RTTY JOURNAL

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AMATEUR RADIOTELETYPE - COMPUTERS - PACKET

VOLUME 36 NUMBER 1

JANUARY 1988

TWO FIRSTS

Taiwan RTTY DXpedition
L to R: JH8KJW, Hiro - JH8PNE, Yoshi
JA1UT and JG1RVN, Toru

Jim Talens, N3JT San Andres DXpedition
says Jim "This is easy"

IN THIS ISSUE

RTTY JOURNAL

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OWNER - EDITOR - PUBLISHER

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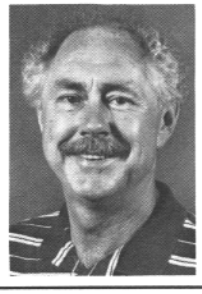

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HITS & MISSES

In starting the New Year off right, I wish everyone a Happy and Prosperous year. In looking back over the past year here at the Journal, I find many things have changed. New writers have come on board, the size of the Journal has been increased to twenty pages, we changed paper weight to help with postage costs, and after a great deal of consideration raised the subscription price to our foreign subscribers. There have been other changes too. A new Award certificate has been designed and issuing will start soon. The RTTY Journal joined with CQ magazine in sponsoring a RTTY contest which I'm happy to say was well received worldwide.

Starting this month, you will start seeing new renewal notices. At present we send out two different notices (first - a reminder and second - final reminder) and that will not change. The difference will be that the first notice will be on yellow paper (yellow for caution) and the second on red paper (danger your subscription is expiring). We hope this will help alert you when renewal time comes around because we don't want you to miss any issues of the Journal.

The Journal columnists all turned in great articles this month and most are quite long, consequently, I'm out of space for my column. My congratulations to both the Taiwan effort and the San Andres effort which are highlighted on the cover this month. Until next time, 73's **de Dale, W6IWO**

REMINDER - REMINDER - REMINDER
Start making plans for Dayton, starts Apr. 29

ABOUT THE COVER
These two DXpeditions are highlighted in the DX NEWS column. More Pix pgs. 2, 8 and 15.

JG1RVN, Toru **BV2A/B, Tim**

Richard E. Polivka, N6NKO
18943 Vickie Ave. #34
Cerritos Ca. 90701

PACKET

AFTER CHRISTMAS....

My question to you is this...How many of you went out and finally indulged yourself and purchased a TNC? So, let's get it going and go for it!

ROSES, ROSES, ROSES

The 99th annual Tournament of Roses parade and Rose Bowl are history. At least for once a team from my home state finally won. Football is football but getting the parade set to run is a monumental task. Several hundred amateurs participate in this annual rite of the new year to provide communications for the Tournament officials with jobs like status reports on how the floats are doing getting to the city, problems with anything, public assistance, and more. The list is endless. And of course, Packet Radio is in the middle of the whole thing. I was monitoring some of the communications from my residence and Packet was used for fixed point-to-point traffic. There were several locations that used it before and during the parade and also at the post parade viewing area. There were several stations running at the post parade site for relaying information to and from the gates and lost and found concerning, lost people, items, etc. Laptops were used for the communications because of the lack of AC power at the various sites where the operators were needed. Unfortunately, the amount of people who have a completely battery operated packet station are few and far between. Nevertheless, the communications were a bit in the rough at first but then over time, they smoothed out quite well. There were lessons learned by me as well and one is that either I get a small laptop computer for portable operation or I get a generator/inverter for my computer terminal. It was a learning experience for everyone involved with the parade and is definitely worth it. I would say that we amateurs fit right into their theme this year -- "Thanks To Communication".

BEGINNER'S CORNER

From our previous discussions, we have talked about timing considerations within the TNC, how to talk to the TNC, and now that we are this far, how about the TNC talking to the outside world. Just about all packet-switching networks work over wire providing communications for businesses and other concerns. We have a more versatile form of communication transport, radio. Now comes the fun part, hooking up the TNC to the radio. Let's deal with the case of VHF radios first.

You need to find out how your mike connector is wired and what it wants in terms of audio signals and keying requirements for the radio to transmit and also a source of received audio for the TNC to decode and process.

Let's start with the keying of the radio. If you are using a mobile or base style radio, you will probably have to deal with just simple keying. Just about all radios that I know of use a form of grounding the PTT line to cause the radio to go into transmit. Most, if not all, TNC's are set up right out of the box for PTT to Ground keying. If for some reason your radio uses positive keying, then the TNC's have in them a jumper that takes care of this. If you are like me and use a handheld radio for Packet, then it gets to be a little trickier. My ICOM uses a form of bias current shunting. The current is on the two conductor mike jack that is on the top of the radio. With that situation, you have to build a little adaptor to achieve switching of the radio into transmit without drowning out the transmitted audio which in itself is at a low level because of the mike input requirements. The device is real simple. You put a 30K 1/4 watt resistor between the PTT line coming from the radio and the center terminal on the mike jack. A .1 uf. capacitor is attached to the mike audio wire and attached to the center terminal of the mike jack. The resistor allows enough current drain for the radio to go into transmit and not drain away the mike audio significantly. The audio from the radio is just fed into the TNC from an external speaker jack on the radio, if it has one. One suggestion that I can make is that you should check and see if the "audio in" lead is shunted to ground through a resistor. In most TNC's this is not the case and will present a high impedance load to the radio causing, at least in the case of my HT, a bias voltage to develop on the line and cause some noise problems. I just put a 22 ohm resistor across the audio line of the radio to take care of that. Usually there is no resistor because some people will hook the audio line to the output of the discriminator circuit in their radio and bypass the audio amplifier so the resister would shunt what little audio there is.

Setting the transmit audio level for the FM radio's can be a bit tricky **(cont. pg. 4)**

(PACKET cont. from pg. 3)
so you do not overdeviate and/or overload your mike input. There is a recommendation that the transmitted audio level be set at around 3 Khz deviation. If you have access to a test set that will tell you the deviation of your signal then life will be made easier for you. If you are not that fortunate, there is another way of doing the setting. You put the TNC into "calibrate" mode and tell the TNC to transmit. You monitor your transmitted signal on another radio that is on frequency. You turn the audio all the way off then start increasing it slowly. You should hear a tone come out of the other radio. If you don't there is a problem and you should find out where it is before continuing. When you hear the tone, keep increasing it until you can't hear any change in the received audio's level. Then turn down the level until you notice a drop in the audio level and leave it there. That level will just about do and should be around 4 Khz deviation. This way, it keeps down the side channel splatter to a reasonable level because of the nature of the transmitted signal.

Adjusting the received audio can be tricky on some TNC's and a piece of cake on others. If your TNC has a tuning indicator, then adjust the volume level until you get full spread on the bars or until the TNC reliably decodes the packets. You do not want to feed too much audio into the TNC because it wants to hear sine waves and not square waves loaded with trash.

I am not going to spend much time on how to wire up the TNC to a HF rig because it is the same for the transmitted and received audio hookups but you adjust the radio like you were on RTTY though the duty cycle is much shorter.

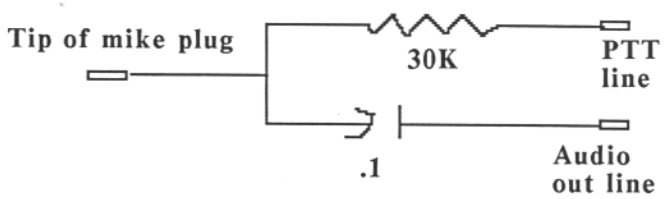
Now, go and hook up your equipment to the TNC and get out there and tear up the radio waves and have some fun and meet new people.

MAILBAG

James Stanicek, AG3Y, sent in a letter with some good questions and thoughts. He has several questions so I shall try to address them one at a time. He was asking about why he see's short phrases like BTU, OVER, KKK, etc., at the end of each phrase. Well, I agree with that form of usage even though it is not necessary. If everyone had a computer to use and the split screen software, life would be so much easier because the received packets would be displayed separate from the transmitted text. There are many people out there who do not have the split screen software or who are running just a computer (like me) and would have the problem of the received text being interspersed in with the typed text this makes it difficult to read and understand what you are typing and to keep your train of thought. Stream typing is great when you have the split screen and is a big help.

The argument that he hears is that 300 baud packet is too slow to use , (somewhat of a problem in relativity). The majority of the users of Packet are on VHF and higher bands where 1200 baud transmission rates are allowed. These users come down to the HF bands and then say "My is this slow ..." I don't like this .... Yuck ....etc". I am sure that you would hear the same complaint from them if they tried RTTY and yes, I have heard the same thing here too, so don't feel so bad. One of the biggest problems with working HF Packet is the noise that is inherent to the medium. If one bit is garbled in the transmission because of a noise burst, the whole packet is tossed out and a repeat is requested until the transmission is correct. So error correcting due to the noise slows down the channel thoughput even more. I think that we are addicted to speed when it comes to doing things and that is one of the problems that is being faced here. In some ways, RTTY is faster to use in a noisy environment because you do not have the error correcting feature. The text that does have an error in it can be sorted out because it is just one or two letters that get garbled and you can patch it in your mind.

James, I really do not know how to answer the question that you had concerning channelization on the HF bands. One reason that I have heard put forth is that when the "powers that be" were figuring where to put Packet operations on HF, they were being bombared by all the various groups that use the HF bands not to put that raucous sounding trash in their segment. So, they decided on the few channels available as an appeasement to the masses. Unfortunately, 300 baud signals take up more band than 45 baud signals so there still is a problem. There is also the problem that I like to call the "MyChannel" syndrome. I have heard it on VHF simplex and I hear that it is also prevalent on the HFbands. If two people set up a sked on frequency X and (cont. pg. 5)



ICOM HT BIAS SWITCHING ADAPTOR

(PACKET cont. from pg. 4)
when it comes time for the sked the frequency is in use, then they should end up going somewhere else to have their QSO and not disturb anyone. One of the biggest problems we have as a human race is that we do not know how to share what we have and I plead guilty to this also. Mutual cooperation among all user groups, I suggest We can coexist together and advance the art as a whole with what we have available.

The idea of calling CQ on the Packet bands has gone the way of the washboard and horse and buggy. Most people out there only use their TNC's for accessing BBS's and talking to just close friends. Back when I started getting into Packet, I would call CQ for some time and maybe I would get a bite and strike up a good conversation. Now, most people have their TNC's set to ignore a CQ call or just leave them off and use them for accessing their local BBS. Another problem with calling CQ is that the packet is what is called an "Unnumbered Information" packet and if one bit gets changed in the broadcast, it will not be retransmitted. Because of this, it appears that no one is listening. Whenever I would call CQ, I must have the patience of a saint hoping that there is someone out there who heard the CQ and will try to connect with me.

That covers the questions. If anyone wishes to send traffic to me, please forward it to WB6YMH-2 BBS on WESNET or via the postal system.

UPS

As in "Uninterruptible Power Supply". There was an article in one of the electronic magazines in January concerning the design of a UPS. It may put out a modest 40 watts. The circuit is designed to run off of 12 volts DC and to provide a sinewave output. I am in the process of scaling up the design so that it can provide about 250 watts of power so that it can run a printer or terminal if necessary from a car battery or directly in a vehicle. Admittedly, 250 watts at 12 volts is a lot of current (22 amps) so the circuitry would have to be beefed up to handle it. It should be an interesting project for all interested.

THAT'S ALL FOLKS!

That is it for this month. Christmas here at N6NKO amounted to fixing the 440 HT that broke at the airport. No new toys this year. Keep the letters coming and have a Happy New Year. My New Year's resolution: Get in shape, stop smoking, get into Packet more, help train new Hams, and most importantly, be a friend to my fellow human beings. Peace.

de Richard, N6NKO

Dick Uhrmacher
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MSO'S

Hi Gang! I hope that 1988 is a healthy, happy and prosperous New Year for each of you, and that Santa brought all kinds of new toys for you to play with.

This months MSO Column will be devoted to correspondence I have received concerning general MSO/CBMS activity, along with questions posed about "third party" traffic operating procedures. Both are timely subjects, with respect to those who may be interested in establishing an automated mailbox system, and for those who may already have systems up and running. The "third party" regulations, (at least those promulgated by the FCC), are quite clear. The philosophy behind whether "to, or not to", become involved in sponsoring a MSO/CBMS is my own, developed over almost 10 years of operating a MSO on 20 meters, and reflects my own opinions, not those of any official agency. For any who might like to add to these suggestions, or differ with my thoughts on these subjects, I encourage you to drop me a line, and I assure you that your comments will be addressed here in the MSO Column.

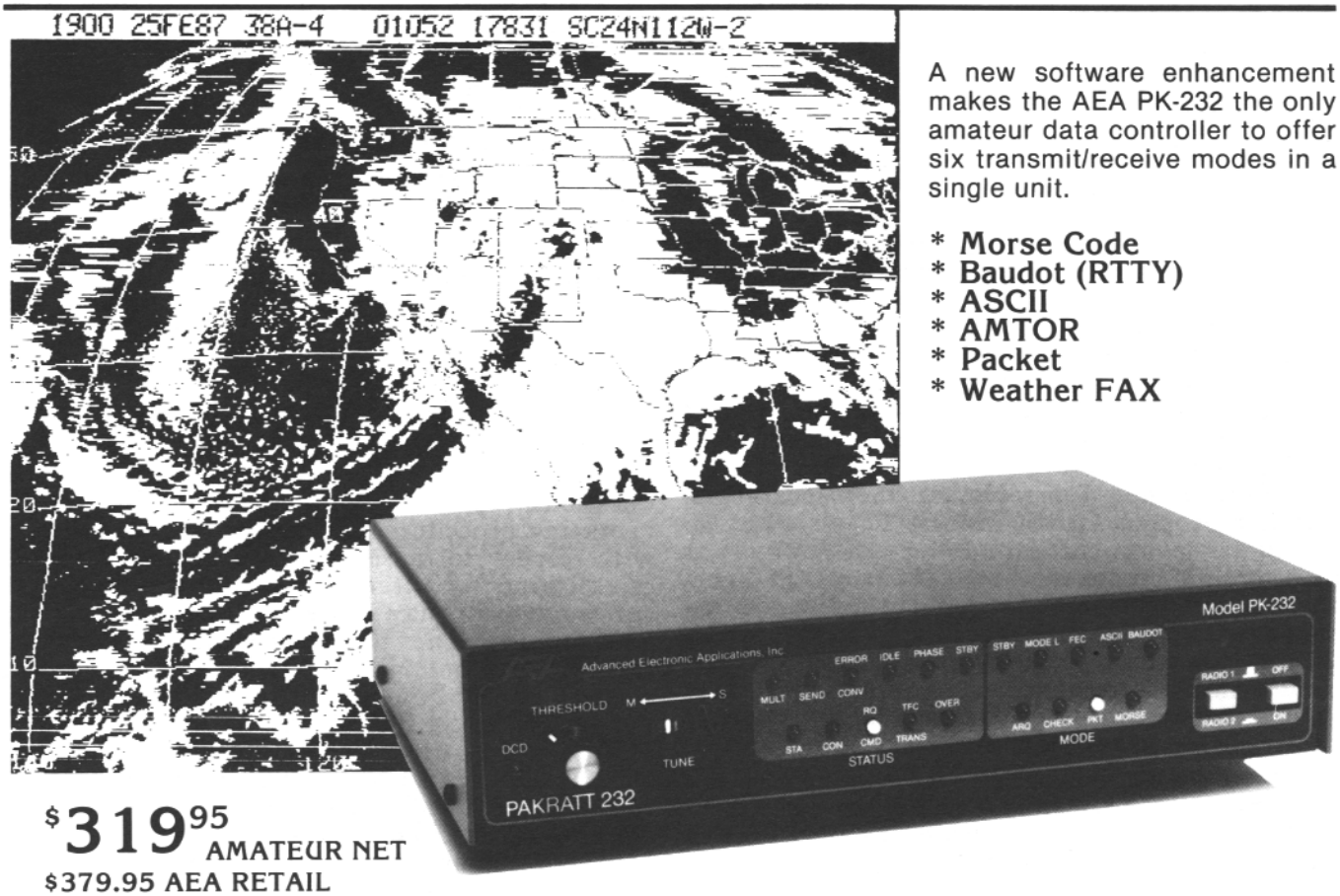
SHOULD I RUN A MSO/CBMS MAILBOX

I received two inquiries this past month, one from a West Coast station asking for tips on how to establish and run a "mailbox", (more properly known as a MSO -- Message Storage Operation, or CBMS - - Computer Base Mailbox System), and one from a New England RTTY station who has been operating a 75 Meter MSO, finds it under- utilized, and wonders about where he could place his system to provide better service.

This is my tenth year of operating a MSO on 20 meters, (National Autostart Frequency, 14 087 625 Hz Mark), and this experience has left some impressions with me. First and foremost, I feel strongly that any automated MSO/CBMS should provide some "service". This service can present itself in a multitude of ways, i.e., relay of messages between two stations which under ordinary circumstances could not communicate, storage and relay of the ARRL/CRRL, DX and Propagation Bulletins, provide technical advice, **(cont. pg 7)**

New PK-232 Breakthrough

Six Digital Modes - Including Weather FAX



A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.

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Your home computer (or even a simple terminal) can be used for radio data communication in six different modes. Any RS-232 compatible computer or terminal can be connected directly to the PK-232, which interfaces with your transceiver. The only program needed is a simple terminal program, like those used with telephone modems, allowing the computer to be used as a data terminal. All signal processing, protocol, and decoding software is in ROM in the PK-232.

The PK-232 also includes a no compromise VHF/HF/CW modem with an eight pole bandpass filter, four pole discriminator, and 5 pole post detection low pass filter. Experienced HF Packeteers are reporting the PK-232 to have the best Packet modem available.

Operation of the PK-232 is a breeze, with twenty-one front panel indicators for constant status and mode indication. The 240 page manual includes a "quick start" section for easy connection and complete documentation including schematics. Two identical back panel radio ports mean either your VHF or HF radio can be selected with a front panel switch. Other back panel connections include external modem disconnect, FSK and Scope Outputs, CW keying jacks, and RS-232 terminal interface.

The RS-232 connector is also used for attaching any Epson graphics compatible parallel printer for printing Weather Fax. Weather maps and satellite photos, like the one in this ad, can be printed in your shack.

Contact your local AEA dealer today for more information about the one unit that gives you six modes for one low price, the PK-232.

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(MSO's cont. from 5)
RTTY art (pix), etc. If you do not have a specific service in mind, I think it is better that you become a "user", rather than a "SYSOP", as just adding another system to our already crowded digital spectrum probably will not attract enough remote users to justify your expense in time and equipment. Secondly, once you make the decision to start providing MSO/CBMS service, you must demonstrate a continuing commitment to this service, by having your system up and running routinely, not on a "hit or miss" schedule, as you will not attract steady remote users if they feel they cannot depend on your system.

If at all possible, join some already established mailbox or MSO operation. Striking out on your own is nice, but I doubt that with the already established systems, you'll attract enough remote users to justify leaving your system up on a permanent basis, (particularly on "HF"). Once you've selected some frequency, stay put, and don't get discouraged if use of your system is slow for the first six months to a year.

"Unattended" operation of a Amateur Radio station below 50 MHz is not authorized. This simply means that you may not turn on your mailbox and walk away from it, leaving it to it's own devices. This does NOT mean that you can not have an automated mailbox, it just means that a Control Operator must oversee the automated operation, in case that it should develop problems, and to prevent illegal use of the system.

For example, it is of course illegal to pass "third party" traffic between two countries where no third party agreement exists. This could easily take place on "HF", and control operator oversight is essential. (Packet Radio is especially vulnerable to this problem, where traffic zips by at something less than the speed of light. See the following information concerning third party traffic).

Although the ground rules are a bit "fuzzy", (to say the least), "for sale, trade or wanted" items, (including "swap shop" activities), are frowned upon by the FCC, and should not be allowed in your MSO. For instance, at one point on 40 Meters, a fellow had his automobile listed "for sale" in a MSO, an event the FCC did not take lightly! Do your advertising and business communications in the publications that sponsor those activities, and keep them out of Amateur Radio, regardless of the mode!

Unlike "VHF" mailbox systems, a "HF" system malfunction which causes the transmitter to "hang up" for hours on end not only can cause interruption to communications on a local (intra-continental) basis, but can cause interference on a world-wide basis. A working "watch dog" timer that will shut your transmitter down after a set amount of time, or lack of keyboard input, is a must!

As a SYSOP, you should be careful of "ethnic or off-color" stories, jokes, etc., which may seem innocent or funny, but have a totally different meaning or interpretation in some foreign land. Review the contents of messages in your MSO, and don't hesitate to delete them if they are not in good taste.

If your system is capable of "beacon" mode, that feature should be turned off, disabled, or otherwise smashed, crunched or destroyed, so there is no possibility of your "beacon" coming up and interfering with already established communications!! If there is any chance of your system becoming unpopular, having your "beacon" come on just after someone has established communications with a long-sought DX station, will surely do it! Turn it off, and leave it off!

Your MSO should always be operated on a non-interference basis. This simply means that you exercise enough control over your system to insure that it does not interfere with a QSO on or near your operating frequency, and that you physically control your system so that others do not, even unintentionally, cause it to interfere with others. After operating on a frequency day in and day out for years, we tend to think of that spot on the dial as OURS! Far be that from the actual facts, as others have just as much "right" to that frequency as you do, and we must do our utmost to insure that our automated systems do not cause interference.

Finally you must unhesitatingly control your system when you see others abusing it. Don't let someone else "run" your system, abuse it, etc. Just simply be the boss of your system. If others want to operate their systems in some other manner, so be it, but run yours the way you feel that it provides a service to others, and fully complies with good operating practices.

No doubt I have forgotten or missed some areas of importance in operating a MSO/CBMS. If you'd like to see some other area highlighted, drop me a line, and I'll be glad to oblige!

THIRD PARTY TRAFFIC UNDER SCRUTINY
Recently a very popular DX AMTOR mailbox was taken off the air because the local government objected to "third party" traffic being relayed via this system. **(cont. pg. 8)**

(MSO's cont. from pg. 7)
Since any "HF" MSO/CBMS is capable of being utilized to pass third party traffic, I think a discussion of the rules concerning this area is appropriate. It is important to remember, that if you, the Control Operator, fail to exercise control over the system, and third party traffic between two countries where no third party traffic agreement exists is allowed to pass, it is YOUR license that is in jeopardy!

Just so that we understand what "third party traffic" really is, the official FCC interpretation is very clear. "Third party traffic is Amateur Radio communication by or under the supervision of the control operator at an Amateur Radio station to another Amateur Radio station on behalf of "ANYONE" other than the control operator". (I added the emphasis). Even though this traffic may be the most innocent, mundane and boring communications between two properly licensed Amateur Radio stations, the act of relaying it on behalf of a third party, (regardless that the third party may be a licensed Amateur Radio operator), where diplomatic (political) third party traffic agreements have not been established between the two countries, is illegal, and most governments hasten to cite control operators for violations of these statutes. There have been some aggressive enforcement of these rules by the FCC recently, primarily aimed at "HF" Packet Radio systems.

These third party restrictions were most likely developed over the years to preclude Amateur Radio stations from otherwise depriving legitimate business entities from revenues derived from commercial radio traffic. One can easily see that the President of an aspiring long-haul communications company would always have some doubts in his mind that "those Hams" are providing communications that rightfully should be on my commercial systems, and thus depriving me of revenue. Not true in 99.99 % of all Amateur Radio communications I'm sure, but the rules exist none the same.

As an example, Article 32 of the International Radio Regulations states quite emphatically, "It is absolutely forbidden for Amateur Radio stations to be used for transmitting international communications on behalf of third parties". Not much room for interpretation there! Fortunately for us, the same section goes on to say, "The preceding provisions may be modified by special arrangements between the administrations of the countries concerned". These "special arrangements" are of course the "third party" traffic agreements that we must abide by.

Amateur Radio is not a "new kid on the block", and most governments are fully aware of the provisions for authorized Amateur Radio participation in third party traffic.

Those, such as the United States, that have concluded many third party agreements with other countries, have gone out seeking this approval. However, other countries, completely within their individual rights, have not seen the need to conclude these agreements, and as such rightfully enforce the ban on this traffic when it is not within the prescribed laws. Each MSO/CBMS SYSOP must insure that his system is not illegally used to pass third party traffic to countries where no such agreement exists. It is my personal feeling, that each of us should at every opportunity stress to our governmental representatives, the importance of concluding third party agreements with foreign nations. Since we are a world of laws, that appears to be the only way to provide change in this area.

SOFTWARE HELP NEEDED WITH WD4NCN MAILBOX PROGRAM

I received a nice letter from Al Brown, W1VTP, in which he asks for help in making some modifications to the WD4NCN mailbox program. Evidently the author is no longer supplying assistance with this software, and Al needs a little help in modifying it. Anyone who can be of assistance in this area can contact Al at P.O. BOX 5439, Manchester, NH. 03108.

That's it for this month Gang! Happy New Year, and I hope to see you on RTTY!
de Dick, K0VKH

Pacho, KH0BKK operating RTTY
(Pix by Jim, N3JT)

Jim Talens, N3JT
P.O. BOX 19346
Wash. D. C. 20036

Read DX NEWS first pg. 14

JIM'S STORY

For DX vigilant RTTY operators rumors in late October of activity from San Andres Island were welcome news, even if there was no confirmation in the RTTY journals. Word was spreading that somebody was taking RTTY equipment to the island and would be on the air just before or after the CQWW CW DX contest in November. The fact is that a decision to open HK0 to RTTY was not really made until a few hours before the first start pulse was sent! This article offers some insights into the HK0 operation last November.

About six weeks before my departure from Washington, D.C. to San Andres, I was in contact with WA4WIP, Dick over matters concerning another DXpedition I had planned, to VP2E, in late October. But it wasn't until a week or two before I was to leave for San Andres that Dick mentioned the possibility of operating RTTY there. He knew that I was planning on taking a Commodore C64 and color monitor with me to use with N4ZR's contest software. All that remained was to take an AIR-1 with me, he said. At that late date it was difficult to make a commitment, because it was not clear that I had time to help with an assortment of antenna repairs needed at the QTH of my station host, HK0BKK; operate the contest; and still have time for RTTY -- which I had last used some 18 years earlier via a Model 19. As I toyed with the RTTY possibility, I recalled that last RTTY QSO I had from my parents' home in Philadelphia years ago when the balun in the tribander caught fire mid-transmission and the neighbors circulated petitions to have me and my antenna removed.

I agreed to take Dick's AIR-1 with me. I arrived on San Andres about a week before the November contest. RTTY was not high on the list of priorities. HK0BKK's TH6 was in dreadful condition after seven years of exposure to salt air. Also, some new kind of antenna for the low bands had to be constructed. Fortunately, the replacement TA-33 had arrived just ahead of me. In only two days a new tower was erected and the TA-33 was beautifully perched some 14 meters over HK0BKK's roof. We also erected a B&W broadband loop antenna for the low bands. There still seemed to be time to consider activating RTTY

Soon I had made hundreds of CW and SSB contacts, confirming that the station was ready for the upcoming contest. By about 1600 UTC on November 24 the pileups died down so the notion of trying the RTTY bit seemed appealing. I was at first apprehensive to risk the welfare of my C64 with the attachment of a plug-in card, considering that I had little experience with the computer. Were I to make a pilot error and damage the C64 there was no local supply from which to purchase a new one in time for the contest.

Fortunately, Dick had prepared and idiot-proof set of instructions. I inserted the AIR-1 card, removed the microphone and inserted the new plug into the ICOM 751 mic jack. My expertise at the project was evident: It took me five minutes to discover that the reason I couldn't get visual copy on receive was that I still had the headphones plugged in! Once all the basics were under control, I was ready to hit the keys. The rest is history.

The first contact, at 1633 UTC on November 24, was with KA5CQJ, followed by W5HEZ and 473 others over the course of the following several days. Contacts were made with every corner of the world on 10, 15, and 20 meters with about 60 watts output.

The vast majority of RTTY operators seemed skilled and courteous. It is always up to the DX station to set the style of operating. I chose simply to exchange signal reports and QSL information. Occasionally, someone would launch into his life history, the station equipment, hat size and retirement goals -- all during the first transmission. I recall in two instances I simply shifted up a few Hertz and called QRZ rather than be trapped into a long-winded explanation of why I could not chat just then. I did not find it necessary to operate split frequency because on RTTY it is easy to simply wait a few seconds and copy three or four callsigns as undulating propagation alternately brings stations over one another in strength. With four callsigns printed I could say, for example, "WB2KXA, WK6E and W0HAH please QRX" and then work W1DA and the others ad seriatim. I averaged up to one QSO a minute during one period. With that style I think I maximized the number of RTTY contacts during the time available.

I thank all of those RTTY operators who perceived the need to be brief in the exchange and for the contributions that some included with their QSLs. Those few dollars do help defray costs of cards and at least one night's hotel bill. Pacho, HK0BKK, was so intrigued by the RTTY activity that he "inherited" the C64, monitor and AIR-1. He is now active on RTTY. Those who missed me at HK0 should look for Pacho. Until next time ; and there will be one from somewhere -- 73's! **de Jim, N3JT**

Cole Ellsworth, W6OXP
10461 Dewey Dr.
Garden Grove, CA. 92640

CONNECTIONS

USING THE AEA CP-100 WITH THE AEA PK-232

This month we are reprinting (with permission) several AEA Service Bulletins that describe using the AEA PK232 in the external modem mode with the AEA CP-100 computer interface as the external modem. Ahh!, I can hear the mutterings in the background noise; "Why in the world would someone want to hang a CP-100 on the front end of a PK232??". "Has old W6OXP lost his marbles? - The CP-100 is a generation behind in the state of the art". Perhaps W6OXP is losing his marbles, but there are some good reasons for using the CP-100 as an external modem with the PK232 multi-mode controller. Three of these reasons are discussed below.

1. Using the CP-100 as the external modem allows one to tune 425 hz-shift commercial RTTY/SITOR stations without having to straddle tune which permits better weak signal copy.

2. The CP-100 is already set for 170 hz shift for both transmit and receive, so this setup allows the purist to retain the features of the PK232 whilst running 170 hz shift. (The PK232 modem is more or less fixed at 200 Hz shift RTTY xmit and receive or by switching to wide shift, giving 1000 Hz xmit and receive shifts.)

3. Many CP-100 owners would like to retain their present connection setup between the CP-100 and their transmit/receive gear, especially for HF bands and this allows them to use the PK232 features with or without a computer as the digital "control box" and enjoy the advantages of their current setup with the CP-100.

Both Service Bulletins are dated 2/3/87 and are reprinted in their entirety.

ENABLING THE EXTERNAL MODEM PORT ON THE PK-232

The external modem port on the PK-232 is not connected as it comes from AEA. In order to use the external port three traces on the bottom-side of the circuit board must be cut, and three jumper wires installed. When this operation is finished, the pins on the External Modem connector will perform the following:

Pin 1: Receive Data (TTL-level data from an external modem to the PK-232)

Pin 2: Transmit Data (TTL-level data from the PK-232 to an external modem)

Pin 3: Data Carrier Detect (+5 volts tells the PK232 that the channel is clear and 0 volts tells that a carrier is detected on channel)

Pin 4: Ground

Pin 5: PTT signal from PK-232 +5 volts is present during receive, and 0 volts is present during transmit. The PK-232's PTT circuitry also remains active

Step One: Open the case
Open the PK-232 by removing the six screws that hold the grey top-cover in place.

Step Two: Remove the Circuit board
Remove the six screws that hold the circuit-board in place. Loosen the set-screw on the front-panel Threshold knob and slide the knob off the shaft. With a small wrench or pliers, remove the nut that holds the Threshold potentiometer to the front panel. The circuit board should now be free and remove easily from the PK-232 chassis.

Step Three: Locate JP4, JP5, and JP6 near the external-modem connector (J8) at the rear of the circuit board as shown in Fig. 1.

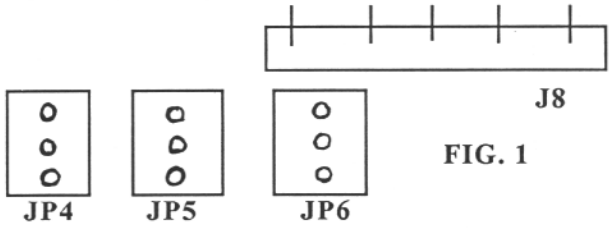


FIG. 1

COMPONENT SIDE OF BOARD

Step Four: Turn the Circuit-board over so that the component side is facing down and again locate JP4,JP5 and JP6. Notice that there are circuit-board traces between the middle connection and the connection towards the front of the PK-232 on each of JP4, JP5, and JP6. Cut each of these traces with a sharp X-acto knife as diagramed in Fig. 2.

Step Five: Install three short jumper wires on the component side of the circuit-board between the middle connection of JP4, JP5, and JP6 and the connection towards the rear of the PK-232 as shown in Fig. 3. The external modem port is now enabled. **(cont. pg. 11)**

(CONNECTIONS cont. from pg. 10)

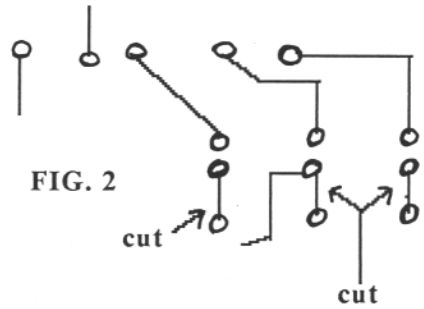


FIG. 2

SOLDER SIDE OF BOARD

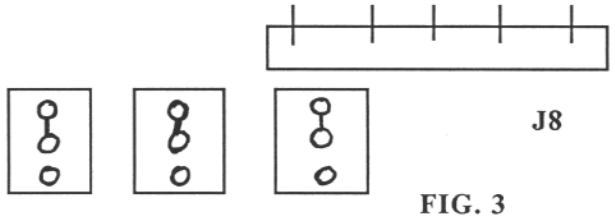


FIG. 3

When the external modem port has been enabled, the internal modem will no longer be used. If internal modem operation is again desired, simply move the jumper wires so that they connect the middle and front-most connection of JP4, JP5, and JP6 instead of the middle and rear-most connection as shown in Fig. 4.

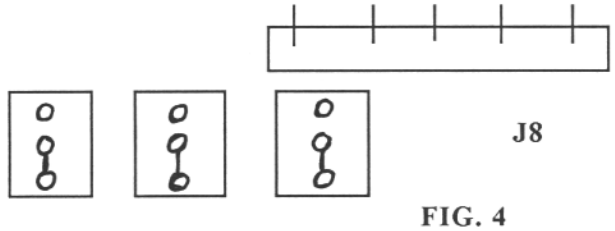


FIG. 4

Step Six: Reassemble the PK232 by reversing the procedures outline in steps one and two.

USING THE CP-100 WITH THE PK-232'S EXTERNAL MODEM PORT

The CP-100 may be used with the PK-232 as an external modem. A minimum of three connections are required between the CP-100 and the external modem port of the PK-232 to allow data to be transferred between the two units.

As a minimum, Pin 5 of the TTL connector (Demod Out) on the rear panel of the CP-100 must be connected to Pin 1 of the External Modem connector on the PK-232. Also pin 2 of the CP-100's TTL connector (TTY in) must be connected to Pin 2 of the PK-232's External Modem connector on the PK-232. Pin 4 of the CP-100's TTL connector (Ground) must also be connected to Pin 4 of the PK-232's External Modem connector.

This minimum configuration imposes some special requirements on the radio interfacing. The audio from the transceiver must be fed to the PK-232 as well as the CP-100 in order to allow the Data Carrier Detect circuit of the PK-232 to function properly. For this to work, JP6 inside the PK-232 must be in the "Internal Modem" position, that is, jumpered from the center connection to the front-most connection. JP4 and JP5 on the other hand must be jumpered from the center connection to the rear-most connection in the PK-232. In this configuration, you must also use the "PTT" and the "CW Key Out" connections of the PK-232 to key the transceiver.

To eliminate the special requirements discussed above, and allow your transceiver to connect only to the CP-100, a few more connections between the CP-100 and the PK-232 will be required. For this operation JP4, JP5, and JP6 inside the PK-232 must ALL be in the "External Modem" position.

Pin 1 from the CP-100's TTL connector may be connected to Pin 5 of the PK-232's External Modem connector to allow the PTT circuit of the CP-100 to be used for keying the transmitter (between transmit and receive).

To allow the CP-100 to be used for CW keying, the Positive "CW Key Out" connection from the PK-232 must attach to Pin 3 of the CP-100's TTL connector.

And finally to use the CP-100's squelch circuit to activate the "Data Carrier Detect" in the PK-232, two resistors and 4.7-volt zener diode must be added to the CP-100 as shown in Fig. 5.

(cont. pg. 12)

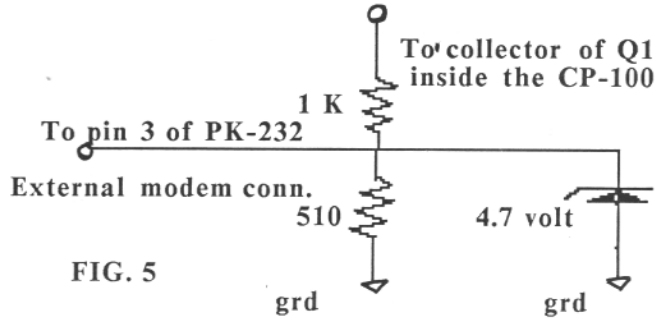


FIG. 5

ADD TO INSIDE OF CP-100 TO PROVIDE DCD TO THE PK-232

(CONNECTIONS cont. from pg. 11)

It is hoped that the above information from AEA is of some value to owners of a CP-100 and who have or are thinking of getting a PK-232. For the rest of us, it should provide a quick and simple example of Systems Integration Engineering.

THE SAGA CONTINUES (TOWARDS INFINITY?)

You readers are probably getting tired of this "Trying to computerize my transceiver" and I will have to admit to being a little weary of it myself. If current progress is any indication, this subject could provide column filler for all of 1988 and we would have to change "saga" to "epic".

Never-the-less, some progress has been made. I have finally obtained, at no small cost, a CT-17 level converter. You saw the picture of it in last month's column so you know there is not much to it. Opening it up revealed even less, as all it contained was a small PC board with a MAX232 IC, 9 capacitors, 1 resistor, 4 rf chokes, 2 diodes and a five-volt regulator. The CT-17 was accompanied by a shielded RS-232 cable, and two miniature coax cables for connecting to various ICOM transceivers. It also came with a very informative instruction manual. This manual provided four individual examples of programs needed for various operations such as reading the current frequency or mode of the transceiver, or setting a new frequency or mode, selecting memory channels, etc. The manual also provided a complete sample program that combines all of the foregoing functions for controlling the transceiver through the computer. The instruction manual stated that the program was written in NEC "N88-BASIC" programming language and was developed on an NEC PC-9800 series computer. I now have this program entered on disk on my IBM PC-compatible computer and while it is ninety-five percent compatible with Microsoft GW-BASIC, that last five percent is still giving me trouble. I have ordered a NEC BASIC programming guide, again at no small cost, with the hope that it will describe the incompatible statements in sufficient detail to permit conversion to Microsoft BASIC. After reading the past few month's columns, you can see I am no expert on BASIC programming languages, but I have a feeling I will know more about it than is desired before this program is working to my satisfaction.

THE BRAPPER BOX

This gadget with the funny name is a great example of someone identifying and filling a need. It is an interface box between a transceiver and a Packet radio TNC (hence the name from the sound of a packet being sent). The interface provides individually adjustable level received-signal audio to the ham shack speaker, and to the TNC audio input. It also provides adjustable transmit audio level from the TNC to the radio's transmit audio connector. The box also contains a PTT relay if you need isolation between the units on the PTT control line. The front panel has a large knob labeled VOLUME (speaker volume), and two smaller knobs labeled SEND and REC for transmit and receive audio level adjustment. The front panel also has a pushbutton labeled TX that allows momentary transmit for SWR or power output testing.

Sure, you can adjust the receive audio level with the transceiver audio control or adjust the transmit audio level with the pot in the back of the TNC but this gadget is so much more convenient. Every Packet radio operator knows how sensitive the TNC is to received audio level and how fussy the transmitter is to proper transmit level (it is very easy to over or under-deviate in the FM mode). This gadget puts all the adjustments right at your finger tips. Electron Processing, Inc., P.O. Box 708, Medford, NY, 11763. Phone is (516) 764-9798 and price class is fifty dollars. Interface cables for "plug in" connection to most rigs are available. Thanks and a tip of the hat to Joe, W6RLL for this gem.

HOW SWIFTLY TIME GOES BY!

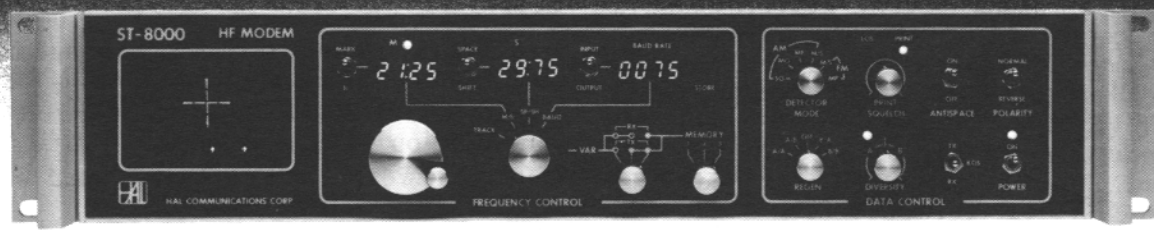
This month begins my second year as a columnist for the RTTY Journal and I hope that this column has been as informative to you, dear reader, as it has been my pleasure to write it. Dale, our editor/publisher has been an inspiration to me and I especially thank him for his suggestions and guidance.

Once again, I invite your letters and cards, your pet circuits and tips, rumors and any suggestions as to content or coverage in this column. Amateur Radio Equipment manufacturers are invited to send us copies of their service bulletins, update announcements and new product announcements. I am sure that Dale will publish these as space and content permit. Many thanks to those who sent in tips and circuits and late-breaking information. To those who sent in queries on connection problems that I was unable to solve or to assist, my apologies and I hope to do better this year.

A very happy and healthful 1988 to each and all of you. Very 73 **de Cole, W6OXP**

Wide Dynamic Range and Low Distortion — The Key to Superior HF Data Communications

- Dynamic Range > 75 dB
- 400 to 4000 Hz
- BW Matched to Baud Rate
- BER < 1×10^{-5} for S / N = 0 dB
- 10 to 1200 Baud
- Linear Phase Filters



ST-8000 HF Modem

Real HF radio teleprinter signals exhibit heavy fading and distortion, requirements that cannot be measured by standard constant amplitude BER and distortion test procedures. In designing the ST-8000, HAL has gone the extra step beyond traditional test and design. Our noise floor is at -65 dBm, not at -30 dBm as on other units, an extra 35 dB gain margin to handle fading. Filters in the ST-8000 are all of linear-phase design to give minimum pulse distortion, not sharp-skirted filters with high phase distortion. All signal processing is done at the input tone frequency; heterodyning is NOT used. This avoids distortion due to frequency conversion or introduced by abnormally high or low filter Q's. Bandwidths of the input, Mark/Space channels, and post-detection filters are all computed and set for the baud rate you select, from 10 to 1200 baud. Other standard features of the ST-8000 include:

- 8 Programmable Memories
- Set frequencies in 1 Hz steps
- Adjustable Print Squelch
- Phase-continuous TX Tones
- Split or Transceive TX/RX
- CRT Tuning Indicator
- RS-232C, MIL-188C, or TTL Data
- 8, 600, or 10K Audio Input
- Signal Regeneration
- Variable Threshold Diversity
- RS-232 Remote Control I/O
- 100-130/200-250 VAC, 44-440 Hz
- AM or FM Signal Processing
- 32 steps of M/S filter BW
- Mark or Space-Only Detection
- Digital Multipath Correction
- FDX or HDX with Echo
- Spectra-Tune and X-Y Display
- Transmitter PTT Relay
- 8 or 600 Ohm Audio Output
- Code and Speed Conversion
- Signal Amplitude Squelch
- Receive Clock Recovery
- 3.5" High Rack Mounting

Write or call for complete ST-8000 specifications.

HAL Communications Corp.
Government Products Division
Post Office Box 365
Urbana, Illinois 61801
(217) 367-7373 TWX 910-245-0784

Roy Gould, KT1N
P O BOX DX
Stow, MA. 01775

DX - NEWS

Happy New Year to all. I hope the holiday season was great for all of you. Well another year gone by and I didn't add greatly to my DXCC totals, but that is mainly due to the fact I didn't operate as much! That will do it. The trip to Galapagos was sure a high point for the year for me. Speaking of HD8, all cards I have thus far received direct have been answered. Have not seen any from the Bureau system yet, but will try to stay ahead of those also.

This month I am going to share with you the details and photos of two RTTY DXpeditions. The recent BV0RY Taiwan effort and Jim's, N3JT effort from San Andres Island, HK0. The Taiwan operation on RTTY was the first ever from there, and I believe Jims' effort was the first from HK0 also. Before we get into these stories, let me share some DX news and letters with you.

OD5NG Lebanon ... Well miracles of miracles, just when I basically have told the RTTY world that we all may as well give up hope of getting a card from this one, my phone rings late one afternoon during Christmas week, and on the other end is WA1ZFS, who is listed as the QSL manager for OD5NG in the W6GO QSL list. Goes on to tell me that OD5NG is indeed real and that he now has cards and logs from 1980 on and will be answering all cards he has on hand. And lo and behold in the mail a few days later OD5NG's card appeared for contacts I had with him in 1984 and 1985. So spread the word, send to WA1ZFS you OD5NG cards with appropriate return postage. How about that!! WA1ZFS, Vinnie Catalano, 21 Brooks Farm Dr., Bristol, RI. 02809

Aruba P40 ... The ARRL awards committee voted "Unanimously" to accept Aruba as a new DXCC country for all contacts dated January 1, 1986 and after. Note the following for submitting cards:
1. Do not submit cards for Aruba credit before April 13, 1988.
2. Before Aruba credit can be given to those who ALREADY have credit for the Netherland Antilles, a Netherland Antilles card must be RESUBMITTED. Therefore, along with the creditable Aruba card, please also submit any card confirming contact with Curacao or Bonaire, or any Aruba card dated December 31, 1985 or earlier!!

VK2AGE mailbox ... There was some problem with this Mailbox system going off the air due to some technicality with its operating procedures regarding third party traffic. But now all seems to be straightened out and we should be able to share that RTTY info from them with you soon. There have been some messages going around the world for people to write the VK PTT in support of the Mailbox, but the word now is to leave things alone and let the VK gang work this out themselves. So if you were thinking of sending a letter, DON'T, but thanks for the support.

Grenada J37ZY ... Has been active and QSL to NS8G CBA

San Andres Island HK0BKK ... Pacho has been putting to use the gear Jim, N3JT left behind.

Tonga, A35PP ... continues to be active around 0800 UTC on 14.093 and again at 2100 UTC

Senegal, JW6JX ... has been reported on 14.088 at 2215 UTC, QSL to F6FNU

Marinique, FM5WE ... has also been reported active around 14.084 at 2130 UTC

Ascenscion Island, ZD7 ... rumor has it that this spot will be active on the keys sometime in late January or February

Lesotho, 708DX ... word has it that he has RTTY gear, but no reports here as of yet. Anyone worked him??

Nepal, 9N5YDY ... It was reported to me that this group was heard in JA land very active on December 25. Nothing heard stateside though. Oh well, maybe next year

No. Sudan, 6T2MG ... has been copied around 1600 - 1700 UTC. he does not like pile ups and prefers to answer CQ's. QSL to: MALIK, P.O. BOX 49, Khartoum, Northern Sudan

Pakistan, AP2SQ ... has also been active around 1330 - 1430 UTC on 14.085

Liberia, 5L2MS and 5L2GA ... have been worked on 14.092 at 2100 hours. They stayed on for about and hour and a half working many on December 30th

Ogasawara, JD1 ... 7J1ADX appeared as promised. He worked December 1 on 14.084 at 2330 UTC and jay, KE7PN reports working him the last week in December

Zone 23 BY9GA ... was reported recently on RTTY. But I do not have a date or time, sorry. Will get more info on this one.

Fernando de Noronha Island, PY0FF ... Andre has been active and really seems to enjoy working RTTY. Evidently Karl, PS7KM and the Natal DX Group has him all set on the keys. He seems to handle the Pileups quite well. QSL: Andre C. Campaio, Box 1, Fernando de Noronha Island, 53990 Brazil. **(cont. pg. 15)**

(DX NEWS cont. from pg. 14)

Z21FB ... George, W1DA passes along the QSL info for Howard. QSL to: Howard Benjamin, P.O. BOX 1215, Harare. George also describes his "never say die" effort to obtain the info. Next month if room permits I will share that with you, pretty interesting.

No. Cooks ... Warwick, ZL1WL is stationed now in the No. Cooks, in the past he has been on RTTY from his other stations so hopefully we may see him on the keys. Any reports would be appreciated.

ZL9 ... ZL1AMO may be taking RTTY gear on his trip there from February 6 to 20th. Maybe some of letters that were sent worked

Navasa Island, KP1 ... N2EDF and K2SG plan to be active all bands all modes including RTTY from February 10 - 18. QSL their home calls

Sri Lanka, 4S7 ... DK1ZN and DJ0CP will be active December 28 to January 28 as 4S7YLR. There also has been activity of late from JA8RUX/4S7 and DF9FA/4S7

Also if there is room, Dale will try to print some photos of TG9VT and his operation in this issue, including Jules, W2JGR operating during the RTTY contest. The photos came in to late to make last months issue.

And one other nice letter in the old mailbag from Ted, WA8FLF, who comments on what a great deal of enjoyment he is getting out of RTTY and the RTTY Journal. He enclosed a print-out of a QSO he had with Dima, UT5RP, Ros, I8AA, Uli, DK3CU and himself. A real thrill he says as print was superb and the friendship great.

DXERS of the MONTH
Toru, JG1RVN and the BV0RY group

Toru sent me a short letter and photos of the recent Taiwan RTTY DXpedition. He notes that QSL cards for the effort will be out the end of January. NOTE: Last month's issue had a mistake in QSL info for this one. Should be: JG1RVN not JR1RVN!! They worked a total of 498 stations. Conditions were not very good and they only worked a few USA stations on the long path. Pictures this page and front cover.

Equipment used:
TS930S, 30L1 (200 watts), TONO 90002, A 203BA 130 feet up, an HB9CV, and a dipole on 10M

Toru thanks Tim Chen, and many members of the China Radio Association including, BV2DA, BV2FA and SWLer Mr. Wu for all the help. I have sent Dale many photos received from Toru and space permitting he will print as many as possible.

The following chart shows the breakdown of QSO's

Date	Asia	N.A.	OC	EU	AF	S.A.	Total
27 Nov	53	1	22	27	1	3	107
28 Nov	55	36	3	24	2	8	128
29 Nov	52	41	19	50	0	6	168
30 Nov	20	21	12	37	1	4	95
Totals	180	99	56	138	4	21	498

Tim, BV2A/B has been worked since Toru and the group left and reports he likes RTTY! Thanks for the effort Toru, truly an historic event.

RTTY on San Andres Island, HK0
Jim Talens, N3JT

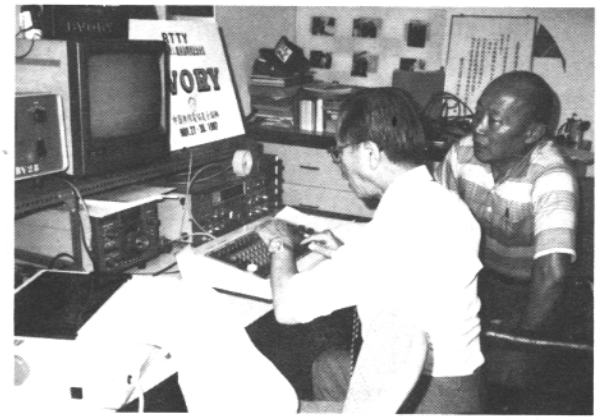
Jim sent me a nice write-up on how RTTY came to be on San Andres. So I will let him tell you in his own words. Hopefully the photos will arrive in time so we can get some of those in also.

STOP HERE - READ JIM'S STORY PG. 9

QSL for this operation to either W2GKH, who is Jim's QSL manager or to Jim's CBA which may be a little quicker. Jim also notes that through it all he also managed 6,000 QSO's on all modes, 4 phone patches, one sunburn, and 11,000 mosquito bites and of course a new friend in Pacho, HK0BKK

Well that is it for this month, we're working away on the contest logs and should have the results in the March issue of CQ and the Journal. Best to all for the New Year. Thanks and a tip of the hat to, N3JT, JG1RVN, KB2VO, W1DA, TG9VT, VK2AGE, KA7IVA, VK2SG, WA3ZKZ, W5HEZ, WA8FLF, NM2I and the DX Bulletin. Tell your RTTY friends you read about in the Journal. 73

de Roy, KT1N



Taiwan RTTY DXpedition - First QSO
BV2A/B, Tim at keyboard - JA1ACB, Gin
November 27 0530 UTC

Hal Blegen, WA7EGA
12910 E. Broadway
Spokane, WA. 99216

CONTESTING

CATCH UP TIME

I always view the dry spell between the November WAE and the BARTG in March with mixed emotions. People refer to this period by various euphemisms like "The Holiday Season" or "Wintertime". They say that its time to "Catch up" with things around the house. Things like cleaning the dirty coffee cups out of the corners of the shack. Personally, I can debunk the rumor spread by the less experienced who claim that mold will not grow on stagnant coffee. Mostly, I call this time of year, "Boring".

My December phone bill reminded me the attempts to reach the WAE rules committee. Although I left my phone number after the beep, since I sprekken no doich, the recording may have only been telling me the time or when the stores opened, "Gazornenplou flintbitte Dresden du shokenstifer...BEEP," the sexy voice told me. "Uhhh, this is WA7EGA and I don't much like your rules so please call me in Spokane, Washington... here's the number..." It was yet another case of unrequited love.

Next year, with luck, we will have the RTTY Roundup contest scheduled into January (1989) to keep the cobwebs off the keyboard but this year, by CQWW-CW time, I was bored. Besides, I didn't want the Lutheran Church across the street to have time enough to get used to any non-RF-proof electronics that they may have sneaked into service for the Christmas season. One year they assembled a nativity in their parking lot. It had hidden speakers that played non-stop Silent Night for all the holiday revelers who drove past the church at 40 MPH with their windows rolled up and their heaters blaring. The creative sounds they got between the time I fired up on SSB for my MARS net and the point when they shut off the tape probably doomed me to extra million years or so of shoveling coal so I certainly didn't want to give them any false hopes this year by staying off the air from November to March.

RTTY is a sport for gentlemen. I was reminded of this repeatedly over the 40-hour period I spent on CW trying to smuggle my call into Africa past a hoard of folks who run so much power that if any five sent a dash at exactly the same time, they would dim the lights of the entire eastern sea-board. They all have little-bitty short callsigns that they can send six times while I am still struggling through **WA7EGA**. The DX never seems to look at the edges of the pileup for signals of modest power like mine which lowers the reservoir behind Grand Coulee Dam by mere inches per hour.

CW contesting has so many quaint little rituals like setting the alarm clock to give you 3 hours sleep and then putting it in a coffee can to make it harder to shut off. By the time the water running in the shower begins to sound like a CW pileup it is apparent that RTTY is definitely a more civilized way to contest!

BAUDOT CODE

After WAE, I got a note from **Ted, WA8FLF** who talked about the weird exchanges he kept getting from some of the Europeans. He sent some examples, "AAATUOAAATUOAAATUO". Modern Keyboards have four rows of keys with numbers across the top in lower case. Baudot doesn't talk that way. Getting stuck in the wrong case on RTTY gives you strings of numbers or letters which don't look anything like your keyboard.

This can happen for several reasons. Many of the European stations are still running mechanical teletype machines. They hit a figures (shift-up) key and their machine stays in upper case. They send 579 579 579 but if you have DOWNSHIFT ON SPACE selected for your software, you get 579 TUO TUO. If they send the rest of the exchange without sending another figures character, your copy going to need some special attention.

Some of the stations using computers send a series of letters (downshift) when ever their keyboard buffer runs dry (diddle characters). This is supposed to improve the copy since keeping the shift going at machine speed improves the print from most TU's. But if he trying to send a string of numbers and typing speed is less than 60 WPM, it will put a downshift between each number. This increases the chance of putting the receiving station into lower case and putting garbage on his screen. Selecting WORD OUTPUT or even LINE OUTPUT on transmit will help.

(cont. next pg.)

(CONTESTING cont. from pg. 16)

In an article he wrote for Radio Sporting, ON4UN says that using buffers is the preferred way to run RTTY contests. He sends all exchange numbers separated by a dash instead of a space to keep everything in uppercase. He also recommends sending the entire exchange (001-599-15) at one time, repeating that group rather than each separate component (001-001-001 599-599-599 15- 15-15). His theory is that it decreases the chance that one whole part of the exchange will be lost thus reducing the odds of having to ask for time-consuming repeats. All of this may improve your chances of getting a quick, accurate exchange across but the only real cure for the upper/lower case problem is the following chart to be used by the receiving station:

UPPER CASE - ? : $ 3 ! & 8 ' ( ) . , 9 0 1 4 5 7 ; 2 / 6 "
LOWER CASE A B C D E F G H I J K L M N O P Q R S T U V W X Y Z **(see bottom of page)**

Any repeated sequence is probably correct copy. TOOAAATOOAAATOO will now translate to a perfectly good 599---599---599.

VOLTA RESULTS

For the first time that I can remember, I received early VOLTA results! Last year, mostly due to lack of both contest results and pre-contest publicity, North America was not well represented. **Geo, KB2VO/4** was 1st in the U.S.A. and 7th overall with 4,403,974 points and a tip of the hat to him for and excellent effort. **W7MI** turned in a very credible score of 2,014,485 points for 9th place. **W2KHQ's** 14th place finish was the only other US station listed for the single operator, all band class. In the single-band class **VE2QO** turned 33 contacts on 20 meters into 553 QSO points and a final score of 291,984 to move into 9th place ahead of **SM5AAY** who had 7 more QSO's and 3 more multipliers but with fewer DX contacts. **WA5KBH** finished 15th. There were no North American multi-op entries (looks like a good class to enter to win North America!!).

With timely results and publicity, VOLTA has an excellent chance of being very well supported in 1988 and if you have never run a contest using the ZONE chart to calculate QSO points, you are in for a real treat. It is the ONLY way I have seen to give every station a fair break in a DX contest. A QSO can be worth as few as two or as many as 50 points depending on the distance between zones on each end of the keyboard. The way the contest is scored, the QSO points become the deciding factor and you can't win it from Europe just by working your fellow Europeans even if they are multipliers! I'll have more on VOLTA as the date approaches but don't make any other plans for May 15th. (It's a quick, 24- hour contest.)

TOP SCORES

MULTI OP
LZ2KIM 20,792,005
SM6AAK 7,182,720
OK3KGI 1,873,044
IK4BWC 848,400
UZ0FWI 147,136

SINGLE OP ALL BAND
I2OLW 60,353,400
OK2FD 42,207,900
G4SKA 26,233,284
SM5FUG 11,185,692
HB9HK 7,767,200

SINGLE BAND
I2BAY 6,035,796
IO2KYM 4,1O7,444
G0AZ 3,632,600
EA5FKI 3,557,400
AP2BCH 1,315,237

SOFTWARE

I have finally found some software, other than what Jay and I have patched together, which runs contest logging well enough for the serious contestor. Next month I will discuss not only logging programs but some of the other software which I have seen recently that might give the user a bit of an edge in a contest. Meanwhile, before the the in-laws get you booked up for the rest of the year painting the house or you plan a fishing trip that you will regret forever, promise yourself some fun and get your bid in for these dates:

March 19-20	**BARTG**
MAY 14-15	**VOLTA**
JUNE 4-5	**ANARTS**
AUGUST 20-21	**SARTG**
SEPTEMBER 24-25	**CQ-WW**

Hope your holidays were happy ones. See you next month. **de Hal, WA7EGA**

UPPER CASE - ? : $ 3 ! & 8 ' ( ) . , 9 0 1 4 5 7 ; 2 / 6 "
LOWER CASE A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

CAN WE COMPARE AMTOR WITH HF PACKET

Submitted by:
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Some will say this is an apples-oranges comparison, but in both AMTOR and Packet we are sending digital data over HF radio circuits via a tone pair. AMTOR uses it's own code and Packet uses ASCII. The AMTOR/Packet tones are almost identical but the baud rate is different. For the sake of discussion lets assume that we can make a comparison.

In 1983, 1985 and 1987 Ken Moore, W6WIS and myself operated the shore stations for the Trans Pacific Yacht Race. Larry Somers, KB6FW operated the station aboard the race escort vessel. The message traffic on each daily contact was about one and half pages long, and we did need accurate copy as the traffic consisted of the name of each yacht plus a full line of numbers, indicating such things as longitude, latitude, distance to destination, etc.

The transmitted data on AMTOR is of course 100 baud while on Packet it is 300 baud. Under perfect conditions the data output on AMTOR is 50 baud, while on Packet it is 150 baud. Under non-perfect conditions one hit on AMTOR equates to a loss of 3 characters, while one hit on Packet represents a loss of 72 characters (assuming a packet length of 72 characters). Discounting the fact there are fewer bits in an AMTOR character than in an ASCII character, we can estimate that the message traffic on Packet would be three times as fast as on AMTOR. (67 WPM vs 150 WPM).

Under poor signal conditions, if we had one hit per line on a Packet transmission, we would end up with a disconnect. However with these same conditions using AMTOR, we would get the traffic but each line takes 1.35 seconds longer to complete. So much for the theory now let's take a look at our actual tests.

At the Los Angeles station (W6WIS) and at the Honolulu station (AH6D) the output to the antenna was adjusted to 50 watts. This more or less simulates the allowable power you could run while using equipment such as the TS430 on RTTY or AMTOR Mode B. We then transmitted the identical race position message in both directions (LAX to HNL, and NHL to LAX). W6WIS received one error on the first AMTOR transmission, enough errors on RTTY that making corrections would have been impractical, and no copy on Packet due to disconnects. A test run was then made at 100 watt power settings. The AMTOR run had no errors, the RTTY transmission had around five errors that were correctable, and again no copy on Packet due to disconnects. We then started increasing the power to the antenna and found that at 500 watts we could get a solid transmission copy with both Packet and RTTY. We found that Packet, at this power level, was indeed about three times as fast as AMTOR.

Since this test was a one-shot experiment, both Ken and I agreed that our curiosity had been satisfied. In discussing this test with others the suggestion was made that the results of our tests be published.

We concluded that for the average Ham running a typical HF transceiver at the 50 to 100 watt power level, AMTOR is the most efficient method of digital data transmission, especially if sending message traffic. Conversation wise, AMTOR outpoints Packet in that you are in direct contact with the other station at all times (the receive station can take control at any time). Due to the error-free characteristics of AMTOR, AMTOR Mode A is our first choice under poor propagation conditions with AMTOR Mode B as a second choice. RTTY and Packet fall in line next based on the quality of the particular HF channel involved.

Please note that the foregoing does not apply to VHF Packet. On VHF all of the advantages accrue to Packet! These comments are really directed to the average Ham using a typical 100 watt transceiver (no linear amp) on HF frequencies. Your comments are welcome, either write to me direct or through the Journal.

de Paul, AH6D

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