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ARRL Submits Petition for Rule Making Affecting Digital Modes

See pages 2, 8, 19 & 21

Edward Ferrel, W7EQU, shares his station with us

RTTY DIGITAL JOURNAL

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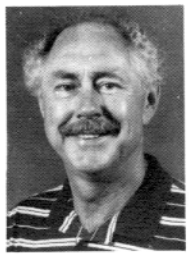

HITS & MISSES

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Digital Committee Meeting

The next DC meeting will be held over the weekend of March 27th in Boston, MA. By the time this issue reaches many of you the meeting will be history. At the time of this writing an agenda for the meeting has not been offered. However, most certainly, the latest ARRL Petition to the FCC will be discussed in detail. The meeting was called by David Speltz, KB1PJ, the newly named Chairman of the committee. The previous Chairman Ed Juge, W5TOO, had to resign due to work commitments.

Many of you are probably already familiar with the contents of the new petition because it has been published in the W5YI newsletter or maybe you received a copy from your Director. Last month I announced that semi-automatic operation had been dropped by the BOD. At the same time the DC was instructed to revisit this issue. This topic will be a part of the agenda at this next meeting. There are other areas that probably will addressed, i.e. power limit of automatic stations, and what type of band plan should be suggested. I will have a report in the April issue.

Spectrum Needed

As I look back over the past few years since I told over the helm of the RJ, there have been great strides made in the growth of the digital modes. In 1986, computer use for the digital modes was just getting a good foothold. Then Packet entered the scene, computer nerds came along, computer prices dropped, and RTTYers saw a chance to advance the mode away from the mechanical machine. Boom! An explosion took place. Manufacturers developed the multi-mode controllers replacing the single mode TU. Tying the computer to the multi-mode controller made the digital modes take off.

RTTYers suddenly began to use AMTOR even though the mode had been around for a few years. Then along came Vic Poor, W5SMM, who needed a way to better communicate with his home base from his boat. From this need, the development of APlink emerged. Now APlink is the most popular AMTOR program world wide for traffic handling. Even a personal AMTOR mailbox (PAM) was developed by Vic for the average user who might wish to have a means of obtaining personal messages when not at his station.

Packet operators developed sophisticated software for networking, so that message handling could be improved. This system will no doubt, be the standard for many years to come regardless of what mode is used to transmit the information.

Today we talk in terms of digital modes instead of just RTTY, AMTOR and Packet. As we unite these modes and the emerging modes, our ranks will grow even larger and our collective voice will be ever stronger. With thousands of multi-mode controllers in the hands of Hams and the new modes coming along, we can look forward to a promising future. In this regard, frequency availability will become an issue that will need to be addressed. Just as SSB emerged to be the premier operating mode for voice, the new digital modes will become the premier transmitting modes over traditional modes. These advancements will facilitate the need for greater frequency expansion; a topic that will surely bring about some spirited debates.

Lack of space prevents me from continuing on this subject but I hope you have all got a mental picture in your mind. A picture depicting the exciting time that we live in where we see our favorite digital mode growing in popularity. If you have not been on the air lately, now is the time to get re-acquainted with the digital modes. Join in on the fun and excitement of the newer modes. Enter one of the many RTTY contests, chase some DX, or just have fun keyboarding. Whatever your choice, you are bound to receive a feeling of exhilaration each time you join in. So, get re-involved, don't be left out on all the exciting times ahead of us.

Continued of page 5

SOFTWARE

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OPUS WF1B

Drat! Radio-telegraphy contesting failed once again to make it into the Olympics. Officials winced at the thought of adding yet another micro-sport to an already crowded 1996 agenda. Those in charge approved the popular "left handed marksmanship from a single ski while moving at least 30 kilometers an hour" (or KAFQUA, the quaint but favorite pastime of those few thousand mountaineers comprising the entire population of the latest eastern European country to make the DXCC list). Such sport (?) draws a large TV audience in some parts of the world. But the RTTY rejection hurts, and stands even though it is obvious that every HF digital Amateur around the globe partakes of the joys of the chase _ at least to some extent. Which proves once again, that we just don't get no respect out there. And leaves us only the joy, challenge and fun of participating in our own ever growing list of ever larger annual events. Who needs the Olympics anyway?

Contest experiences offer as much variety as cable television. Post-contest times bring few claims of big victories. Some, most it seems, talk of hardware failures _ the lost finals, the charred balun, the crashed disk, the hot transceiver, TVI or events of equal magnitude. Such problems come as no surprise because contesting stresses every element of your rig. The weakest link shows up every time. Lamentations echo across the lands.

Equally disastrous, but less widely discussed because of the possibility of "operator failure" (as opposed to some blamable shortcoming elsewhere in the chain), are the many software problems out there. No measurement of contest drop-outs is available to us, but there are two types and they may be equal in number. First, the contestant who experiences a true software failure or a serious enough glitch to remove her or him from any possibility of a decent score. That is an oft-told and sad tale. Second, the "closet contestant" who would love to get into the fray (and may make a few contacts) but lacks confidence in either the hometown operational skills or some new piece of software, or both. That is the saddest tale of all, albeit the most understandable. But there is good news on that front.

ENTER RAY

I bought RTTY by WF1B in its early form and didn't like it or, heaven forbid, failed to comprehend its finer points. The program perched on the hard disk and slowly but surely faded from memory _ mine and the computer's. My bias was, in retrospect, more against the class of programs that attempted to do too many things than against Ray's entry. In more than one contest I flunked out early because of a crashed program, a buggy logbook or a locked-up computer. I was not too anxious about trying the latest version of anything. So, I tried to design my own and the same thing happened! Contesting moved to the back burner and when I did enter I logged manually.

The update disk arrived last December. I paid little attention to it for I didn't have a manual. When I realized that the ARRL test was just a few days away, and aware that I had no other software option, I decided to give it a try. As it turned out, the test allowed a two-way examination. Evaluating the software was important, of course, but so was a more critical first test. Could I get the program installed, set the parameters and run a significant number of contacts without a manual and with no crash? Since I fall short of the expert class when it comes to contest software, the program's magnanimity would thus be thoroughly challenged!

The process began one day before the contest. I spent exactly one hour finding commands, setting parameters and rehearsing the keystrokes needed to run the contacts during my seven or eight hours of active participation. All went well the next day, but two mistakes clouded my performance. At the fifteenth call, I realized that the log was not quite as automatic as I had guessed. I started over and ran 192 consecutive calls with no hitch, of any kind. Well, that is not quite true. One little bit of ignorance caused me great pain. The "chat" key eluded me until the day after the contest when it all became perfectly clear. Thus, when good friends broke the pace to say hello, I ignored their greeting _ only because I could not figure out how to get out of overdrive! Apologies to one and all. Finally, to be impeccably honest, I hit a wrong buffer key once or twice! Blaming the software for that strikes me as being a bit unreasonable. Hi!

Allow me to point out that, even before the contest was over, I had sorted and printed the log in the ARRL format. Though I chose not to submit it (the counts were quite high this year) I could easily have mailed it Monday morning. I called Ray that night and learned of many other niceties available to the serious contestant. But, except for the "chat" problem there was not a single necessary ingredient missing in my setup. Not bad if you remember that I a) had no manual b) had never used the software before and c) get no high marks for my software intuition.

This lengthy but true story about my rediscovery and use of Ray's program leads me to conclude that WF1B's RTTY is the program for all of us. And I mean every ham who wants to get off of the bench and on to the field, whether experienced or inexperienced. With the headstart this software delivers, no obstacle to success stands in the way of the operator who has a transceiver and antenna that can stand some reasonably heavy use. If you have the itch to compete, try it. I heartily recommend the fun you will find through its use! I'll sure use it when we do make it to the Olympics.

THE WORKS

Installation and setup require a few simple steps. Getting ready for a con-

test is no more difficult. The disk you receive from Ray contains about 750K bytes so there is no great burden on your hard drive. The program runs from a floppy without too much loss of speed, I'm told. Don't let the 40 files on the disk upset you. Most of them are small files for specific contests and each represents a labor saving shortcut for you. (ARRL, CQWW, SARTG and BARTG templates are included.)

Bring up the program with the "RTTY" command. The first almost blank screen asks for the work sheet file name. Type in CQWW93, for example, and up comes the complete parameter file for that contest. Fill in the blanks, all of which are self explanatory. In the lower right hand corner the TNC, comport and baud rates need to be set. The menu takes the lead. I use PCI-3000 and was very impressed with the program's ability to pick up and communicate with the Hal board with no delay. Press Ctrl-Enter and you are at the contest screen. Easy!

The clean screen seems too empty at first. You'll soon recognize the three panels and understand their use. The large, top screen is for incoming copy. A much smaller second screen is topped with a menu bar containing 14 function buttons, plus a GMT clock. Finally, in a narrow strip at the bottom, the logging screen. Don't let the minimalist design fool you. All the power you need, and more, is right there with the reach of a keystroke.

Take a quick test ride. Turn on your TNC and press F1. You'll discover the ARRL CQ complete with your call sign. Go on, press F2, F3, etc. Every key you need is programmed automatically. Let me hasten to add that your exchange will be the shortest on the air. And the most efficient. So, if you want to produce the highest rate of QSO's, don't change a thing. If, on the other hand, you want to proceed at a more leisurely pace, edit each file to fit your personality.

The entire contest sequence takes so few key strokes that it is somewhat embarrassing! In the ARRL test, for example, F1 sends out the proper CQ

When someone answers (they were slow in coming in this year's affair), click on the illuminated callsign and if a "dupe" is not flashed at you, press F2. The basic exchange transmits and the callsign is positioned within the logging screen. While the other station sends his exchange, click on the State, Serial Number, etc.; then click the TU button and the "TNX _ QRZ?" goes out on the air and the log data goes to file. Other function keys serve to handle the secondary but necessary messages_to answer a CQ, to inform a "dupe," or to add a personal note where appropriate.

More interesting screens appear later on. The second time around, a common occurrence in most contests, clicking the callsign puts all of the applicable information in the log automatically. Very efficient. One thing, one of the few things that the operator must do is make certain the program knows the current band. While I didn't miss changing that window whenever I switched bands it would be very easy to do. A pop-up reminder might even make sense after any period of inactivity beyond, say, five minutes. A mistake like that in a serious contest effort would be a disaster. And, speaking of keyboard errors (those few made by us on rare occasions), the ESC key plays a special role here. While pressing it does not correct the mistake you just made, it does stop everything at once. This step minimizes the confusion!

Other, important support features are delivered by a keystroke in combination with the Alt key; CHAT, Score, Zone and DXCC status, DX locator, Multipliers and so forth. Nothing is left to chance and the Help screen (F1) will steer you to the answer you need. Ray and his users have developed a package of supplemental options that deliver all of the intelligence needed by the person at the keyboard.

Dreary tasks, and I mean log sorting and printing, become trivial jobs. Use the Writelog feature and out comes the Summary Sheet, Log Sheet, Duplicate QSO sheet, DX Multiplier Sheet or the US/VE Multiplier Sheet. Neither postage nor envelope emerges from the printer but everything else you need to send in seems to be included. And, for your own records, print a sequential log containing all the information necessary or print QSL labels and statistics. This is like a super dessert after a fine meal.

There is more. I see no reason why this program could not be used as your basic RTTY software. Function keys F6-F10 are user defined, file transfer is available and there are 30 buffer variables that can be inserted as well. CHAT and edited buffers together handle almost any kind of QSO, complete with automatic logging. Try it and share your experience with the Journal readers.

Is there no complaint? Well, yes. A gremlin resides in the logging operation_I think. On occasion, rarely, the signal report showed up in the callsign section of the log. Was it me or the program? I am not sure but that section of the screen appeared to be a bit shaky from time to time. My sole serious criticism relates to the manual. In a way, I was fortunate not to have had it before the ARRL test. The modest-sized manual lacks the organization and clarity so obvious in the program it purports to supplement. The first time contester, and even a few more advanced types would be lost or at least confused by the rambling style. A sequential tutorial is a must in any commercial software.The developer must assume that every purchaser is a rank beginner, or the manual isn't worth its weight in salt. This one needs a lot of improvement.

However, Ray has with this version brought RTTY to a high degree of refinement. Its flawless performance in the ARRL contest delivered pure satisfaction. The tension and writer's cramp normally associated with "real" contesting are missing here. Nothing else is. This is a fine piece of work Enjoy it.

Order from Ray WF1B, Wyvern Technology, 35 Colvington Road, Coventry, RI 02816. The cost is $44.95. Be sure to specify your disk size.

MISCELLANY

Several people need the address of Thomas Software. It is 1375 Beasley Rd. Jackson, MS 39206. That's the home of Winload mentioned in an earlier column. I like it and use it all of the time. Remember, it gives you a few seconds to abort the launch of Windows and takes you to the DOS prompt instead.

Clark W9CD has upgraded MARTTY to full-fledged Windows status. This program is plain vanilla terminal

software. I use it to run the DX Cluster on a PK-232 in my APlink machine but it is a full- fledged RTTY unit as well. Simple and efficient, it's available from Clark for an SASE and a formatted disk. The good README file helps a lot.

In the pipeline_BMK-MULTY (if you are a user, please drop me a note), ComprttyII, BBS and Shareware thoughts and SAM, the US callbook data base. Lots of other stuff here. Let me know what you want to read about.

Don't forget to wear your green tie on St. Patrick's Day! 73 G/L

de **Jim, N2HOS** ■

Contact me on CompuServe 71573,1077 or APlink.

Continued from page 2

HELP NEEDED

From time to time, I have urged the readership to share their ideas with us all. This urging has produced many interesting articles but that pool of material is now drying up. So again, I am appealing for help.

Some of you may think that the present columnists are the only ones allowed to write for the RJ. That is not so! You are all invited to submit material for publication. All I ask is that it be on subjects associated with the digital modes. In fact, their is an urgent need for someone to step forward and write on PACTOR and Clover. These two modes are emerging rapidly and there is a desperate hunger for material about their operation and idiosyncrasies. Both are sophisticated modes that demand exposure. If you would like to write some articles on these two modes, please contact me ASAP.

I have received pictures of station and some of them have even graced the cover the RJ. But even pictures have not been coming in lately. Recently, I received a letter from a subscriber indicating he would like to see more picture of stations that were typical. By that, he meant, pictures of messy stations as well as those that had been manicured. You send them and I'll find room for them. Fill my mailbox! And thanks for sharing and helping.

All for now.73 de **Dale, W6IWO** ■

PACKET

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CONTINUATION

Last month, I covered the basics of Packet radio. I presented some information on how to get started and where to get information when you have a question. I did forget to mention one very important item--READ THE MANUALS FIRST!!!!!! This is the most important step you should take before starting a project. The manuals that come with a TNC will cover just about all you need to know to get the unit working with your system. So, study them well.

AN ONGOING PROJECT

For the longest time, on and off, I have been trying to find software that I could use to implement any version of KA9Q's NET/NOS software on the UNIX box. I have tried many of the major versions that are out there and have had no luck. All of the versions I have seen, have been written for Borland's Turbo C compiler. Trying to compile and run this package can be a bit on the frustrating side. I tried compiling a NOS package on a 286 running at 12 MHz. and the whole process took five (!) hours. After the compile, I looked at the error files. All I saw were errors that were related to pointer problems. I have tried in the past, to deal with wild pointers and that gave me gray hair. So, I put the whole project on the shelf.

Occasionally, I checked several of the ham related BBSs now and then hoping a version of the package would appear that I could compile and run under UNIX. Well, I found a copy of the old KA9Q NET program. This package contained the simple basics with none of the glitz that one could find with the NOS package. I downloaded the package and started to sift through the documentation. Doing this, I found out that the package was the creation of Joe Buswell, K5JB. He took the KA9Q bits and went through them, tweaking and cleaning, while changing them to run on the UNIX platform. One of the biggest problems, IMHO, is taking the interface that is present in just about all of the NET/NOS packages that talks directly to the communications port and to the UNIX device files.

Let me explain that last sentence. In all of the NET/NOS packages that I have seen, there is software that directly talks to the UART (8520, 16440, 16550) chip and grabs and pokes information from and to the chip without BIOS assistance. The BIOS for most clone computers is capable of chatting to only two communications ports to avoid conflicts since there is no such thing as shared interrupts in the BIOS to allow you to stack more than one communications port to share an interrupt. Because of this, there has been software written that runs as a TSR (like MBBIOS) which allows for interrupt sharing with communications ports. With UNIX, communications is done differently, depending on what you are doing. As an example, I will use my machine here. Under UNIX, you do not read or write directly to a communications port. You read and write to a device "file." This process is intercepted by the kernel and directed to the proper device. In the case of my machine, I am using the HubCard manufactured by Bell Technologies. My operating system, as supplied, already supported the HubCard. This wonderful item is a six RS-232 port card. I can have up to four of these gems in this machine giving me 24 RS-232 ports. What is really nice is that they all use the same interrupt (?!). What happens is that the resident software in the kernel which talks to the HubCard is responsible for sorting out which port needs service and pre-

sents that information to the requesting program or programs. This whole procedure allows for the program to not worry about the low-level problems but talk and listen at a high-level. This has the end result of making the communications port handling much easier than in DOS (yea!). So, my hat is off to Joe for doing that bit of conversion.

What is about to follow is the information about the whole process as I have performed it here. The following will be in real time as I will write down what I have done. To start, I have already decompressed the files and placed the contents into appropriate directories. The files came to me as compressed TAR files. I am planning to make the files into one big compressed TAR file and posting it to the WB6YMH-2 Ham BBS (310-541-2503) as 'k5jbk28.taz'. The '.taz' ending means that it is a compressed TAR file. This will be good for UNIX people only unless you have a DOS system that supports 'compress' and 'tar'.

Only 184,170 Bytes!

Here goes...

First thing, I printed out the unix.note file that came with the sources. That is the directions on how to configure the packaged software in preparation for compiling. There are two makefiles, one is for UNIX based systems and the other one is for COHERENT based systems. I needed to use the UNIX based version. Joe suggests that I make a link between Makefile and the Makefile that I want to use. For me, I will avoid the link and just call up the Makefile directly.

I now have to edit the files config.h, options.h, and unixopt.h to reflect my needs, wants, and desires of the operating system. This will involve going through the process of reading and editing the files in question.

Upon editing config.h, I find that the file is loaded with documentation. However, there is one nice touch to the file. Each of the major options that is selected from here has attached to it a comment that describes the addition that it makes to the final program length. That is a nice touch, especially if you have very little memory to play with. The ISC UNIX version that I use, SVR3.2, can run in as little as 2 MB of RAM but on this system, I have 6 MB. From reading through the file, I see that I will not need to change anything here. This is just fine for my purposes.

Now to edit the next file, options.h. There is no need to edit anything here either. This file is quite short in terms of lines. The file is left in stock form. Two down and one to go.

Now on to the last file, unixopt.h. I had to make one change here. This package allows for pseudo-tty ports. NO WAY ON THIS CRATE! Undefined the option and saved.

Now to the Makefile. Time to check out who will make the whole show. I added a section that reflects my system to the Makefile. There is a section that is for the SCO UNIX on a 80386 system that will do the job but I needed to change a few things. For the first compile, I want to have the debugging information in the program in case of a program crash. At least I will be able to hopefully find out where the problem or problems are. I also have to tell the program what the tick speed is here. My tick speed is 100 Hz so I need a -DMSPTICK value of 10. With these changes are in place, it is time to run the compile and see if it will play for me.

This is being compiled on a 80386/387 system with 6 MB of RAM. The following times for compile will only apply to my system. Your system will get different timings just because the systems are different and tuned differently. This will be in multi-user mode while this is going on. At start time, there are sixteen separate processes in the process table. First thing to run from the Makefile is the dependency file build. That took 4 minutes and 48 seconds in real time. I can give you the gory timing details but that is not necessary. Now to run the compile. Well, that took 35 minutes 30 seconds to compile. Now to see if it will run. (Save this and sync system in case of a big crash).

Yes, it ran! It ran the first time with all of the requested goodies. One attribute that I like here is that when you are in a telnet session, what you receive is highlighted. Nice touch. Now to put it on the air. The final compiled size here is 184,170 bytes. I remember seeing a NOS program on this machine that was 470 Kb in size (ouch!). And that 184,170 bytes also has the debugging code imbedded in it in case of a core dump, as unceremoniously that little process is. On this machine, I get kicked out to the terminal login but the machine has not crashed and burned yet on a core dump.

It talks to the TNC. It hears the TNC. It can trace the TNC. It seems to be doing what I wanted it to do. The older version that I had was a CPU hog big time. This one seems to be easier on the CPU and I see no slowdown of the system here. Joe Buswell has done a great job. Admittedly, this is a simple program compared to NOS but I can use the following.

From what I have seen of the code, the routines are done quite well and the code looks to be quite portable and non-compiler specific. I had no problems compiling the code. The only problems that occurred, (they really are not problems but notifications) during the make, was a couple of warnings that said that two variables were being redefined. Other than those two messages, the program compiled just fine.

In addition to the "net" program that results from the make, you need a couple of other files. For NOS users out there, you use a file named "autoexec.nos" to tell the program how to run and allocate its resources. With this version of "net", you use a file that is built the same way except that the file is named "startup.net". Admittedly, this file can get to be long if you use many explicit routing commands. Having less options to deal with would be much easier for the novice. The other file that is needed, but not necessary to get the program running, is called "hosts.net".

This file has the same essential information that "domain.txt" has for the NOS program. What this file holds are the IP numeric addresses and the system names and alias for each address. This file can be small or hu-

mongous. That covers the files that are needed to get this well behaved puppy going. There are a few other directorys that have to be created or defined with environment variable and all of that is covered in the documentation that is supplied with the package.

Now That I Have This! What Do I Do With It?

There are some people out there who say that with this program you can't do much of anything. Well, that is not correct. First off, you can do regular Packet connections with no problem. When you are talking to a regular TNC, in order to make a connect, you usually type the letter 'c' for connect and then the call of the destination station or node that you want to use. With this program, you have to specify which one of the ports you want to use. So what would be 'c n6nko' now turns into 'c 1200 n6nko'. The '1200' tells the program that you want to connect to station N6NKO through the port named 1200. In the case of my program here, the port named '1200' defines my 1200 Baud Packet port. The port name is defined in the 'attach' statement. This tells the program the port name, Com port to use, Com port speed, segment size, and Com port buffer size. Through the 'attach' command, you can define many ports to the program. The RS-232 port cards that I use in the machine have six ports to each card and the computer can support four of these cards. If I compiled the program to be able to use all of these ports, I could have 24 Packet channels being controlled by the program. Try doing that with a DOS based program right out of the box (snicker, snicker).

Aside from just regular Packet keyboard-to-keyboard connections, I can also have the program send and receive mail for me from other TCP/IP users on any of the monitored frequencies. This can be done with no intervention on my part. I will be notified that new mail has arrived and can then read the mail that has arrived or wait until later.

Even while I am receiving or sending mail, talking keyboard-to- keyboard, I can be sending and receiving computer files. I can send any kind of file from this program. As an example, a friend could send me a program to compile and I could send the compiled version back to him when I am finished with it.

So, I can be running all of these at once and be able to run a PBBS and Packet node also. Sounds busy, doesn't it? It is without doubt. Now comes the interesting part, the program size. The compiled size here for the program, as I have it configured and compiled, is 183432 bytes. As an example, PA0GRI's nos_0618.exe program that I have here is 196535 bytes in size. If I want to be able to run more than one program in the DOS mode, I had better use some form of multitasker, like Windows 3.1, Desqview, and now OS/2. Personally, I want to do the process this way under UNIX. I can run the net program in one terminal session and be typing this article in another session, and compiling a program in another session. This whole process is a matter of convenience for me. I do not mind supporting two completely different operating systems on the system here. When I upgrade the system here to another release of UNIX, then I will have support for Windows programs.

Many people have said that UNIX is TOO HARD to learn. It is not that hard to learn. The installation process has been made real easy. If you can install MS-DOS 5.0, DR DOS 6.0, OS/2 ver 2, or Windows 3.1, you can now install UNIX. I can say this because I have installed all of the listed programs on various systems. A side note: I can KILL Windows 3.1 and force it to go to the cold boot sequence with one keystroke using the same hardware configuration that I use for UNIX. In UNIX, usually I can kill the session if it is being naughty. If I am in the DOS 3.3 emulator and I run into a illegal state, the emulator can be rebooted manually or will do that automatically for me. The whole system stays intact through this whole process.

I hope that this has shed some light on the program by K5JB. This versatility can be had with just about all of the available NET/NOS programs. Usually, the MS-DOS versions do not need to be compiled unless you are trying out something new. They work right out of the box. Because of the many different UNIX platforms out there, it is best to compile the code for your particular system.

NEXT MONTH

I hear complaints already....$$$. The answer next month....

Have fun and get digital!

de Richard, N6NKO ■

Packet: n6nko @ wb6ymh-2

Internet: elroy!swc!owlsnest!richardp

Kantronics KAM now has PACTOR, the newest HF Digital Mode

PACTOR, available as an option for the Kantronics KAM, is the newest digital mode for HF data communications used worldwide throughout the amateur radio community. Developed by German Amateurs, this mode combines many of the best features of Packet, and AMTOR, providing greatly increased data throughput on noisy and unpredictable HF bands, PACTOR operates at either 200 or 100 Baud and, depending on existing band conditions, automatically selects the initial Baud rate and then adjusts it as required during a link. Fro more effective throughput, PACTOR also features Huffman encoding. Like Packet, PACTOR uses a 16-bit code to ensure error free data transfer between stations, even under adverse HF conditions. Utilizing memory ARQ, incorrect frames can be combined to form a good frame, eliminating the need of "perfect" reception, and PACTOR offers optional long path connections which allow users to establish links with stations around the world. The PACTOR firmware option for the KAM is available as an Eprom chip to replace existing firmware. Contact your nearest authorized dealer or Kantronics at 1202 E, 23rd Street, Lawrence, KS, 66046. Telephone: (913) 842-7745 or FAX (913) 842- 2021

ARRL Petition For Rule Making

Usually I blast 'em! This time I have to congratulate them!

by Jay Townsend

W S 7 I

I just received a copy of the latest ARRL petition to the FCC in its entirety and have read it completely three times. What I first heard about this petition was faulty. After thinking about what is actually contained in the ARRL petition the little bell started ringing. Not bad, really not bad, at all. For those of you who don't know my background; I am a DXer, (its hard to stay up with K6WZ when you work tho!) contester (the ARRL RTTY Roundup was an idea that came from my living room), and traffic handler (Air Force MARS HF Packet as well as NTS). However, my first love is and probably always will be, RTTY. This is the largest win --win that has occurred in the digital arena for quite some time. This will be good for Packet, Aplink, Amtor, RTTY, Autostart, Pactor, and Clover. By the way, I run all of these modes from time to time.

Lets look at the pluses. The STA has ended or will end when this is approved. This means all will be able to try these automatic or semi-automatic modes. All those questionable practices that have been going on for years will finally be legal and codified. I can leave messages on an RTTY Autostart without all the elaborate control mechanisms that I have had in place. No longer will the local APLINK station need to have the 440 Mhz link back to the shack for control purposes. All will be legal and with no loss of band space to anyone.

Our spectrum will be divided by function rather than by mode, which is as it should be. The problem that I and others have had with Packet was never that we didn't like it, or that it sounded funny, but that the unattended people were in spaces that caused us problems. I have never enjoyed the station at 14.093.2 firing up while I was working a weak European DX station. That will be gone. All will know where in the bands the traffic forwarding, messaging stations will be located.

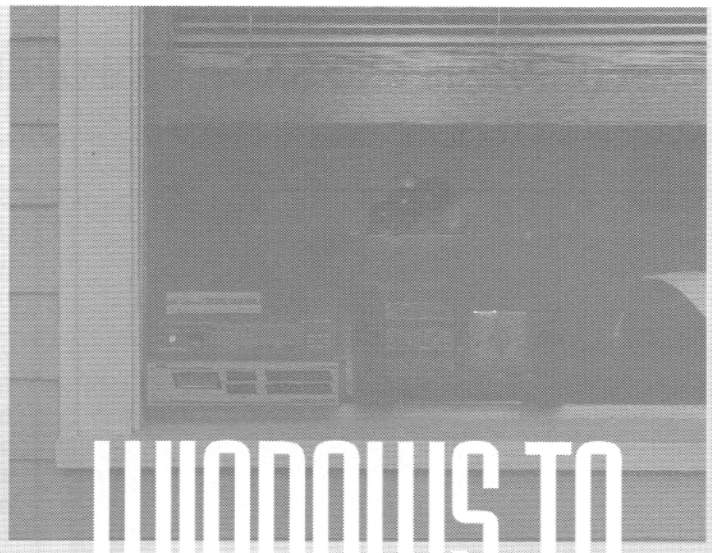
Another good thing will be the locations of the band segments. These are very well thought out. They fit internationally as well as nationally. The WARC bands have a nice bit of space dedicated to messaging without disrupting things. Twenty meters has a nice large area and will clean up the Amtor space by moving the APLINK stations up into the messaging areas. I have heard some complaints from the APLINK folks but I think that emotion is still clouding their vision on this issue. First, on 20 meters, they can expand into a great wide area. It will clean up the Amtor area for keyboarders. The change on 15 will just move them up above 21.090 which shouldn't be a problem. Yes, they will have to adjust and I can see that the issue will need to be further investigated. The ARRL has already called for the Digital Committee to do this. But the big plus is that the control link function is finally gone and APLINK will be a lot more legal than it previously has been. Fully automatic functions of the APLINK system will also certainly come.

The keyboarders can now have some spectrum that is clear of all the automatic, semi-automatic and BBS operations. I must admit that this will be a relief. We will need to get together and select some areas for DXing, weak signal work, contesting, rag chewing on all modes.

There are some things in the petition that I take issue with and will be addressing them to the FCC if the petition becomes a RM (Rule Making). It's still my believe that there should be power requirements. I like many others, have a half started petition in the word processor. This came from emotion after hearing that "packet" had won the day and would be taking "these frequencies". Not true as I subsequently learned. Actually Digital has won. We will finally have an area on each band for automatic traffic messaging handling and other needs. The various messaging systems, modes, and operators will have to work together in completing band plans after this is all approved. We keyboard operators need to realize that these other systems are good, do good, and need an area. Perhaps later on these areas will even need to be further expanded.

This plan as presented by the ARRL in this petition is well thought out. If you need a copy of the petition contact your local ARRL official. Talk about it, think about it. I felt strongly enough about this to ask Dale for some space to present this opinion. THANKS DALE! Look for me from HC8J during the BARTG contest.

de **jay, Ws7i** ■



WINDOWS TO THE WORLD.

Pakratt for Windows is the only data controller program for Microsoft© Windows™ on the market today. AEA gives you a true Windows application for controlling AEA's entire family of data controllers, including the new DSP-2232 and the new PK-900.

This graphics-oriented program offers all standard Windows 3.x features (cut-and-paste, custom window sizing and color selection, etc.) and can run minimized or in the background if desired. Also, PC-Pakratt's multi-tasking allows you to run two data controllers simultaneously. Other features include complete parameter screens, binary and ASCII file transfers, macros, QSO logging, comprehensive help and much more.

Get a whole new outlook on ham radio
with PC-Pakratt for Windows from AEA.

Connect with us for your nearest AEA dealer or for a
PC- Pakratt for Windows fact sheet.
Call our literature request line at (800) 432-8873.

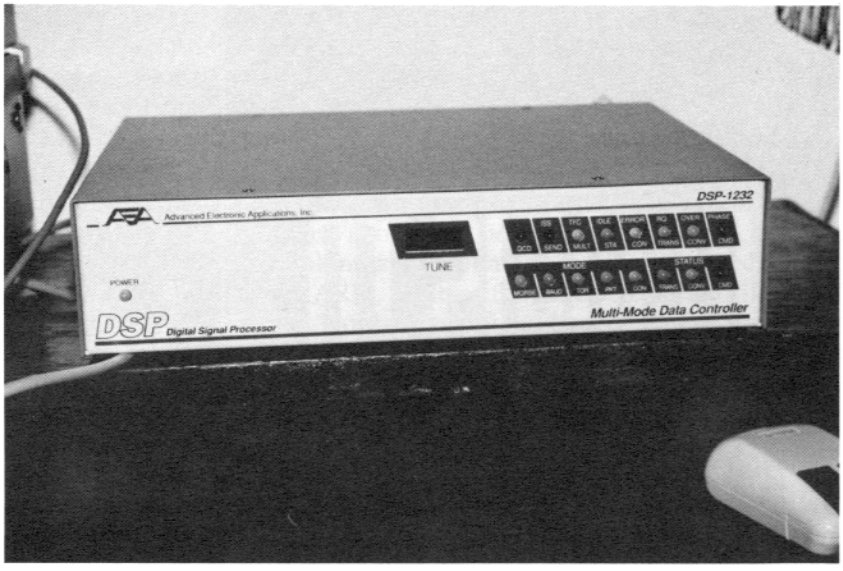
Advanced Electronic
Applications, Inc.

PO Box C2160/2006 - 196th St. SW, Lynnwood, WA 98036
Sales: (206) 774-5554

Connect with us

AEA DSP-1232 AND SATELLITE OPERATION

The DSP-1232 and SPAACCEE MAAGGICC by Guest Author and soon to be ex-hardware correspondent, WV7Y.



Picture 1: The AEA DSP-1232 Multi-mode Data Controller used to experiment with Satellite Packet

Since Jay, WS7I, roped me into doing this article on the AEA DSP-1232, I have had a chance to dig into the current literature on packet radio via satellites. If I had to admit to a strength in ham radio, this would not be it.

Prior to this piece, my OSCAR operations have been on SSB and CW. Photo number 2 shows my station: separate rotators for my KLM 430 and 2 meter tracking antennas, Bencher key with Trac keyer, my prized YAESU FT-736R transceiver, and a fine 386 Compaq with 18 inch VGA monitor (in case I want to watch the tracking program from across the room).

As I was not working satellite packet, my KLM yagi's on the roof were doing a fine job for me on the birds. HOWEVER, and this is very important to note, if you want to work the PACSATS use something simpler. The local satellite gurus I hang out with recommend using a dual band J-pole for uplink and downlink transmissions.

Why not use the big gun antennas? Reason numero uno is that they are not omni-directional. You have to track the satellites as they fly over your area. The PACSATS move very fast, and believe me, you don't have time to track them. There are other important things for your hands to be doing, such as typing at the keyboard.

Numero dos is that a home-brew dual band J-pole antenna is both cheap and fun to build. It is a modest investment for a great deal of enjoyment. Construction tips are in the ARRL's "Handbook on FM and Repeaters for the Radio Amateur".

Numero tres is that you really don't want to be bothered with circular polarized vs. right or left hand polarized antennas. This is important only for SSB and CW when you use gain antennas.

At the end of this article I have provided you with a listing of materials I find useful in working satellites. They will steer you clear of many horrible mistakes that will make you want to sell your gear in disgust. Remember, packet should be fun!

ONWARD

If you have been reading the RTTY JOURNAL lately you've seen some articles on DSP, so a beginner's guide to DSP isn't necessary here. We are now ready to take the unit out of the box and start enjoying it!

AEA sent me a DSP-1232 for this article. Unlike Jay, I don't hang out at the local ham store very often, so this was the first one I had seen. Picture number 1 shows the DSP-1232 in all it's glory. It really is a nice looking unit, and a quick look at my station picture shows just how good it looks next to my YAESU. For all of you hams out there who have to justify every ham expense to your wife, just show them this photo and explain all of the things it will do for you. Many of you will be able to replace ugly units with this nice unit!

The DSP-1232 came complete with a fine manual and connectors to make my life easy. They even explained in detail that I had two options for connecting the DSP to my radio. I chose to ignore the data connector option and instead connected via the microphone connector.

Some of you have sneaked ahead and taken a look at photo number 3, which we will call exhibit A. I admit to being in a hurry and somewhat lazy in nature, and as you can see (quit laughing) I made the classic error for forgot the shell when soldering the wires. Folks, this is NOT the way to make a 5-pin connector.

This error wouldn't have been so bad if only Jay had told me not to screw up, because I have a right to ignore him. However, AEA's manual also told me not to do it (page 3-4, section 3.3 5.3 called "Prepare the connector". Guilty as charged. It does work, though, although I'm not really sure why. I do know that any more errors of this type will lose me my rights to the family soldering iron.

The manual gives a good explanation on how to set up software for the neophytes out there. I naturally found it to be most helpful. As with all large manuals, it's a lot of work to wade through it but the explanations and diagrams are most thoughtful.

The DSP-1232 is a busy little unit: facsimile, SIAM and TDM, AMTOR and NAVTEX, BAUDOT and ASCII, MAILDROP, PACKET and satellites. One not published feature is a special master/slave meteor scatter packet mode. I didn't test this one.

When I first looked into modem requirements about a year ago, it

seemed that each new breakthrough was introduced on the birds. Each new satellite put into orbit required a different twist on the same old story. AEA is kind enough to show you how to connect up for 1200 bits/sec, but the future in satellites is towards 9600 bits/sec FSK. This is a strong argument for buying the DSP- 1232. Another is that future modems can be programmed into the software. No more junking a good unit because you need something else.

DSP is more expensive, true, but a great beauty of it is that to change functions, you change the software. Currently, this isn't easy for the average ham and is best left up to the manufacturer. Those of us who love burning EPROMS won't be inconvenienced and may even be encouraged with the 1232's potential.

There is a challenge to setting up the DSP-1232. The modem selection steps will take awhile to figure out, but this is another area that will be made easier if you take the time to read the manual. And switching modes will require a careful selection of modems.

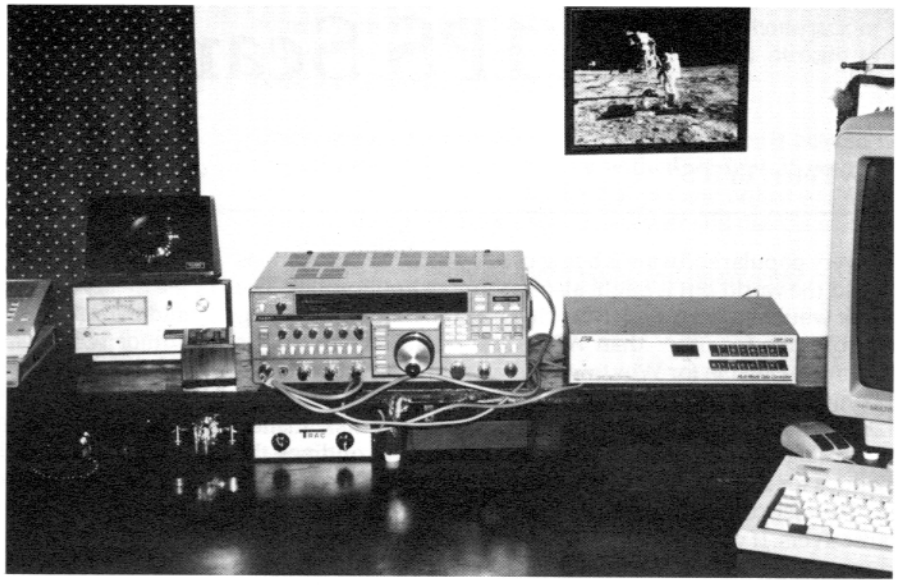
By all means, try your DSP-1232 on the local packet BBS first before you attempt to linkup with a PACSAT. The unit is complicated at first, and your first PACSAT connects will be easier if you understand how the unit operates under "normal" conditions. Many things must come together to make a successful satellite connection, and operator error should not have to be factored into the equation.

AMSAT has a great little piece of software called "PB/PG" for satellites AO-16, LO-19 and UO-22. They sell it for a nominal fee and you get with it a book on how to use the PACSATS.

Is the DSP-1232 easy to operate? Once you have played around with it for a short while, I think so. The merits of DSP and this unit in particular make it worth the effort.

What about negatives? I would have to note that it lacks Dopler shift steps when using the PACSAT modem. This is maybe a final argument for simple antennas, you will need to track the frequency shift due to the movement of the satellite in space. I suspect that AEA is already looking into this.

PACSATS can be one of the satellite operator's biggest joys. Don't worry so much about the footprint, just upload a message for your friend across the world to download later. Satellites are not always available when you want to use them, either. So study and invest in good equipment like the AEA DSP-1232, and maybe someday we'll meet via PACSAT.



Picture 2: A look at my station shows the DSP-1232 next to my YAESU FT-736R tranceiver. On the left are rotor controls for my tracking antennas and on the right is my 18-inch monitor for nifty graphics.

LIBRARY

A good satellite library is a must to keep you from going astray. It will also provide you with something to look at while you're waiting for the next satellite pass. Some of the items I use a lot are:

> OSCAR SATELLITE REPORT, by R Myers Communications. 24 issues per year. It lists current orbital elements and the latest news. Newsletter format.

> THE AMSAT JOURNAL, published by AMSAT-NA. 6 issues per year, comes with membership in AMSAT. In-depth articles on timely satellite concerns, construction projects, satellite biographies and orbital elements. Approximately 30 pages each issue.

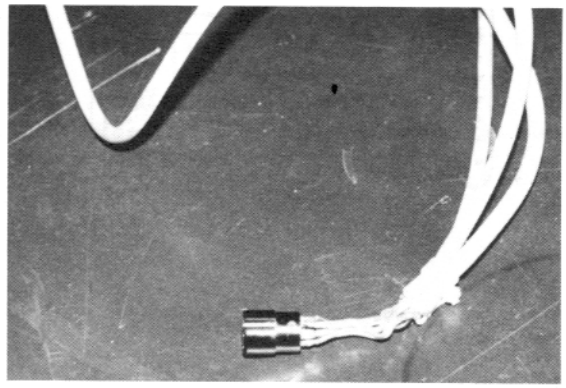
> SPACE RADIO HANDBOOK, by John Branegan, GM4IHJ, published by the Radio Society of Great Britain. A tremendous book on space physics and satellite theory. This book is not a rehash of the info in the ARRL's book. Not readily available; I had to get mine at DAYTON.

> THE SATELLITE EXPERIMENTER'S HANDBOOK, by Martin Davidoff, K2UBC, published by the ARRL. Get the second edition which is updated to include the microsats. Includes great construction projects to improve your shack.

> THE ARRL SATELLITE ANTHOLOGY. Reprints of satellite articles from QST magazine. Be sure to get a new edition to maximize packet articles.

> THE PACSAT BEGINNER's GUIDE, published by AMSAT. Comes with a copy of their packet program "PB/PG".

de **Betsy, WV7Y** ■



Picture 3:This is not the way to make a quality connection, but surprisingly, it does work.

TY1PS Scanner Setup

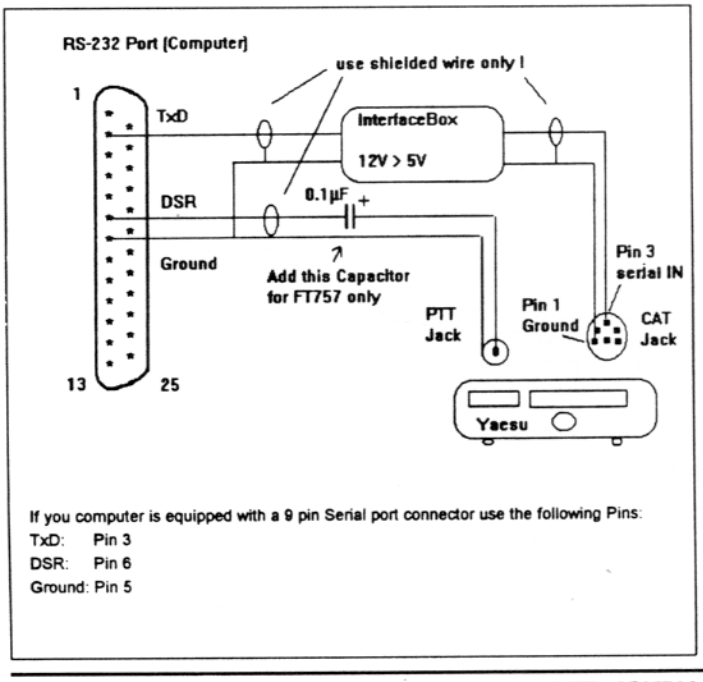
by Peter, TY1PS[1]

This very popular software is being used by most APlink stations around the world but it might also have other applications. The author would be interested in hearing from anyone who is using this software for other than APlink services. Version 2.03 is presently available for Windows operation. Those interested in obtaining a copy of the program may contact Jim Mortensen, N2HOS, the RJ Software Columnist (A formatted disk, mailer, and postage would be appropriate). This article outlines the hookups for three radios to their serial ports and serial port card use. Scanner currently supports Yaesu, Kenwood, and Icom HF transceivers. If you have another brand of radio that is equipped with a Serial Port connector and you want to use it with Scanner, please send the complete technical documentation of your set and the description of the interface option to TY1PS. The Scanner author will then attempt to update Scanner to support your model radio. Scanner requires that one Serial Port be used for communications with your radio and to detect that an AMTOR link has been established. Serial ports on PC-AT class machines are limited and their use is somewhat restricted. See the Windows 3.1 book and the use of serial ports that will be covered in the next issue of the RJ.

Connecting to a Yaesu radio

Scanner will use the Yaesu CAT interface to send commands to your radio. Your computer's RS-232 serial port runs at a +-12 volt level whereas the Yaesu CAT connector uses +5 volts for serial communications. Consequently, you cannot connect your radio directly to the computer. Caution: Doing so, may damage your transceiver. In order to properly connect the two devices you must use an interface. Either use the FIF-232Cvan of FIF-232C interface available from Yaesu, or alternately you can easily construct your own. See the Build your own voltage converter article on page 13 for details.

Scanner will use the Serial port to send frequency data to the port. For this purpose only two wires are required. A third wire is needed to signal a link condition to the computer. This signal come form the radio PTT line (on the microphone jack or the jack marked "PTT" on the back of the radio) and is applied directly to the computer's Serial Port DSR line as shown below.

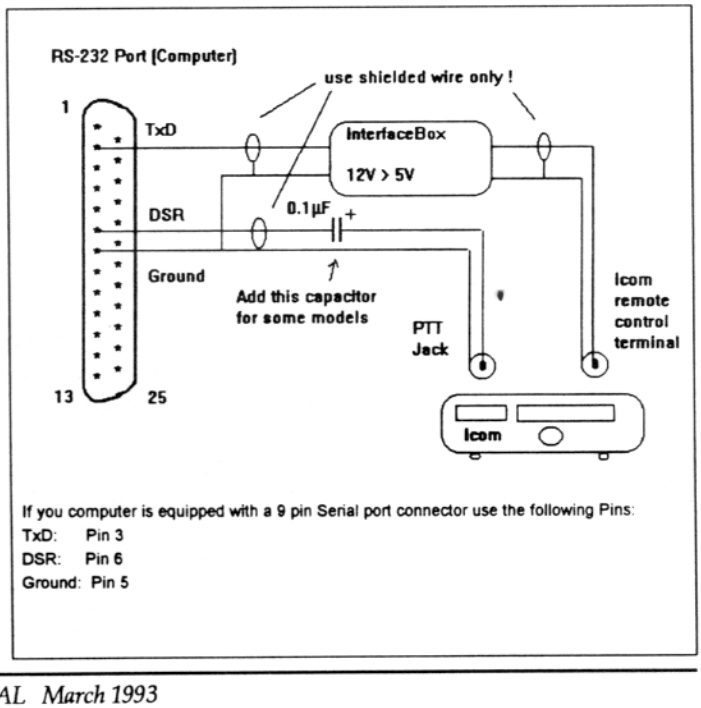


If you computer is equipped with a 9 pin Serial port connector use the following Pins:
TxD: Pin 3
DSR: Pin 6
Ground: Pin 5

Connecting to a Icom radio

Scanner will use the Icom CI-V communications interface to send commands to your radio. Your computers RS-232 serial port runs at a +- 12 volts signal level, whereas the Icom CI-V connector uses +5 volts for serial communications. Consequently, you cannot connect your radio directly to the computer. Caution: Doing so, may damage your radio. In order to properly connect the two devices you must use a interface. Either use the interface available from Icom, or you can easily construct your own. Again, see the Build your own voltage converter article on page 13 for details.

Scanner will use the Serial port to send frequency data to the port. For this purpose only two wires are required. A third wire is needed to signal a link condition to the computer. This signal comes from the radio PTT line (on the microphone jack or the jack marked "PTT" on the back of the radio) and is applied directly to the computer's serial port DSR line as shown below.



If you computer is equipped with a 9 pin Serial port connector use the following Pins:
TxD: Pin 3
DSR: Pin 6
Ground: Pin 5

Connecting to a Kenwood radio

Scanner will use the optional Kenwood IF-10C interface to send commands to your radio. Your computer's RS-232 Serial Port runs at +- 12 volts signal level whereas the Kenwood IF-10C connector uses +5 volts for serial communications. Consequently, you cannot connect your radio directly to the computer. Caution: Doing so, may damage your transceiver. In order to properly connect the two devices you must use an interface. Either use the IF-10C interface available from Kenwood, or alternately you can easily construct your own. See "How to Build Your Own Voltage Converter" outlined below. In any case, you will need the IF-10C option to be added to your transceiver.

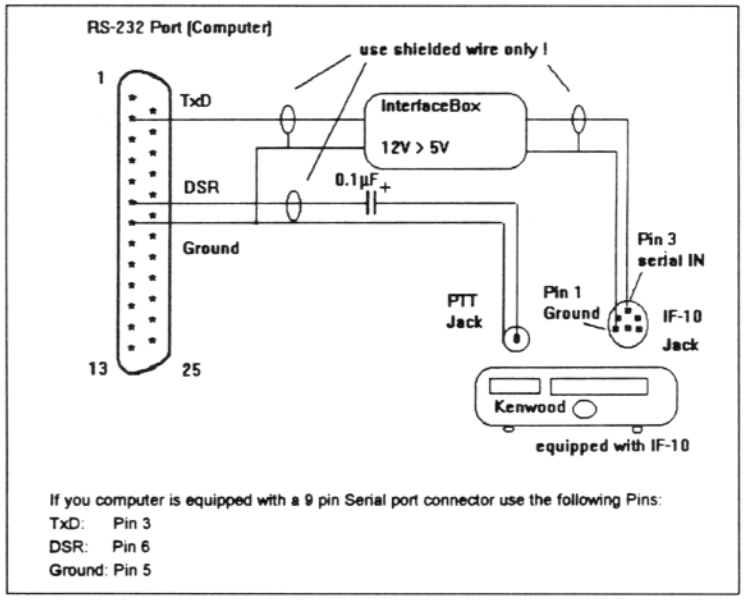
Scanner will use the Serial Port to send frequency data to the port. For this purpose only two wires are required. A third wire is needed to signal a link condition to the computer. This signal comes from the radio PTT line (on the microphone jack or the jack on the back of the radio) and is applied directly to the computer's Serial Port DSR line.

Under some circumstances a 25K potentiometer is needed here to pull up this line to 12v. Try without it first. If your radio remains keyed up, then add the 25K pot and adjust so the radio will not key up continuously but scanner still detects a link.

Running more than two serial ports will be covered in the next issue of the RJ.

de **Peter, TY1PS** ■

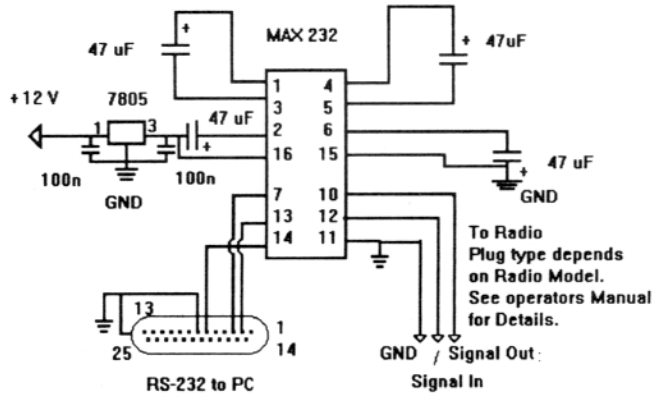
1- Peter Schulze, BP. 06-2535, Cotonou, Rep. of W. Africa



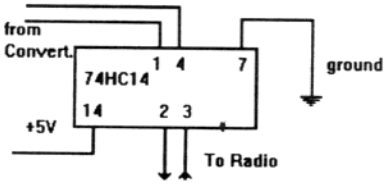
How to Build Your Own Voltage converter

Instead of buying the rather expensive RS-232 adapters from the radio maker you can easily construct your own. It only

12V to 5V converter to be used as an interface of a PC serial port to a 5V transceiver data jack (CAT, IC-V) etc.



The Kenwood transceivers require the 5V TTL serial signal to be inverted. This can be easily accomplished by adding a simple inverter circuit to the TTL level serial lines to and from the radio. You may use a 74HC14 or similar IC.



CONTESTING

Rich Lawton, N6GG
14395 Bevers Wy
Pioneer, CA 95666

RTTY Contests - Coming Events

All rules + logsheets are in the RTTY Contester's Guide

Date:	Contest:
APR 17-18	SARTG WW Amtor Contest (Sweden)
MAY 8-9	VOLTA RTTY WW Contest (Italy)
JUN 12-13	ANARTS WW RTTY Contest (Australia)
AUG 21-22	SARTG WW RTTY Contest (Sweden)
SEP 25-26	CQ/RTTY Journal RTTY Contest (USA)
NOV 13-14	WAE RTTY Contest (Germany)

REMINDER

BARTG Contest logs must be received by May 25. Mail to:

BARTG c/o John Barber, G4SKA
32 Wellbrook Street
Tiverton, Devon
EX16 5JW
ENGLAND

COMING UP

April 17-18 SARTG WW AMTOR Contest Sponsored by the Scandinavian Amateur Radio Teleprinter Group.

Contest periods are: 0000-0800Z Saturday, 1600-2400Z Saturday, and 0800-1600Z Sunday.

Bands: All five bands, 10 through 80M. Classes: A: Single op, all band; B: Single op, single band; C: Multi op, single transmitter, all band; D: SWL, all band.

Exchange: RST + Name + QSO number (starting with 001). Mode: Only AMTOR allowed. Use FEC (mode B) for calling. Use ARQ (mode A) for exchange of contest messages. Exchanging of contest messages in FEC or in any way other than ARQ is subject to disqualification.

Multipliers: Each DXCC country counts as one multiplier on each band, including the first QSO with Australia, Canada, Japan, and USA. Each call district in Australia, Canada, Japan, and USA will also count as one additional multiplier on each band.

QSO Points: QSO with own country; five points. QSO with other stations in own continent; ten points. QSO with other continents; fifteen points.

Scoring: Sum of QSO points x sum of multipliers = TOTAL SCORE.

Awards: To the top stations in each class, country and district, if the number of QSO's is reasonable.

Logs: Use separate logsheets for each band. Logs must show: BAND, DATE and TIME (UTC), CALLSIGN, MESSAGE Sent and Received, MULTIPLIERS and QSO POINTS. Summary sheet must show full scoring, class, YOUR CALL, NAME, and ADDRESS, and a signed declaration that all contest rules and regulations for your own license have been observed. For multi-op stations, all calls or names of all operators should be listed. Logs must be received by June 10, 1993.

Mail logs to: SARTG Contest Manager - Bo Ohlsson, SM4CMG
Skulsta 1258
S-710 41 - Fellingsbro
SWEDEN

Comments: This is a strictly AMTOR contest. The first and only AMTOR contest around. Note that there are three operating periods, each eight hours long. In between are two eight hour rest periods. Pileups must all be in FEC mode, which is always interesting. After contact is established, each station must switch over to ARQ (mode A) for the exchange.

May 8-9 VOLTA RTTY WW Contest Sponsored by SSB and RTTY Club of COMO and A.R.I. (Associazoine Radioamatrore Italiani) honoring Italian discoverer of electricity, ALESSANDRO VOLTA.

Starts: 1200Z Saturday, and ends at 1200Z Sunday, a total of 24 hours. Bands 80, 40, 20, 15, and 10M.

Classes: A1) Single operator, all bands; A2) Single operator, single band; B): Multi-operator, single transmitter; C: SWL.

Exchange: QSO number + RST + Zone. (*Zone chart in next issue.*)

Multipliers: DXCC Country List + each call area in VK, VE, and USA. DO NOT COUNT VK, VE, or USA as separate country. (USA stations with callsign from one district but are now living in a different district should give proper identification, such as: K6WZ/0.) The same multiplier counts again on a new band. An additional multiplier is given for each INTERCONTINENTAL COUNTRY worked on at least four bands. Contacts between stations within the same country will not be valid, such as: A W2 station can work W1, W3, W4, etc. but not W2. Contacts made OUTSIDE one's own continent on 80 or 10M are worth double QSO points. A contact with a station that would count as a multiplier will only be valid if that station appears in at least 4 other logs, or a contest log is received from that station.

Scoring: Use Exchange Points Table to determine points scored for each QSO. Final score: Total QSO points x total multipliers (band multipliers + each INTERCONTINENTAL COUNTRY worked on 4 bands) x total number of QSO's.

Awards: A SPECIAL trophy will be awarded to the top stations in each class. In addition, a certificate with special sticker to all entrants.

Logs: Use separate logsheets for each band. Logs must show: BAND, DATE and TIME (UTC), CALLSIGN and MESSAGE Sent and Received, POINTS and NEW MULTIPLIER

PREFIX. Summary sheet must show full scoring, and list of multipliers worked.

Logsheets, summary sheets and multiplier and dupesheets and the EXCHANGE POINTS TABLE are all available for copying from the RTTY Contester's Guide, published by RTTY Journal.

Logs must be received by July 30, 1993, to qualify. Send logs to:

Francesco Di Michele, I2DMI
P.O. Box 55
22063 Cantu
ITALY

Comments: This is a 24 hour contest. The QSO points are determined by the EXCHANGE POINTS TABLE. This table, based on the 40 CQ Zones, is arranged so that the further away the QSO is from your zone, the higher the points scored. (Please note: CQ zones DO NOT count as multipliers.) The Table is on page 24 of the RTTY Contester's Guide. It also appeared in the March 1992 issue of the RTTY Journal, page 22. Since W/VE/VK call areas count as separate countries on each band, CQing will be the best way to make a good score for W/VE/VK ops. Band multipliers will spread out the CQing, too, and will make the low bands more active. Don't forget to try working DX on 40 and 80M, as QSO's with countries on other continents will increase your multiplier if you manage to work those countries on the high bands. Also, QSO's outside your own continent on 80 and 10M are worth double QSO points. This contest uses the number of QSO's as an additional multiplier, making for astronomical scores... millions!

- - -- Hint of the Month -- -

Picking Up the DX Call Out of an RTTY Pileup

There is nothing quite like an RTTY pileup. On SSB and CW, when you tune into a group of callers signing only their own call, the best hint of where to find the DX station is to note how big the spread of callers is. If they are spread out over several kHz, tune down about 4 or 5 kHz to catch the DX station. If the callers are all on top of each other, then he is most likely working only stations right on his own frequency.

On RTTY most pileups are zerobeat. Here's where the RTTY pileup skills are developed. What to do? First priority: find out what his call is. On RTTY, a few of those who call will finally give the DX call when they eventually raise him. That's the easy way. But if the DX station is on a roll and is working stations at a maddening clip, then most callers will not sign his call, even when they are working him, just to keep the rhythm going.

Watching the pileup churning along on the screen, try to notice who is working the DX station. Here on the West Coast, if the W1, W2, and W3 callers are noticeably weak, then their beams are not pointed west. If they are very weak, the DX is probably South America or deep Europe, because the side null of their beams is west. If they are moderately weak, one of their beam's back lobes is doing its job. If they are very strong, their beams are right on you. Go west, Old Man!

After you've made the best guess as to where to point the beam, watch the churning on the screen unfold. After the caller has made his exchange transmission, carefully note the DX station's reply. This is the crucial time to pick out the DX station's call. If he sends a "DE", then what follows has got to be his call. This happens about half the time. (Good RTTY operators will rarely tailend the caller's exchange, thank goodness! I like to think, that since the DX station is working zero beat, the obvious chaos of RTTY tailending will most likely destroy the DX operator's control of the pile, and RTTY ops are, by and large, very courteous operators.)

From the jibberish and random QRM on the screen, note carefully when a SINGLE NUMBER occurs. If there is a space one or two characters before the number, you've most likely got his prefix. If he signs twice, note where the SPACE occurs. From the space, you can look at the screen and study both forward and back to determine his call. This doesn't always work, but it's a good starting point.

If you finally raise the DX station, don't be too bashful about asking him to repeat his call. If you are having trouble deciphering it, there are probably others having that problem, too. Of course that ALWAYS makes the pileup bigger for those who follow you. So, be kindly towards your competition..... please?

NEWCOMER'S CORNER

Tuning In an RTTY Signal and Fighting QRM

It is easier to tune in an RTTY signal starting from the low side. As you very SLOWLY tune into a signal, listen to the pitch as you watch the tuning indicator. Using the LED-type of indicator, note how the first couple of LED's on the left will be brighter than the rest. As the main tuning dial is slowly tuned higher, the bright left LED's will move to the center of the indicator and start to split into two bright ones with a dim area inbetween. Then as the dial is slowly advanced, the two bright ones spread apart to the outer edges. Stop right there. You have just set the Mark and Space frequencies to match the filter frequencies of your RTTY demodulator. Listening to the RTTY signal as you were slowly tuning will help you become accustomed to the correct sound pitch for the correct tuning.

After the TUNE indicator indicates that you have correctly tuned in the RTTY signal, turn your attention to the monitor screen. Carefully note what the screen shows. If the station's signal strength is strong and steady, the screen should be copying the received signal with no problem.

If there is local QRM, such as a power leak, or static (QRN), you will see some jibberish. Try your noise blanker controls, or RF Attenuator switch, to see if it clears up the text. It is sometimes quite surprising how the Attenuator can clean up a power leak or QRM from a computer monitor flyback transformer. The reason seems to be that the attenuator circuit creates a non-reactive (resistive) 50 ohm load for the signal source, which is the antenna. The transceiver's receiver front end is now forced to see 50 ohms. If the SWR on your antenna coax is not all the greatest, then the attenuator makes the coax match 50 ohms right at the receiver. This helps to minimize the signals picked up by a coax feedline that has less than a good match. This trick works quite well on static crashes, too. It does indeed drop the signal strength but the background noise also drops by the same amount. To compensate for the loss, merely turn up the RF Gain con-

trol. Thus, with local QRM/QRN, it will improve your signal-to-interference ratio.

Here's a trick that can be used for reducing QRM from a station very close to where you're tuned. Try the Notch control. Slowly tune the Notch control as you watch the monitor and listen to the interfering signal's QRM. You'll most likely find a spot where the undesired signal suddenly drops down and most of the jibberish goes away. By the way, I use the CW filters (500 Hertz) in the transceiver (Kenwood TS-930S), on RTTY for chasing DX and operating contests. It's the ONLY way to go. SSB filters are much too broad for serious RTTY work.

((73)) for now...See you in the pileups,

de **Rich, N6GG** ■

P.S.

Drop me a line with an idea to share,
Or, drop me a line with an item to air.
Drop me a line with anger to bare...
But don't drop ME... 'cause I care!

DX NEWS

Jules Freundlich, W2JGR
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Minneapolis, MN 55403-3188

There seems to be a sudden upsurge in the use of PACTOR. Frequently when I work a new station on RTTY or AMTOR, they ask me if I operate PACTOR. As of right now, the answer is no. So, for the present, I will have to depend on others to learn how this mode is progressing. Those users, to whom I have spoken, speak positively of it. Is it suitable for keyboard to keyboard QSOs, or does it perform best as a data/file transfer mode? And most important of all, to me...how well does it work in the DX environment?

Recently Joe, K4IHP and his XYL, Celia, N4KVG, operated, during a three week vacation, as ZK1IHP and 3D2ME, using AMTOR and PACTOR. They had about 40 QSOs, mostly on AMTOR from Raratonga. Perhaps Joe can answer that last question. Of course, I also welcome comments, based on operating experience, from others.

Aside from its utility, one reason for PACTOR's popularity is the ready availability of inexpensive software.

I have had a note from Don, AA5AU that there is apparently a PACTOR MBO operating on 14085 being accessed in disregard of ongoing RTTY DX traffic on that frequency. Please listen before transmitting. It would be nice if pulse/burst type transmissions would limit their operation to below 14080 or 21080. If the current trend continues, with Packet creeping down to .095 and PACTOR going up to .085, the RTTY gang will eventually be squeezed out. Perhaps it is a natural evolution that will signal the ultimate end of that mode. However, I am sure that as of today, the number of RTTY operators far exceeds that of the burst modes. Can we all live together in harmony?

The other new digital mode now making its way onto the bands is, of course, CLOVER. CLOVER was authored by Ray, W7GHM and is supplied by HAL Communications as an expansion board for your PC, with matching software. It's adoption into widespread use, because of the cost, is apt to move more slowly than PACTOR. It's utility for DXing is questionable, although as a file transfer mode, it is said to be super. Many APlink Sysops have it up and running.

A list recently compiled and disseminated by Joe, ZS5S identified 66 CLOVER users, worldwide (as of 28 February 1993). Of this group 45 are in the USA, and 21 are DX. We should soon learn of Clover's performance for DXing.

CLOVER frequencies were stated to be 3631, 7083, 10133, 10136, 14083, 18111, and 21083. Those 15 and 20 meter choices again chip away at the popular RTTY segments. I don't know who selected those particular frequencies, but please, CLOVER users, how about staying below .080?

DX DOINGS

BANGLADESH, S2 - S21A is best found on 20 meters on Fridays or Saturdays between 1400 and 1800Z. QSL to W4FRU.

BELIZE, V3 - Glenn, AE0Q, enjoyed his trip last year so much, that he has returned to Belize to operate as V31RY in the BARTG contest. He convinced John, KT0F, and Leo, WN0B, his QSL Manager to take part in the fun. John and Leo will be signing V31WN, and V31OB respectively. Their scheduled stay on Ambergris Cave is 19-28 March.

BOUVET, 3Y - This long shot, by a group of Russians, as mentioned here, in the January 1993 RJ, may not be so long after all. Apparently a license has been issued, and permission has been received to land on the island sometime in April or May. There are no details as to modes, times, frequencies etc. Keep alert for further news of 3Y/R0L.

ETHIOPIA, ET - As was surmised last month, Ethiopia may shortly be removed from the very rare list. Old Timer Sid May, G4CTQ, who gave some of us the then rare A4 on SSB back in 1976, is working in connection with a new United Nations building in Ethiopia, and has been appropriately licensed as ET3SID. He told Andy, W1ACB, that he will be operating "lot of RTTY from ET land." Incidentally, Rudi, 9F2CW/A reported that the station signing ET3YU who made a brief appearance on 15m RTTY in mid-January is an admitted pirate.

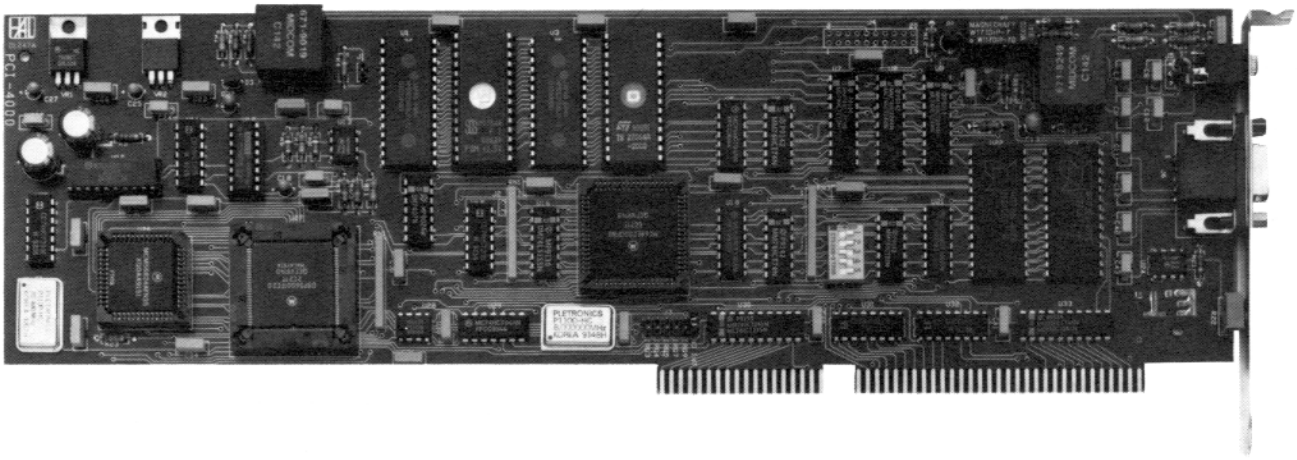
GALAPAGOS, HC8 - The husband and wife championship team of Jay WS7I, and Betsy, WV7Y, will return to "El Junco" for the BARTG contest. Their stay will span approximately 15-27 March.

GREECE, SV - It's nice to see a little more RTTY activity from Greece. When 10 meters is open you may find SV1BPQ around 1325Z. SV1ATS and SV1LK like 15 meters around 1500-1530Z.

NEW!

HAL Announces the PCI-4000 PC-CLOVER System

For Fast, Bandwidth-Efficient HF Data



The PCI-4000 uses the latest development in HF data transfer methods–CLOVER-II. CLOVER-II is designed to maximize the amount of data which can be transferred in a narrow bandwidth over HF radio frequencies. It uses a combination of four tone frequencies with phase and amplitude modulation to achieve data transfer rates as high as 60 characters per second–about ten times faster than AMTOR. The PC-CLOVER system incorporates Reed-Solomon error correction, not simply a retransmission scheme. The PCI-4000 is a full-sized PC card which operates in a 80286-based PC or higher.

The PCI-4000 PC CLOVER system features:

- Higher throughput than RTTY, AMTOR, Packet, or PACTOR on similar HF channel
- Simple pull-down menu operation
- Signal bandwidth of 500 Hz (@50 dB down)
- Plugs into your PC (286, 386SX, 386, or 486 machines)
- Easy interface to your transceiver
- Automatically adapts to HF band conditions
- Error correcting using Reed-Solomon error correction

You've read about it in the articles. Now you can operate CLOVER!
Order your PC-CLOVER system today from HAL Communications Corp.

PCI-4000 PC-CLOVER System Only $995.00

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INDONESIA, YB - Keith, formerly 5N0ETP has been transferred to Indonesia and is currently operating as N6QLQ/YB5 until he receives his new local license.

KUWAIT, 9K - There is plenty of activity from Kuwait. Much of it seems to be on Fridays, Saturdays and Sundays. A few stations are noted in mid week. Most action by 9K2IC is on 20 meters between 1300-1530Z, and by 9K2WA on 15 meters between 1400-1515Z. 9K2ZZ, 9K2JR, and 9K2IU may also be found on 15 or 20 meters at similar times. Early band openings will occaisionally allow signals as early as 0850Z on 20 meters, and 1015Z on 15 meters.

MADAGASCAR, 5R - George, 5R8DG, still keeps the deserving happy, mostly on 15 meters starting around 1400Z. He can sometimes be found on 20 meters around 1600-1700Z but your best chance of finding him is on 15 meters.

MELILLA, EA9 - We have not seen Aure, EA9JV, for quite a long time, but if you still need EA9, look on 20 meters for EA9RE around 0950Z, EA9DX around 1400-1500Z, and EA9NP around 1640Z. QSL EA9DX to Box 382, Melilla, Spanish North Africa.

MICRONESIA, V6 - Look for V63BM, 31 March-4 April, on Yap Island, by JA6VZB following his mid-March trip to the Marianas as AH0AL. QSL Tosy via JA6BSM.

NAVASSA I, KP1 - If you missed the January 1992 operation from Navassa, look for W5IJU and group at the end of this month, before and after the CQ WPX contest, 27-28 March.. QSL to W5IJU. (Tnx The DX Magazine)

NICARAGUA, YN - This country has always been a little elusive on RTTY. Keep you eyes open for YN1DE around 1800Z on 20 meters.

NIGERIA, 5N - 5N0ZIP can sometimes be found on AMTOR around 0630Z near 14079 khz. QSL to N5PSI.

REUNION I., FR - Roland, FR5AB, may be found on 20 meters around 1430Z.

SOMALIA, T5 - Brian, KF6BL/T5, has given a new RTTY country to a small number of lucky ones on 20 meters between 0000-0200Z but his availability has not been regular enough to be predictable. If you are lucky enough to catch him, QSL to KZ6X.

TURKEY, TA - Can, TA5C, usually can be found on 20 meters between 1500-1600Z.

UGANDA, 5X - Paul, WF5T, and James, N3CJL, will open up here for about two and a half weeks in late April-early May. They will operate two stations simultaneously. Paul will operate RTTY and CW, James will operate SSB. Their licenses will be picked up upon arrival. QSL Paul to his 93 CBA.

QSL POTPOURRI

This month brought some good news regarding long awaited QSLs.

S2/HA5BUS cards are coming in at a steady trickle. Hope you have yours by now.

Bill, AA4M/6, finally received his YV0AA cards from YV5KAJ for the April 1990 all-digital expediton. It took him 34 months and nine requests plus untold green stamps (and perhaps some publicly expressed concern! Ed.).

Chuck, W6JOX, disagrees with the contention that RTTYers are the worst QSLers. His experience is to the contrary, that, indeed, they are the best QSLers! Having worked 293 countries on RTTY, he has 288 confirmations in hand. I wonder how many of those five outstanding ones are more than six months old, Chuck?

Ted, HC5K, said he had a complaint similar to that of WA1MPB from someone in Louisiana. When advised that his cards have not been received, Ted immediately sends out replacements. Earl should have received replacements by now. Les. KE6XJ also received his HC8K and HC5K cards when Ted was advised they had not been received. Ted stated that the mail service in Ecuador has suffered several prolonged strikes, and he wonders what happens to the backlogged mail when the strike is over. He emphasized that the only QSL route to him is via Box DX, Cuenca, Ecuador. Cards for HC5K and HC8K should NO LONGER be sent to KT1N.

There may be a break in the FR5ZU/G and /E QSL situation. It is reported that the logs for the September-October 1992 operations are in the hands of VE2NW, who, apparently, is now Jacques' QSL manager. Send your cards to Zaren Amadouny, 18 Nisko, Dollard des Ormeaux, PQ, H9G 2R5, Canada. As of this writing, I have not yet been able to personally verify that this route works, but I am in the pocess of tyring to obtain my FR5ZU/G card. Good luck to you all!

Ken, N4SO, has a solution to the Cuba QSL problem. Work a CO-station like CO2FS who has as QSL Manager, I0WDX.

Cards for the May 1992 operation of Malyj Vysotskij, 4J1FS, which had been promised to go out in January, now are scheduled to be received at OH2BU, from the printer, this month. Everything comes to those who wait long enough!

A REMINDER...If you have any constructive suggestions for changes in the DX Century Club (DXCC) rules that would discourage abuses in the QSLing process, submit your examples of poor QSLing practices and suggested changes before 31 August 1993. Any change in the rules must be fair, enforceable, and not place a burden on ARRL, the DXCC desk, or the DXing community. Your comments should be sent to ARRL, DX Advisory Committtee (DXAC), 225 Main St., Newington, CT 06111 USA.

Finally we come again to what appears to be a serious breach of ethics. In addition to WB2CJL's report in the matter of the Pitcairn Island Bicentennial Commemorative Certificates, we have a similar report that Les, KE6XJ, and Howard, WD6EDK, also sent checks which cleared in May and June of 1991. When queried, on the air, about the delay, the manager told KE6XJ of a series of alleged stumbling blocks. These included design of the artwork, conflict on artwork due to ownership, change of artists, final approval by Pitcairn itself etc. etc. Well, the 200th Anniversary year was 1990. Here we are in March of 1993 and there is no sign of certificates for which payment has long been sent and accepted. Since this award was announced and publicized in QST, perhaps letters to that publication are in order.

MISCELLANY

Scott, N5DST, who achieved fame by operating an APlink system from the aircraft carrier, John F. Kennedy

(CVA-67) during the Gulf War, retired from the Navy in October 1992, and is now living in Houston, TX. He has just returned to the air and has his APlink fixed on 14071.5 khz. He is using a transceiver presented to him by Abdul, 9K2DZ, when he was in Kuwait in February 1992. Since he has been off the air for so long, he would like to hear from his old friends from around the world. So give NDST a chirp..

HAVE DX NEWS?

I can be reached directly by dropping mail into my APLink MBO, leaving a message in the APLink box of CE3GDN[1], sending me a packet message addressed to W2JGR @ WB0GDB.MN.USA.NA, finding me on RTTY, telephoning me at (612) 377 7269, or FAXing me at (612) 374 8161. If you FAX me, please address it with my full name, as that FAX number serves a number of people.) When these high tech approaches fail, the U.S. Postal Service can find me. When I am not chasing DX, my APlink listens on 21074 during daylight hours and 14074 at night in the Central Time Zone. Set your chirping to WJGR.

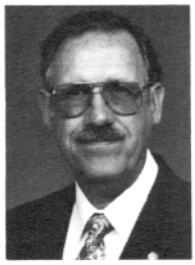
THANKS

Thanks to the following for all your information: AA4M/6, AA5AU, AE0Q, CE3GDN, HC5K, I5FLN, KE6XJ, N4IHP, N4SO, N5DST, W1ACB, WA4WIP, WB2CJL, WF5T, W6JOX, WS7I, ZS5S, and 9F2CW/A. Without you there would be no column.

See you all next month. For now bye bye from Minnesota, PAX....73

de Jules, W2JGR ■

1 - CE3GDN scans 7037, 7070, 14066, 14068, 14072, 14074, 14078, 21070, 21072, 21074, 21076, 21078, 24915, 28074, 28135.



The Hornet's Nest

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

Well, it's finally happened! The American Radio Relay League, (ARRL), has gone forward to the Federal Communications Commission, (FCC), with a petition "to permit, under certain conditions, automatic control of RTTY and data communications in certain portions of the amateur bands below 30 MHz". Digital enthusiasts across this great land of ours are dismayed and disgruntled that the ARRL has gone forward with this concept based clearly upon political considerations, with disregard for the findings and recommendations of its own Digital Committee, and most certainly without basing their petition upon good technical considerations. The ARRL petition is flawed in several respects, and quite frankly, contains the ideology and political aspirations of a few Directors, who are more interested in their own political agenda, than in providing service to the amateur community.

The request for yet another extension to the Special Temporary Authorization (STA), allowing unattended HF Packet Radio operations is totally ludicrous, without merit, and establishes a dangerous precedent. The STA vehicle is being purposely abused by the ARRL, who are in fact creating authorizations via the STA, which should certainly be more appropriately legislated by petition for rule making. Let's face some facts. The original STA was flawed in the beginning when the AX.25 protocol was mandated. Can the ARRL or the STA participants point to one single advancement in technology during the test period? No. Does it take six or seven YEARS to test and analyze a digital mode, when ones hands are tied by the requirement to use an already established protocol? No. The Amateur Radio Service in general, and the digital enthusiasts specifically, are not well served by the ARRL in requesting yet another extension of the STA, and the request for this extension should be withdrawn immediately. HF Packet Radio is not robust, suffers greatly from multi-path distortion effects, and is otherwise not sufficiently worthy of special consideration, especially dedicated frequency authorizations!

The Amateur Radio Service is not ready for fully automatic digital authorizations. It is not ready from several viewpoints. One of the most stalwart tenets of the Amateur Radio Service is that once occupied, a frequency belongs to the station(s) utilizing it, until they are through using it. To have anything less, is to permit anarchy and disaster. One only has to listen to Channel 19 on his CB, to understand what this means. A fully automatic digital system, one that automatically ORIGINATES calls to other automatic stations, has absolutely no concept of "frequency sharing." It only knows that somewhere in its innards lays a piece of traffic that must move from its system, to some distant station. It automatically seeks out some other station to which it can forward this traffic, and it will attempt this auto-forwarding incessantly, completely oblivious of anyone or anything else that may be on "it's" frequency. Interference to ALREADY ESTABLISHED communications is ASSURED under fully automatic control, as it is outlined in the ARRL's petition.

The current technological state of amateur radio equipment can most easily be categorized as "mode specific". In other words, packet radio equipment can only talk to other packet equipment; AMTOR only talks to other AMTOR equipment, and CLOVER signals are only responsive to other CLOVER signals, etc. The ARRL's petition concerning automatic control proposes "subbands" where this activity can take place. Not only are there substantial questions about the frequency bands themselves, but the combining of all modes into these tiny segments is a recipe for disaster. For example, AMTOR, (APLINK, PAMS, PACTOR, etc), signals will devastate packet signals. AMTOR reception in a 500 Hz passband is assured, whereas packet signals require three

to four times that bandwidth for proper demodulation. Can you envision the amount of "retries" on packet with a nearby AMTOR station operating? The packet guys will be disgruntled, so in retaliation, out comes the firebox running at one kilowatt. Not to be outdone, the AMTOR guys fire up their amplifiers, and the interference and intolerance levels escalate dramatically. Combining RTTY, AMTOR, CLOVER, Packet, PACTOR, etc., in one small area is clearly asking for trouble. The ARRL's proposal for fully automatic operation is unworkable as written, and should be withdrawn immediately.

I think it's time to "call a spade, a spade"! The political agenda of the Board of Directors of the ARRL prevents and precludes honest, straightforward and responsive consideration of policies and decisions relative to digital communications. The current Digital Committee, made up of highly qualified individuals in their own right, sponsored and selected by the ARRL, funded and maintained by the ARRL, has been basically ignored. The Board of Directors has shown a propensity for making decisions relative to digital communications based solely upon political considerations, rather than seeking and taking the advice of their own Digital Committee. When members of the Digital Committee attempt to enlighten and inform the Board of Directors, they are rebuffed. When the Digital Committee attempts to install procedures that will better communications and liaison with the Board of Directors, they are rebuffed. It is apprent that the Digital Committee, no matter how well meaning, or how dedicated in their efforts, are only considered as a "necessary evil" by the ARRL Board of Directors, and the BOD will go forward with its own agenda, the Digital Committee notwithstanding!

I am aware of a burgeoning movement within the digital community to formally constitute an alliance of digital enthusiasts, with the concept of actively opposing the ARRL on subjects relative to digital communications. This alliance, which developed during the debate concerning RM-7248, (when digital enthusiasts were so vocal in their opposition to the ARRL's petition to the FCC on "Unattended Automatic Operations" that the ARRL was forced to withdraw the petition), will be primarily engaged in formulating petitions for FCC consideration relative to digital communications. If rumor is fact, the Dayton HAMVENTION 1993 will be where this alliance will put down its roots. It's unfortunate that the ARRL has become so recalcitrant and unresponsive to its members, and its duly constituted committees, that a separate organization must be formed to more properly represent us with regard to our digital authorizations. Is this a threat to the ARRL? Of course it is, as there will be many digital enthusiasts who will not want to remain members of both organizations, and will select the organization which best serves their interests. One thing the ARRL can not survive is a declining membership base.

Solutions. My crystal ball is probably no better than anyone elses. But I have a gut feeling that we may be witnessing the start of the demise of the American Radio Relay League. Quite clearly the ARRL is not serving a significant number of its members. And, I find this very unfortunate. If we were able to poll the majority of digital enthusiasts who are cognizant of current affairs, I would be willing to bet that the vast majority would want to see the ARRL continue in a leadership role within amateur radio, to continue to represent them with the FCC about digital affairs, and in general, continue to be the spokesperson for the Amateur Radio Service. However, at the same time, if these same enthusiasts were asked if the ARRL is presently fulfilling the leadership roles I have listed above, I'm more than confident that the answer would be a resounding NO! This image, public relations and policy problem will not go away for the ARRL, and unless a dramatic change of course is instituted by the ARRL, their effectiveness, particularly in the digital communications area, will be lessened dramatically.

The ARRL must become more responsive to the needs of its members. The ARRL must seek out, counsel with, listen to and otherwise be receptive to the guidelines of its own Digital Committee. If the ARRL continues to arbitrarily disregard the Digital Committee, then discharge them, as it's a waste of time and money. It's funny, but we see the very same changes going on in our national Government. Our Senators, Representatives and other politicians have become unresponsive to the very people who have elected them to office. The same situation now exists within the Board of Directors of the ARRL. Formulation of policy is based more upon personal political agenda, than it is upon the wants, needs and desires of the members. This must stop!

I recommend that the ARRL petition for authorization for fully automatic, unattended digital operations be withdrawn at this time, and be tabled until significant advances have been made in both equipment and operating protocol, which will allow different modes to coexist within relatively small areas of bandwidth. To suggest that five or six different modes can now exist in a small frequency area only points out how un-informed the ARRL Board of Directors really are on the subject of digital communications.

Secondly, I recommend that the ARRL go forward with a petition to the FCC, which would allow SEMI-AUTOMATIC operation of digital stations ANYWHERE that mode is presently authorized to operate. (Semi-automatic operation is defined as any operation where a control operator is required to be present at one end of the link). To those who are concerned about a rapid proliferation of semi-automatic, BBS-like stations, let me make this observation. Would it be better to have semi-automatic operations, where a warm, live, control operator is at the keyboard, who hopefully listens on the frequency before transmitting, or would it be better to leave these communications to an undiscriminating computer, which will attempt to connect and pass traffic to another station, completely without regard to who currently occupies the frequency?

Thirdly, establishing and maintaining even a semi-automatic digital station is not something to be taken lightly. It means dedicated equipment, considerable expense, a sense of dedication to ones service, lots of hours at the keyboard, and certainly higher utility bills! Over the past 13 years of providing this very service, I can tell you that many have started these services, but only a few have persevered. Even with the rapid expansion of computer technology, coupled with significant reduction in

computer hardware prices, I have seen no dramatic increase in digital mailbox operations. Even on 20 meters, our most valued DX band, one can find adequate space for a leisurely RTTY ragchew, or to chase a elusive DX station.

It should have been more than evident to the ARRL during the RM-7248 debacle that a sense of solidarity, purpose and comradeship exists within the digital community in this country. And, it should be more than evident that the FCC has grown extremely weary of the ARRL's position on the STA concerning HF Packet, their procrastination in providing test results, and their "head in the sand" approach concerning digital communications in general. We need new leadership, whether within the ARRL, or within some newly constituted organization, with respect to the day-to-day, and long range activities concerning digital communications. What we have now is not working!

Best 73, good luck, and let me hear from you. de Dick, K0VKH ■

THE LINK

Jim Jennings, KE5HE
Rt 2 Box 165E
Hearne, TX 77859

THE PETITION, ETC

There certainly has been a flurry of activity this past month or so concerning the League's Petition to the FCC on the HF subbands for automatic digital operation. Messages have been flying around on COMPUSERVE and INTERNET and the politicians are hard at it trying to reach a compromise position takes something from everyone and gives little to a few. The real problem I see is that most average digital users that I have contacted seem to be not concerned at all that part of the bands they operate are going to be set aside for a special group.

The League's Petition, simply put, would make the benefits of the STA (fully automatic unattended operation, i.e. by computer control) available to everyone within designated subbands. After 4 1/2 years of operation, the STA group do not have a single technical development or improvement to show for the special consideration. All of the improvements in HF digital communications have come from outside that group. CLOVER was developed by HAL, PACTOR developed by a German group of hams, and the "illegal" APLink bunch began to widely use scanning. Meanwhile, the STA bunch continued to apply VHF packet technology on the HF bands. This worked fairly well during the peak of the sunspot activity, but as the bands have gotten worse, things have deteriorated. As good as packet is on VHF and UHF, the mode simply will not cut it when the going gets tough on HF.

Fully automatic unattended operation is a fine objective, and one that most of use agree with. The fact of the matter is that no one has yet to come up with a means to prevent such operation from causing interference with ongoing established communications. The cardinal rule of radio communications is: Except in a very few special situations the tradition (and rule) is that one amateur station must not willingly or knowingly interfere with a contact already in progress regardless of the mode of operation or the perceived importance of the communications in progress. While packet has its CSMA which presumably prevents the TNC from transmitting when another carrier is on frequency, many use the DCD open squelch mode of operation in which case the TNC will inhibit a transmit only when it hears another packet signal. Some AMTOR controllers have a similar feature. Neither PACTOR or CLOVER have such a feature as far as I know. In any case, these techniques did not seem to me to be very effective while I monitored STA frequencies over the past 3 years. So the result will be that these subbands will rapidly fill up with users not able to establish contact. As a result some will increase power to get through, the final result being complete loss of those portions of the bands to any useful purpose. As the Digital Committee properly concluded in their June 1992 report to the League, what is being proposed by the League will not work. The reason it won't work is that we do not have the technology at hand to allow a fully automatic station to operate without causing unwanted interference with ongoing established communications.

Under what conditions could it be made to work? It would work if restrictions were placed on the number of stations allowed to operate fully automatically and if they were grouped together by digital mode. That is all packet stations operating on certain channels, CLOVER on others, and AMTOR on others. In that case, those subbands would be unavailable for use by the vast majority of hams. The effect to us would be exactly the same as if these subbands were given to commercial radio services. This alternative is unacceptable to the vast majority of hams in my opinion.

How did we get into this mess? Well in the first place it appears that we elected the Board of Directors of the League based more on their political abilities rather than their understanding of the technical issues. Actually, this would work if they were really smart politicians and surrounded themselves with technical experts and listened to those experts when deliberating on technical issues. I am not saying at all that the League does not have experts on their staff as they do. But every one of those experts has a job which exists at the pleasure of the Board and President. I was in business long enough to learn that when an expert is put into that kind of position he tells the boss what he wants to hear. So we

have a staff at the League who work for the Board, not for the members. I have had them tell me that. Sadly, it turns out that the digital modes are apparently used by a very small fraction of licensed hams on HF. We have a few, very regular users, but they are a small fraction of the total number of hams. What I am saying is that the digital portions of the bands are rather crowded and well used, but the total number of individuals is rather small. From a political point of view, being in the minority does not help at all.

The League has praised APLink in the past. I have 2 awards from the League which were given based on my service in operating an APLink station. The APLink network has been praised in the QST several times over the past few years. The most notable was in conjunction with Operation Desert Storm. Everyone, including the ARRL and the FCC, knows that what we call semi- automatic operation has been used since the early 60s by RTTY and over the past 4 years by APLink. I have tried, through my director, to get the League to get A formal rule change which would make such operation clearly legal. The reply I got back was, "Don't upset the apple cart. No one is going to bother you." Now what I get back from the League is that, "You realize that your operation is illegal, don't you?"

The League has the ability to interact with the FCC in a very special way. They evidently have been able to get "prior agreement" on how the FCC will respond on issues. The STA is a case in point. As I understand it, the STA allowed a certain list of stations to operate on certain frequencies in a fully automatic unattended mode. Normally the FCC issues an STA for a relatively short period of time (90 days). In this case, it has gone on for about 4 1/2 years. The problem is that this has had the effect of law without going through the rule making process. Further, it appears that the League has unilaterally changed the list of authorized stations and even authorized frequencies. Certainly, I know of stations who claim to be on the STA list who were clearly not on the original list set up with the FCC. In addition, there has been an STA net operating at about 14.097 Mhz, when all of the original operating frequencies were above 14.100 Mhz. Each of these changes seems to me to be effectively changes in the rules without going through the rule making process.

WHAT TO DO?

When you are in the minority and don't have a champion among the politicians, you are in deep doo-doo. We need a full time champion. It is time to start thinking about forming a national society or group to give HF digital operators a louder voice. We need to be properly represented in rule making issues. We need to be more aggressive in promoting technical development and idea exchange. We need to spend much more time educating the "politicians" about what is going on with new technical development.

TECHNICAL FEEDBACK

Now that some of us have CLOVER and AMTOR capability, the question arises of how to hook both systems up at the same time. I got the following information from Vic, W5SMM, on how he did it with the PCI-4000 and PCI-3000.

1. At the microphone connector, insert a resistor (10k to 100K) in series with the microphone connector. (Vic found that this really reduced RF feedback into the radio. Those of you that have RF problems while running AFSK might want to try this.)

2. On the PCI-3000; cut R68, cut D11, and turn R50 fully counter-clockwise. (The changes increase the transmit audio level and remove a diode in the PTT circuit which holds the PTT line high when it is ungrounded by the PTT relay.)

3. On the PCI-4000; set jumper to 0 dbm and cut D1. (These changes set the audio output of the PCI-4000 roughly the same as the PCI-3000 and remove the diode in the PTT line.)

4. Tie the PTT lines together and connect to the radio PTT input.

5. Tie the audio output from the radio to both PCI-3000 and PCI-4000 audio inputs.

6. Tie the audio outputs from the PCI-3000 and PCI-4000 together and connect to the resistor on the microphone connector installed in step 1.

7. Key the transmitter with the PCI-3000 in FEC mode (AFSK) and set the microphone gain to just where the ALC starts to read. This should be full power output.

8. Unkey the PCI-3000 and key the PCI-4000 in single-tone test mode. Adjust the output level pot on the back panel of the PCI-4000 (R22) to just below where the ALC starts to read. This should be nearly full power output.

9. Unkey the PCI-4000 and adjust the receiver bandpass tuning so that the four tuning bars on CLOVER average about the same length on background noise.

IF FILTERS AND AFSK

Now that we have CLOVER and AFSK, most of us have to use SSB filters for the digital modes. Vic also reminds me of a technique we used on RTTY when practically none of us had narrow filters (or even good AGC for that matter). It is what was called, in the "olden" days, manual AGC. I think you will find this technique very helpful in reducing adjacent channel interference both on AMTOR and CLOVER.

1. Turn the receiver RF gain all the way down.

2. Turn the receiver AF gain all the way up.

3. If you have an input attenuator on the receiver, set it to maximum attenuation.

4. Turn the RF gain up slowly until the tuning bars on CLOVER just start to move occasionally on background noise. (On AMTOR, turn the RF gain up till you start to see the LEDs start to flicker a little. Actually, you can also tell by looking at your S meter on the receiver when the AGC is just starting to act.)

5. Tune in the desired digital signal. You will hear little or no audio on your receiver, but the dynamic range of the PCI-4000 or your AMTOR controller will recover the audio signal nicely. At these low levels all but the strongest of nearby signals will have no effect and you will get good copy.

DAYTON

Make your plans to attend Dayton on the fourth weekend in April. I hope to see you there.

73 and GOD BLESS

de Jim, KE5HE at KE5HE.#CENTEX.TX.USA.NOAM

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