night, XU time and fluctuates between 75 and 125 Volt. But sometimes juice is not available. Their QSL Cards are worth waiting for; pretty is an understatement.

**SAIPAN, KH0**, in the Northern Mariannas will be operated a few days on RTTY by JA1PGY, during his vacation late April. Look for **KH0/JA1PGY**.

RUMORS; Lots of rumors about a new expedition by USSR operators to **AFGHANISTAN**. Some have it that Romeo, UB5JRR is going back there. Others have it, that it will be Alex, RL8PYL, as YA2A. Further rumors say that Romeo is going to **D2, ANGOLA** this year , and also to **ZA, ALBANIA**. Fascinating rumors if only some of them come true. Another rumor has it that Jim Smith is exploring the possibility of a return visit to **HEARD ISLAND VK0**, possibly in concert with another DX group.

# ASEA WITH AMTOR


*Ray, AG3L, aboard his boat "Juno" contemplating his journey.*

## Crusing with Ray, AG3L

Ray, AG3L, recently completed a single-handed cruise in his 30 foot sailboat, Juno, from his home port, Solomons, MD, on the Chesapeake Bay, to the Virgin Islands and back. Al, KJ3E, in California, MD, and John, K3NNI, in Dayton, MD, provided communication with the home folks. The route was direct via the open ocean from Cape Charles, VA, to the island of Jost Van Dyke in the British Virgin Islands. Ray was at sea for 25 days on the outbound trip and 19 days on the return, which departed from Charlotte Amalie, St. Thomas, in the U.S. Virgin islands.

The three stations kept a daily CW schedule on 40, 20, or 15 Meters as propagation permitted. AMTOR communications began from AG3L to WB7QWG (Bob) in Indianapolis, IN, but soon after leaving land Ray found he had a better link with TG9VT (John) in Guatemala City. John relayed to WB7QWG via AMTOR where the traffic for the MD stations was transferred to VHF Packet via APlink. Ray originated about 200 NTS messages, most of which were transmitted as books with 8 or 10 addresses. Al and John (NNI) delivered to local addresses by land line and put the others on the NTS traffic system as required. Al and Doug, N2GTE, have developed a pioneering VHF Packet node for the exchange of keyboard NTS traffic. This node is controlled by a computer program written by Doug himself; he operates it in conjunction with his own Packet BBS (also controlled by an original program.)

## *AMTOR Makes The Difference*

A great deal of informal traffic was also handled by AMTOR from Juno to the MD area and delivered by landline. The excellent link between AG3L and TG9VT allowed traffic to be exchanged almost around the clock. The direct CW link was faster and allowed immediate exchange of info, but was often hampered by poor propagation. The digital link always got through, however, because of automatic forwarding, which kept trying until propagation was good. Ray was surprised at how AMTOR messages could often be transmitted during periods of very poor propagation because the system kept trying and sneaked them through in brief intervals. Since he was sailing alone, boat duties sometimes made meeting a schedule difficult, but he could send his AMTOR traffic at his convenience.

## Equipment Line-up

Juno is equipped with a Yaesu FT-747GX HF transceiver and an ICOM 28H for VHF. The TNC is an AEA PK-232MBX. The computer is a Toshiba 1200 FB laptop. All of the gear operates directly from the boat 12v supply and battery drain is surprisingly low. The computer uses the Microsoft MS WORKS program; the word processor is used for composing messages and the communications module controls the TNC. The program includes a macro feature that makes it easy to tailor a speedy procedure for composing, transmitting, receiving and saving either Packet of AMTOR messages. There is an active VHF Packet group in the Virgin Islands and Puero Rico; the mountainous islands with salt water in between, allow excellent digis and voice repeaters.

Juno's main antenna system includes a VHF whip on the top of the mast, which serves via a coax switch for both the ICOM 28H and the Marine VHF transceiver. The HF antenna is a Hustler vertical mounted on the stern and fed by low-loss coax. There is a second antenna, a vertical wire running along the (wooden) mast to the masthead and is tuned as a random wire by a tuner located directly beneath the lower end. Since all the digital gear is in the same area, this antenna causes some RF interference and is not used much for AMTOR. The Hustler, however, is far enough away that RF is not a problem.

AG3L wishes to thank all stations who forwarded his traffic, particularly the AMTOR Sysops John, TG9VT, and Bob, WB7QWG, who contributed much hands on work and helpful advice.

## What's in the Future?

Around May 1, 1991, Ray will again cruise to the lower Bahamas, or perhaps the Caicos Island. He will work his way up to Great Exuma and meet some visitors at Georgetown. Plans call for some serious Scuba diving in this area. The Bahamas north of Georgetown are usually very crowded, although it is not as bad in the Summer as in the Winter. Ray will probably leave Georgetown about 1 August for the home port.

**ED:** *Ray also said he was very impressed with the greater amount of traffic being passed by the APlink MBOs compared to CW NTS nets.*


# Kantronics**KAM**

If you're looking for a flexible all-mode, if you're looking for a TNC to operate both HF and VHF digital modes, if you'd like one unit to operate RTTY, AMTOR, WEFAX, CW and Packet on HF, yet be keystroke switchable to VHF for packet, then you've found it, the Kantronics All Mode (KAM). Just ask a user!

It's the most flexible and evolutionary all-mode on the market! Since its first appearance in 1986, we've generated four major firmware upgrades, adding new capabilities each time. With release 3.0, in August of 1990, we added software carrier detect for squelch-free operation, reverse personal bulletin board forwarding, the new AMTOR 625, NAVTEX/AMTEX, a command to restore parameters and more!

And the KAM is tops in flexibility. The HF demodulator is user programmable, allowing keystroke selection of tone pairs. You can select any of the standard shifts (170, 425 or 850 Hertz - handy for MARS ops!) or you can set the MARK SPACE tones to any desired value within the unit's range, in one Hertz steps! You can program baud rate too, allowing for the operation or listening to off-rate baudot or other HF digital transmissions.

On CW we stand head-and-shoulders above the rest. You can program CW-filter bandwidth and center frequency to match receiver needs. If your HF rig doesn't have a CW filter, you can 'close it down' by decreasing the KAM's CW filter bandwidth! Better yet, you can match the KAM's CW demodulator filter to your particular receiver CW filter.

On packet you can operate on both HF and VHF simultaneously, enabling a host of new possible modes of operation. For example, you could have a QSO on HF packet while leaving your VHF channel available for mail or connect. Or, you could set your station up as a gateway, allowing other stations to digipeat from VHF to HF or vice-versa. Or, you could have an RTTY QSO while leaving your VHF packet mailbox active. And more, with firmware update 3.0, your personal packet mailbox (PBBS) is enabled to allow reverse forwarding of messages to a larger BBS, such as RLI. And on and on!

And the unit is PC or C-64 friendly: an internal jumper allows TTL or RS-232 serial port operation without the additional need for a TTL/RS-232 adaptor for the C-64 serial port, saving you money.

The three-manual set is outstanding too, consisting of installation, operation and commands. All are indexed and cross referenced to each other for quick access to related information. The Operation's Manual contains information for beginners too.

Specs: size 1-3/4" by 6" by 9", weight 2-1/2 lbs, power requirements nominally 12 VDC at 300 ma. Input sensitivity 20 mvpp (FM), 100 mvpp (AM). Audio drive jumper selectable from 100 mv to 1.6 vpp.

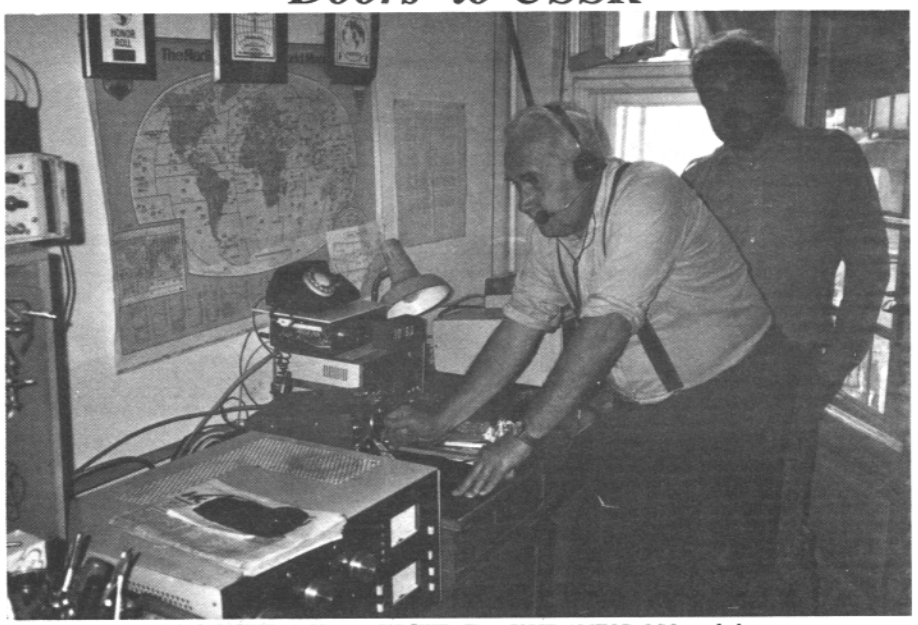
Options: a 2400 baud QPSK modem for VHF/UHF operation, an MSK modem for advanced HF use, and a battery backup or SmartWatch for preserving mailbox contents/time during a power interruption.

Modes: CW, RTTY, ASCII, ARQ, FEC, WEFAX, AMTOR-625, NAVTEX/AMTEX and PACKET.

So there you have it, the flexible and evolutionary all-mode. For a detailed specification sheet contact Kantronics. The KAM, the all-mode that evolves with the state-of-the-art.

**Kantronics 1202 E. 23rd St., Lawrence, KS 66046, 913.842.7745 TELCO BBS 913.842.4678**

# *Amateur Radio Peace Corps Opens Doors to USSR*



*Vlad, U5WF, & Victor, UB5WE. First USSR AMTOR QSO made here.*

The first delegation of the Amateur Radio Peace Corps returned recently from the Soviet Union, having set great foundations in place for long term projects of technical exchange and cooperation. This peace corps group is independent of the Federal Government Peace Corps in that they are privately funded. The organization utilizes volunteers from all over the world who have a common bond in Amateur radio.

Amateur Radio Peace Corps Board member David Larsen, KK4WW, (See cover) and his wife Gaynell, spent the first two weeks in October 1990 in Moscow and Lvov, in the Ukraine. During this period, high technology computerized communications equipment, being donated to the Soviet branch of the International Amateur Radio Network, was installed and tested. More equipment, some donated by Control Data Corp, is on the way for installation in Moscow, Ulyanovak, Yerevan, and other sites. This equipment has already paid off in that, during the 1990 Iranian earthquake, assistance was given Soviet radio operators as well as Soviet rescue personnel.

David, an instructor of instrument automation at Virginia Polytechnic Institute in Blackburg, VA, also gave a workshop on IBM-PC interfacing techniques and was able to sign agreements for broader educational cooperation between the U.S. and the USSR.

Today, the Amateur Radio Peace Corps is working in El Salvador, Jamaica, Haiti, China, Bangladesh, Jordan, Israel and now the Soviet Union. Originally this project started after the massive earthquake in Mexico City in 1985 and has steadily grown to where it is today through the endeavors of such Amateurs as David.

## AMTOR FIRST

Another first was established by David while he was in Lvov visiting with Victor, UB5WE. The first AMTOR QSO took place on September 30, 1990 using the callsign KK4WW/UB5W. The station used for this memorial contact belonged to Vlad Goncharsky, U5WF, (father of Victor, UB5WE.) It was David's pleasure to present Victor with an IBM PC for AMTOR his use before leaving.

It appears computers and radio parts can now flow easily into the USSR but not assembled transceivers. They need a simple design for a hand-held radio, and repeater equipment for more VHF work. The same idea is also needed for the digital modes. An IBM PC cost 10 to 20 years pay in the Ukraine for an engineer, so that is impossible. What is needed is simple computer system and TNC for RTTY/AMTOR/Packet. The computer could easily be a Z80 based. Help is needed in researching, obtaining, and implementing such gear and if you would be interested in working on such a project, David would like to hear from you.

Upon his return to the U.S., David has been busy soliciting funds to pay for the first two Meter repeater for the City of Lvov. Part of their funds are being raised by promoting hand painted wooden eggs made by the villagers in the Carpathian mountains of the Western Ukraine. Anyone interested in obtaining one of these eggs should send a check for $9.97 to Victor Goncharsky, POB 341, Floyd, VA 24091. They make a wonderful gift and you will be helping a worthy Amateur cause.

# How About a Trip to USSR?

If you are planning to visit the Soviet Union and would like Amateur radio operating privileges, you will find it quite difficult if you do not know someone who can assist you from within the government. It can be done and David has been working with his good friend Victor Gonchardsky, UB5WE, in obtaining permits. $75 will cover his cost for this help and, if you are interested, please write to Victor at POB 341, Floyd, VA 24091.

David is planning another trip this year and has made arrangements to take along six to ten Hams to live in Soviet homes, obtain a Soviet license, and operate from the Ukraine Lvov. It is almost impossible to take along a transceiver at this time, but Victor and his friends will make all the arrangements at their end. If you are interested in going, contact David at POB 341, Floyd, VA 24091, where plans will be made for you to travel to this exciting area. The cost will be less than staying in luxury hotels and the area of Lvov is quite interesting with many museums, old churches, ballet, opera and castles.

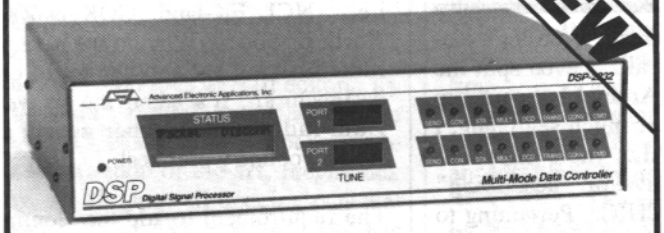
**This story excerped from a Amateur Radio Peace Corp news release and David's flyer on his trip.**

**Ed:** *David had planned to be in Dayton this year but his plans were changed suddenly and, instead will use the time to prepare for another trip to the USSR. Maybe next year we will get David to show his slides at the RTTY Dinner.*

high-quality AEA low-cost

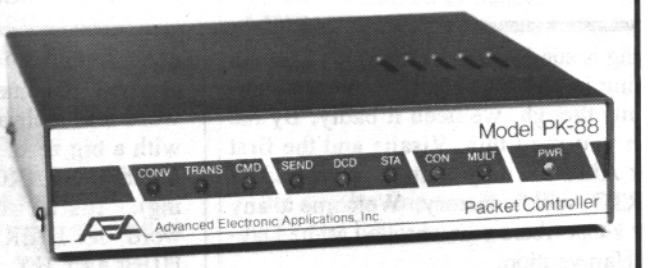
# Digital Data Products

❶ NEW




DSP-2232

❸

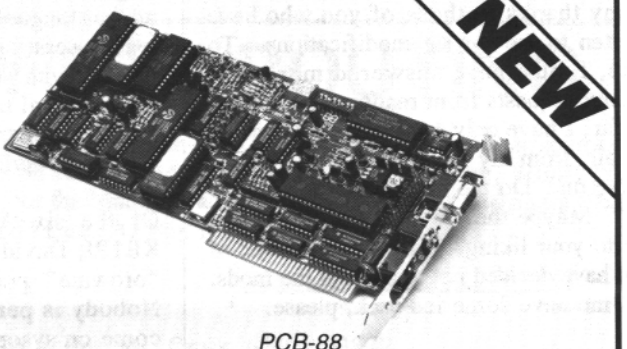



PK-88

❷


PK-232MBX

❹ NEW



PCB-88

① ***NEW!*** **DSP-2232 (pictured) and DSP-1232:** *state-of-the-art controllers utilizing digital signal processing technology with the Motorola 56001 processor; built-in software modems include all standard FSK modems, G3RUH/K9NG 9600 bps modem, 400 and 1200 bps PSK telemetry modems for PACSAT and OSCAR 13 & 15 satellites, AEA's V.26b 2400 bps DPSK modem and more; modems for SSTV, multi-level grey scale WEFAX and WEFAX APT coming soon; includes all features of the PK-232 and much more; dedicated parallel printer port; DSP-2232 has two simultaneous radio ports and a front panel LCD display; DSP-1232 has two switchable radio ports (no LCD display) and can be upgraded to the 2232 at any time* . . . . . **DSP-1232 $789.00**
. . . . . **DSP-2232 $999.95**
. . . . . **DSP-1232 UPGRADE KIT $299.95**

② **PK-232MBX Multi-mode Data Controller:** *most popular multi-mode controller ever made; RS-232 compatible controller for Packet, Baudot and ASCII RTTY, AMTOR/SITOR ARQ and FEC, Morse code and WEFAX; also receives NAVTEX/AMTEX and TDM; superior Chebyshev filter design for better copy; built-in 18K byte PakMail™ personal packet maildrop with auto forwarding; SIAM™ for automatic RTTY signal identification; KISS mode for TCP/IP compatibility; Host Mode for user-friendly software interface; cables and connectors included* . . . . . **$349.95**

③ **PK-88 Packet Controller:** *the easiest way to get started with amateur digital communications; same packet commands as the PK-232; includes Host Mode and 18K byte Packet maildrop; AX.25/L2/V2 compatible; requires 12 – 16V DC @ 500 mA (not included); advanced features such as KISS mode and NET/ROM compatibility for the advanced user, easy to learn for the new user* . . . . . **$119.95**

④ ***NEW!*** **PCB-88 IBM Compatible Plug-In Packet Adapter:** *full-featured Packet controller; plugs into 8-bit expansion slot in your IBM PC, XT, AT or compatible; includes all features of PK-88 controller and more; packet-only version of PC-Pakratt II (called PC-Pakratt-88) terminal control software included at no additional charge; external 12V DC input (power supply not included) so your unattended TNC and mailbox can operate with the computer turned off; true packet DCD sensing circuit included; built-in modem disconnect header* . . . . . **$169.95**

*Specifications are subject to change without notice or obligation. Prices listed are suggested Amateur Net through participating AEA authorized dealers (DSP upgrade kit available through the factory).*

*Technical support may be obtained through CompuServe's Hamnet forum. Messages should be addressed to user ID #76702,1013.*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# AMTOR

**Eddie Schneider, G0AZT/W6**
**1826 Van Ness**
**San Pablo, CA 94806**

Spring is supposed to be here, but it is still raining in Northern California! No complaints though, we need it badly. By the time you read this, Visalia and the first ever AMTOR only contest, sponsored by SARTG, will be history. Welcome to any new subscribers who enrolled at the Dayton Hamvention.

## MAILBOX

Many thanks to those of you who have written to me for rig modifications. To date, I must have answered more than twenty requests from readers. However, so far, I have only seen three callsigns on the air, from my list of enquiries. What is going on? Do the modifications work or not? Maybe the color of the smoke was not to your liking? (Hi) Maybe some of you have decided not to attempt the mods. Let me have some fed-back, please.

Thanks also to K4QJP, Val, and KL7FG, Larry, who have requested an explanation for various "acrononyms" (abbreviations), used in AMTOR editorials. No sooner said than done folks.

## APOLOGIES

Some of you who wrote to me, may not have had my usual undivided attention during the past few weeks. I apologize for taking longer than normal to respond to your letters. As Dale and his dear wife will attest, my printer sometimes decides to play games with me and I have great difficulty in reading what it is printing! As I cannot afford a Laser machine, I have to make do with what I have. Be assured that I will try to be more prompt with my replies in the future.

## SOAPBOX

### Heirarchial, Hierarchical etc.

By now, most APlink users will have come across this word when they log on to their favorite BBS. What does it mean? When I first saw the word, I feverishly consulted my 1940 vintage Webster's dictionary. No clues at all. I even split the word into Heir and Archial but came up with a big zero. After much searching, I found HIERARCHAL. (note the spelling). It's an adjective or "describing" word, see HIERARCHIC. Pertaining to HIERARCHY, "a body of persons in whom is confided the direction of sacred things." Confused? Sure, and I am an Englishman with a college degree in my mother tongue. I wonder what the "overseas" users thought when they were confronted with such a word? Surely with International usage, a KISS (Keep it Simple Stupid) explanation would have been more appropriate?

Of the six APlink BBSs I accessed, KB1PJ, David, and NO1A, Bud, get the "brownie" points for correct spelling. Nobody is perfect, least of all me, but come on sysops, if you are going to use such big words, please spell them correctly so that users have some idea what you are trying to convey to them.

### H-Routing (Hierarchal)

What is H-routing? Well, in order for your traffic to be correctly routed via APlink, when using the "SP at xxxx" command, you have to insert the state, (for USA destinations) country code and continent code. An example, SP W7xxx AT W7DCR.OR.USA.NA., W7DCR is the "home" BBS of W7xxx, OR is the two letter US state designator for Oregon, USA is the country code and NA is the Continent code. You must use the period (.) after each designator.

For destinations outside the USA, you will have to use, SP G1HQG AT GB7BMH,GBR.EU. Once again, GB7BMH is the "home" BBS of G1HQG.

For our overseas readers assistance, finding the U.S. State abbreviations should not be a problem. Both USA and International Callbooks have an alphabetical listing of all U.S. States and Territory abbreviations. However, finding the country codes can present a bit of a headache. Of the APlink BBSs I accessed in early March, some had a file of U.S. State abbreviations, while others had a short list of Country abbreviations used. None had both.

Incidentally, the Country abbreviations bear little resemblance to the IARU designated Amateur radio prefixes issued. i.e.: NCL FK-land, COK is ZK-land, North or South? Why do we have to start remembering yet another set of country designators? It's taken me six years of Ham radio to remember nearly all the DXCC country prefixes!

The requirement to add the Continent as part of the address, should take care of any mail addressed to someone in the State of LA (Louisiana) going to the DXCC Country of LA (Norway).

If you do not use H-routing, your message is likely to get stuck at the point of insertion. In other words, the SYSOP is unlikely to forward your message unless he is in a good mood or has the time to figure out the missing routing. Like the world's postal service, if you do not address your mail correctly, it is unlikely to get to it's destination. Talk to Bo, SM4CMG, about that subject! Hi.

For those of us who do not use the forwarding capabilities of APlink, H-routing is not required. For instance, if I want to leave a message to N2HOS, I know that Jim accesses TG9VT on a near daily basis, so I would not use the SP N2HOS AT xxxx command. A simple SP N2HOS, into TG9VT'S BBS will ensure that Jim gets my message when he next accesses John's machine.

## AMTOR DX

There IS good DX on AMTOR, believe me and read AA4M/6, Bill's encounters with choice, rare DX in last month's Journal. Where else can you have a forty five minute, uninterrupted QSO with Reunion Island? Only on AMTOR! Who still needs MacQuarie Island on any digital mode? I sometimes wish I was connected to a DX spotting network! Congratulations, Bill.

9X5LJ is a regular, 5N0ALE (with his Lanlink beacon). Numerous A9 guys who do not have Baudot alphabet soup on their menus, are frequently reported by European Amtorites. The only way I could

work Zone 29 for RTTY WAZ, was to snag a VK6 in ARQ. Dear Moshin, 9K2EC was another good catch, lets hope that he will be more active in the future. Quite a few African stations are also more active on AMTOR than they are on Baudot, so keep your ears tuned for their FEC calls and good hunting.

## FSK v AFSK

AA4M/6 Bill brought up an interesting subject in his "Interesting Fact #4." Namely, why don't we as staff editors, try to "dissuade" digital enthusiasts from using AFSK? Many of us do not have one of the latest, state of the art, mega-buck costing, all singing, all dancing rigs that have an RTTY or FSK position. FSK has been described as "pure as driven snow," but from some of the signals and their harmonics recently heard by yours truly, I have my doubts! Admittedly there is a greater chance of over-driving the audio-input when using AFSK. Monitoring your ALC and ensuring that you set the mic-gain so that the ALC meter reading, just and only just, moves off its stop, should produce a very clean and spurious free signal and still give you maximum power out.

In my opinion, the biggest advantage for using the FSK/RTTY position on so equipped rigs, is the ability to select the narrow CW filter for receiving. The Kenwood TS44OS, although not FSK capable, has the choice of selecting 500Kz filters, if installed. The Yaesu FT101ZD, FT757 and Kenwood TS430, to name a few of the non-FSK rigs, can be modified to enable narrow filters to be selected while is AFSK (SSB) mode, so there is hope for those of us still using "older" gear. I agree that it is no fun using the 2.4 KHz SSB filter in a contest or pile-up spread across 10 KHs.

However, switching to FSK can produce problems. I recall an occasion where I persuaded a well known RTTYer that if he wanted me to be second operator in a contest, he would have to do something about his TS940 receiver. At the time he was using AFSK and 2.1 Khz filtering. He rewired his set-up for FSK (narrow filter selection) and had terrific RFI in the shack, so much so, that when he switched on the amplifier, the computer would not switch off his rig! At first, he was not a happy "puppy," but many hours and boxes of toriods later, he agreed that narrow filtering was the way to go. We didn't do too well in that contest despite better receiving capabilities. The amplifier blew up!

Some abbreviations used in this column.

**AMTOR**——Amateur Teleprinting Over Radio
**ARQ**———Automatic ReQuest
**MODE A**—-Same as ARQ FEC———Forward Error Correction
**MODE B**—-Same as FEC
**ISS**———Information Sending Station
**IRS**———Information Receiving Station
**SYSOP**——System operator
**MASTER**—-The station who initiates an ARQ link by using a Selcal
**SLAVE**——The station who was called by the MASTER SELCAL—-A four or in some cases, seven LETTER identification used to "link-up"
**ARQ. IDLES**——Required before and DURING a CQ call in FEC, for receive synchronization
**CHIRP-FRIGHT**—Someone who hasn't tried ARQ yet
**AMTORITE**-Someone who HAS tried ARQ and loves it!
**RY**———-NEVER used in FEC and should be banned in Baudot
**LINEAR**—-A big, RF producing box, that should be switched OFF for ARQ operations.

That's it for this month folks. 73, good luck, and DX

de **EDDie, W6/GOAZT** ■

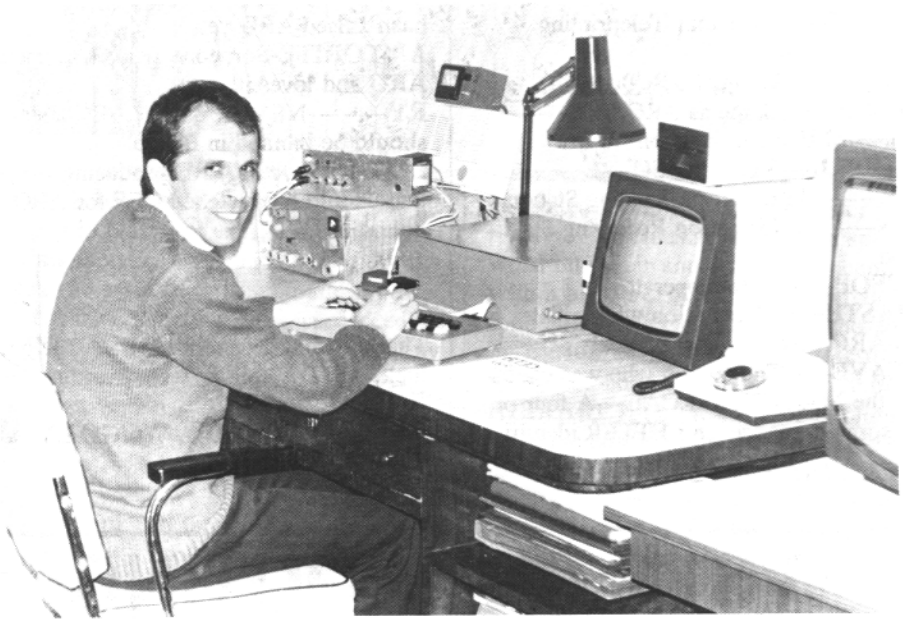
# WS7Y QSL ROUTING

These QSL routes were gleaned from the WS7I/PacketCluster and other sources but, for the most part, come from the DX1 reports, Special thanks Danny, WB4ETY, for his help again this month For the best most accurate QSL routes and managers, I would suggest the W6GO/K6HHD List, PO Box 700, Rio Linda, CA 95673

73 and 88, de **Betsy, WV7Y**

4K2BDU Qsl Via UA9MA at Box 341, Omsk, 644099 USSR
4K2OIL Qsl Via UA9MA
5W1KM Qsl Via JR3OIB
8P9FR Qsl Via W4BAI
8P9HR Qsl Via KA8AI
9J2BO Qsl Via W6ORD
A22BW Qsl Via DK3KD
BV2/WE6C Qsl Via WU6X
C21JM Jim Motiti, PO Box 359 Rep of Nauru
C9EC Qsl Via DF3EC
D68YN, D68YH, D68TS Qsl Via JL3UIX
FG4FI Qsl Via Box 205, 97139 Abymes, Guadeloupe, FWI
FH/JJ3IMX Qsl Via JL3IUX
FK8BZ Qsl Via Box 1954, Noumea
FR4FR Qsl Via Cure FK 14, 97430 Le Tampon, Reunion Is
HZ1AB Qsl Via K8PYD
KG4CO Qsl Via Box 41, APO New York, NY 09593 USA
J6L/KB6BZI Qsl Via Home Call
P29BT Qsl Via N5FIR
PJ7JC Qsl Via K2PEQ
PZ1ER Ray Kidjo, Tabetjestr 16, Box 2031, Paramaribo, Surinam
TJ1MR Qsl Via F6FNU
TY1PS Qsl Via Peter Schulze BP 06-2535 Lotonou, Benin West Africia
VP2EE Qsl Via KA3DBN
VP5VDV Qsl Via WD4JNS
VQ9RB Qsl Via WA4DPU
UZ0SXG Qsl CBA Zone 18
XU1DK Qsl Via Box 80, Kotimachi, Tokyo, 102-91 Japan
ZD7CW Qsl Via N4CID
ZL9DX Qsl Via JH4RHF

# INTERNATIONAL



*Milen, LZ2MP, at keyboard. Far left, SWR, speaker, TU, and Transceiver. Center, Apple II compatible. Right, Disk drive and monitor. Home addr. is Milen Postadshieff, LZ2MP, POB 237, 7000 Russe, Bulgaria. Story submited by Milen who is very active on the Digital modes in Russe. Ed: Thank you very much*

## Digital Modes in Bulgaria

As the story goes, during one of the CQ WW contests in 1973 Uli, DK3CU, asked the operators of the Student Radio Club, LZ1KDP, at the Technical University in Sofia, why being such an active SSB/CW station were they not active in RTTY? Uli's answer was that they lacked RTTY equipment. Soon thereafter, LZ1KDP, received a mechanical RTTY machine donated by Uli, DK3CU, on behalf of the German Amateur Radio Teleprinter Group (GARTG). It took some time and a lot of trouble obtaining the machine from the Customs House but word spread that KZ1KDP would soon be operating RTTY. This offended the self-esteem of the Central Radio Club, LZ1KAB, and they took immediate action obtaining a Military RTTY set-up. Slightly modifying the set-up, they were the first to operate RTTY from LZ land. But their enthusiasm only lasted a few months and they dropped the mode. They still have the mechanical machine at the Central Radio Club just collecting dust. So in the end the real RTTY activity was started in 1974 at LZ1KDP and is still active to this day with the original set-up.

The second serious RTTY station was the Radio Club at the printed circuit board factory in Russe. Their operation started in 1978 and remained active until 1985 using a RFT mechanical machine made in (East) Germany and a homebrew TU with passive filters. Other stations were active during this period of time, but two stations stood out as the most prominent and they were LZ1KDP and LZ2KRR.

In 1985, Ewgeni, LZ2OV, built the first electronic RTTY unit consisting of a keyboard and monitor. In January 1986 Valyo, LZ2XA, and I, LZ2MP, activated the Student Radio Club, LZ2KIM, on RTTY using an Apple II+ compatible computer, homebrew TU with active filters, and a simple RTTY program. This proved to be the first "computerized" RTTY station in Bulgaria.

In 1986 using the RTTY set-up, a very simple interface and Hamtext program from Kantronics for Apple II, I activated the Club station on AMTOR which was a first for LZ land. Finally in 1987 running the same Apple II, homebrew 300 Baud Modem and FL2MDL, and AX.25 program, LZ2KIM, was activated by me on HF Packet. Again this was the first Packet activity from Bulgaria.

## Digital Modes Activity in LZ Today.

To understand the Digital mode activity from here better, some basic information about Ham radio in Bulgaria would be useful. We do not have access to any factory made Ham radio equipment but even if we did have access, the cost is far to high for Hams here to import equipment even used equipment. So more than 90% of the private stations have homebrew set-ups. According to the last LZ callbook, there are about 1200 Ham radio stations in Bulgaria. I think about 400 of them may have working SSB/CW equipment. For example, here in Russe, the fourth largest LZ city with about 300,000 inhabitants, there are about 30 Ham radio stations listed but only 7 of them have working equipment and are active. Also, there is only one VHF/UHF set-up at the City radio club.

Therefore, Ham radio activity here in Bulgaria in concentrated in the radio clubs. You can recognize them from their three letter suffix calls starting with a "K" for club. In 1984, via the Central Radio Club of Bulgaria, almost all 50 active LZ radio clubs received Kenwood Transceivers (TS830S) paid for by the government. Some stations sponsored by factories, companies, universities, and schools, etc., also managed to import factory built equipment from Japan. So the main reason the Ham radio activity is concentrated in the LZ radio clubs is that almost all of them are well equipped compared to private stations.

Another reason for the club activity is the rules governing Ham radio in Bulgaria. Before applying for a home station license the Ham must first pass exams. There are lots of Hams who have passed the exams but are not able to build or buy equipment, therefore these Hams enjoy operating the club stations using the club callsign. One final reason for operating the club station is because they are manned by a paid station manager responsible for the Ham radio activity.

There are about 20 RTTY set-ups here but quite often Hams who do not have RTTY capabilities at home use club equipment under their own callsigns. Consequently, you may have heard more than 20 LZ stations on the air. Not fair play but here we have a saying "A poor man is a live devil." Hi! Most of these stations typically consist of an Apple II compatible, TU with active filters and Super-Ratt program.

On AMTOR, the only stations I am aware of operating from Bulgaria are LZ2KIM, LZ2MP, and LZ2OV all from here in Russe. For this mode an Apple II compatible, homebrew TUs with active filters

and HB9BCS, AMTOR program or homebrew G3PLK, MK-2 AMTOR units.

There are now about 10 Packet radio set-ups here. For lack of VHF/UHF equipment this activity is limited to HF only. I don't like HF Packet so LZ2KIM and LZ2MP are on occasionally just to keep abreast of the Packet revolution. A typical Packet set-up consists of an Apple II compatible, homebrew Modem, DL2MDL AX.25 program or homebrew TNC2 compatible developed in DL land. I have never heard of any PK-232, KAM, MFJ or any other multi-mode units available here.

### The Future of the Digital Modes in Bulgaria

It is not to difficult to build a homebrew Apple II look alike here these days. Lately even new look alike Apple II computers are available but quite expensive. So I think that within the next few years there will be much more Digital mode activity from LZ, especially RTTY. With no real VHF/UHF activity in LZ land only occasional Packet radio activity will be seen probably just to see how it works. The APlink systems introduced in Europe this Spring will promote much more AMTOR activity. I would guess most of the HF Packet stations will switch over to AMTOR APlink for connection with the National Packet Nets abroad.

### Want to Operate in Bulgaria?

In Bulgaria presently, there are no reciprocal licensing agreements and therefore no guest licenses. But aliens who hold a valid Amateur radio license issued by their government may operate any club or private LZ Ham radio station in the presence of the manager or the owner transmitting the callsign of the station visited accompanied by stroke and their own home callsign using one of the following languages: Bulgarian, English, French, German, or Russian. So no government permit is needed, only your license and the consent of the station Manager or Owner.

### LZ2KIM Contest Activity

The Student Radio Club LZ2KIM, at the Technical University in Russe was founded in 1958. Though it is rumored to be the first University Radio Club in Bulgaria, I contend that LZ2KIM is the first University Radio Club outside the Bulgarian capital of Sofia.

LZ2KIM RTTY activity started in January 1986 and, since that time, we have been the most active RTTY station from Bulgaria. We do our best to keep the station in all the known RTTY contests and we have won our share of them.

The RTTY set-up at the moment consists of:

**Transceiver Kenwood TS-830S**

**Homebrew Linear 250 watts input for 80 to 10**

**Homebrew Linear 1 Kw input for 80 to 15 Meters**

**Homebrew switching box for connecting second Transceiver to the antennas during contests**

**Homebrew TU with active filters for RTTY Apple II compatible computer**

**Super-Ratt program**

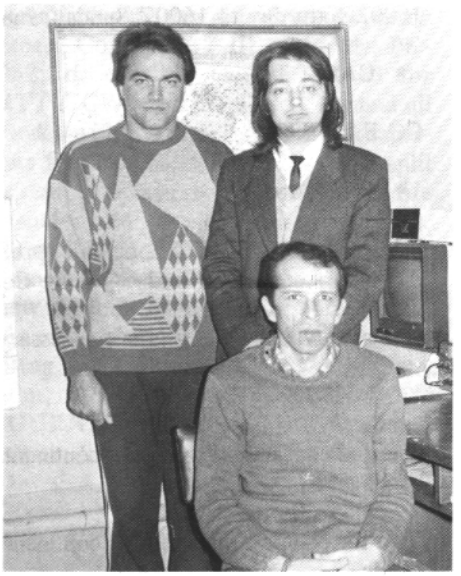
**Dipoles for 80/40 2 El Quad for 10/15/20**

During RTTY contests, we use a second RTTY set-up, borrowing another Kenwood TS-830S from the City Radio Club, Apple II from the University and TU from LZ2MP. Using the switching box, we are able to collect multipliers while the main position most of the time is calling CQ.

From more than 15 Digital mode enthusiasts in 1986 we are now down to about 5. This loss is caused by students finishing school and going back to their home QTH. Fortunately, some of these ex-LZ2KIM members have activated several RTTY stations, i.e., LZ1KSP, LZ2KTS, LZ2KZA LZ2BE, etc. The second reason for our loss is that 5 years ago when we first got our Apple II compatible, a lot of members were excited about this machine. But now, some IBM compatible machines are appearing here in LZ land and for obvious reasons the students prefer this machine over the Apple. Since these IBM compatible machines are still very expensive, the University cannot afford to buy one just for the Radio Club station. The third reason is that some Packet radio enthusiasts, after about 500 HF Packet QSOs, have come to the conclusion HF Packet doesn't work. Consequently, some members were lost because we do not have any VHF/UHF equipment for their experiments in Packet. In spite of this, last year one TNC was built and tested but has been packed away waiting for the day when we have more VHF/UHF equipment available in LZ land.

If anyone wishes to contact us for skeds, info, etc., please send a message for: LZ2MP @ PA0QRS.NLD.EU - LZ2MP @ HB9AK.CHE.EU - LZ2MP @ GB7PLX.GBR.EU Milen, LZ2MP

**de Milen, LZ2MP**
**POB 237**
**7000 Russe, Bulgaria**



*Standing: Steve, SWL, Krassi, SWL. Seated is Milen, LZ2MP.*

*LZ2KIM contest station set-up. At right is 250 watt Linear.*

# EA RTTY CONTEST

**Organized by " Seccion Territorial Comarcal De Ure De Aranda De Duero", the EA RTTY CONTEST was created to promote activity in RTTY mode and is open to radio Amateurs World-Wide.**

- **BANDS:**

All five bands, 10 through 80, according to IARU band plans

- **TYPE OF COMPETITION:**

A) Single Operator, all band

B) Single Operator, single band

C) Multi-operator, single transmitter, all band only

- **DATE:**

1600Z Saturday to 1600Z Sunday, June 15-16

- **CALL:**

CQ EA TEST

- **EXCHANGE:**

**EA** stations, RST, CQ zone and "prefijo provincial."
All others send RST and CQ zone Contacts between stations world-wide are valid.
Contacts with **EA** only is not necessary.

- **POINTS:**

One for contacts within own continent on 10, 15 and 20 Meter bands.

Two for contacts outside own continent on 10, 15 and 20 Meter bands.

Three for contacts within own continent on 40 and 80 Meter bands.

Six for contacts outside own continent on 40 and 80 Meter bands.

Contacts between stations in the same country are valid for multiplier credit, but have zero point value FOR **EA** STATIONS ONLY: **EA, EA6, EA8**, and **EA9** are considered the dame country.

- **MULTIPLIERS:**

**EA** stations: CQ zone and DXCC country contacted on each band. For multiplier credit, own country is valid on each band like CQ zone, but not like DXCC country. Non-**EA** stations: CQ zone and Spanish province on each band.

- **TROPHIES:**

Foreign winner:
Trophy **"AYUNTAMIENTO DE ARANDA DE DUERO"**

**EA** winner:
Trophy **"AYUNTAMIENTO DE ARANDA DE DUERO"**

- **AWARDS:**

Certificate to winner in each DXCC country and in each category. Certificate to winner in each EA district Certificate to SWL winner in each DXCC country For getting a certificate, participants will make 50 or more QSOs.

- **LOGS:**

Use separate log sheet for each band. Include a summary sheet showing the scoring and other essential information and a dupe sheet if you make 200 or more contacts. Official log forms are recommended. Mailing deadline for all entries is July, 14, 1991.

- **Mail to:**

**EA RTTY CONTEST**
**POB 240**
**09400 Aranda De Duero**
**(Burgos) SPAIN**

## Tokyo Area Hams Celebrate New Year

Party was held February 6, 1991 at Shinjuku. This group has helped sponsor many DXpeditions and are well known in DX circles.

*Ft. Row: JA1JDD, JA1BWA, JH1BIH, JA1JAN. Ctr. Row: JA3DLE/1, JA1BLV, JA1ACB. Bk. Row: JR1RCQ, JH1QDB, JA1DI, 7K1TFK, JF4GJB, JA1HGY. All are active RTTYers and ask that you give them a call when you hear them. Pix by Hiro, JH1BIH.*

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**JUST RELEASED:** *RTTY Journal* INDEX for years 1984 thru 1989. If you are tired of looking through back indexes or issues for an article you wish to reread, then you will want to have this new INDEX in your shack. Order today, by sending $2.00 to the *RTTY Journal* and we will rush your copy to you. The Index also contains a handy order form for ordering back issues that are available.

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**RTTY-PC COMMUNICATIONS** program: multi-featured and easy to use! Not a terminal program to operate a multimode controller, but a GENUINE BAUDOT (RTTY) RX/TX PROGRAM! Dedicated to HF RTTY (does ASCII, too.) Type-ahead buffer, printer/disk functions. One key sends your pre-composed 'message.' Change/view messages while receiving. Help screen. Customizable. MANY OTHER FEATURES. Works with your IBM PC-XT- AT-PS/2 or clone, interface & transceiver. Requires 256K, RS- 232 port. Manual is on disk; bound manual $6.00. Free brochure available. NOW WITH 45 DAY NO-QUESTIONS ASKED MONEY BACK GUARANTEE IF NOT SATISFIED! RTTY-PC version 1.07 is only $29.95 + $3 S/H (free S/H if ordered by mail.) VISA/MC accepted. Comtech Research, 5220 Milton Rd, Dept.2, Custar, OH 43511 (419) 278-6790

**HAL RTTY EQUIPMENT:** ST-6000, $345.00 or DS-3000KSR/monnitor and ST-6000, $450.00. DS-2000KSR/monitor and ST-5000, $175.00, OBO. All include manuals, cables, IBM software/instructions. ED, AB4PY, (904) 583-4580

**NEWS — NEWS — NEWS — NEWS** Amateur Radio's Newspaper "WORLDRADIO." One year subscription is only $12.00. Contact: WORLDRADIO, P.O. BOX 189490, Sacremento, CA 95818

**RS-232C and COM PORT booklet:** This is a compilation of all articles published in past issues of the *RTTY Journal* on these two very important topics. If you are using a computer in conjunction with Ham Radio, you will find this booklet an invaluable tool to have in your shack. The booklet contains information about COM ports 1,2,3 and 4 as well as the RS- 232C information. You would need to reference many publications in order to obtain the same information contained in this booklet. Why do that? Send $5.00 to the *RTTY Journal* and you will receive a copy of this invaluable booklet by return mail, post paid.

**FOR SALE:** 10Mhz O'Scope, $125.00, includes UPS shipping. B&K Model 1466, solid state, 5" CRT, Portable, removed from school service. 100% functional, GREAT RTTY Tuning Scope. Only 25 available! Tony Davis, KN4VL, 1546 Christmas Cove, Covington, TN 38019-3522

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