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ARRL BOD Meets ... Supports Semi-Automatic

See Hits & Misses

SS Guadalupe

Ship radio operator C. Brown, N4SO submits this picture of where he works. Ship statistics: Named after a river in Texas, roughly 45 to 50 million cargo value, owed by Sabine Trans. Co., GPS is used for navigation, callsign is KSHF, length 683 feet and 33 foot deep draft, normal speed is 13 to 14 knots, chartered to Phillips 66 Co., SITOR gear uses WLO radio, Ham radio gear is a TS-520 that is used with diopoles and a vertical antenna. Main communications is via MARISAT satellite service. CW is used for backup. Other gear consists of: R-71A, R-4C, two PK-232s, plus satelitte backup. C. Brown is a regular contributor to the RDJ.

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RTTY DIGITAL JOURNAL

Dale S. Sinner, W6IWO
Owner, Publisher, Editor

All Correspondence:
1904 Carolton Lane
Fallbrook, CA
92028-4614

Phone - FAX
(619) 723-3838

STAFF MEMBERS

Mike Candy, KI7FX . . . . . Hardware
Jules Freundlich, W2JGR . . . . . DX News
Jim Jennings, KE5HE . . . . . The Link
Jim Mortensen, N2HOS . . . . . Software
Richard Lawton, N6GG . . . . . Contesting
Richard Polivka, N6NKO . . . . . Packet
Phil Sussman, KB8LUJ . . . . . PacTor
Besty Townsend, WV7Y . . . . QSL Routing
Jay Townsend, WS7I . . . . . Clover
Dick Uhrmacher, K0VKH . . . . . MSOs
Roy Gould, KT1N . CQ/RTTY Contest Mgr.

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HITS & MISSES

Dale Sinner, W6IWO
1904 Carolton Lane
Fallbrook, CA 92028

BOD Meets in July

The BOD at their July meeting agreed to support semi-automatic operation on the HF bands below 30 MHz. Three members of the DC met with a number of Directors the evening before this crucial meeting and reviewed the DC recommendations and then answered questions of those in attendance. Those representing the DC were David Speltz, KB1PJ (Chairman), Craig McCartney, WA8DRZ, and Paul Newland, AD7I. The motion to the BOD was handled by the DC liaison person, Mary Lou Brown, NM7N. Mary Lou did an outstanding job making all the necessary revisions that were needed to satisfy the BOD.

Basically, the League does not wish to modify it's present petition (RM-8218) and will therefore support the ADRS petition (RM-8280) which requests that semi-automatic operation be allowed. The other parts of the motion address the methods used by operators in semi-automatic mode and that the transmission bandwidth be limited to 500Hz. In other action the BOD also directed the DC along with all interested parties to develop operating guidelines for the proper and efficient use of semi-automatic stations.

At this writing the League has commented to the FCC on the ADRS petition (RM-8280), however, according to a spokesperson for ADRS the comments were less than satisfactory and un-complimentary to toward the ADRS organization. This occurred after the ADRS endorsed the League's earlier petition (RM-8218). ADRS had hoped for a harmonious relationship with the League in this matter but now feels they have not been given their due respect.

Since the comment period has expired on both of these petitions there is not much the rank and file can add. However, all those who did comment on these two petitions are to be thanked for their efforts. In addition, interested parties should download the comments and late breaking news from the ADRS BBS (212-698-2102). Unfortunately, the RDJ publication schedule has precluded me from keeping everyone up to date on all the fast breaking developments concerning these two important petitions. But, I'll keep trying.

TEXAS HAMCON

In June the XYL and I attended the HAMCON convention in Arlington, TX. This convention attracted a large group and our own Jim Jennings, KE5HE, (The Link) gave an outstanding presentation of Clover to a packed room of digital enthusiasts. Jim used a slide presentation similar the one used at Dayton earlier this year. His session ran over and there were many gathered around Jim asking questions, long after he left the room. Of note, it should be mentioned that Jim is also the "founding Director" of the ADRS. (See picture page 8)

I enjoyed this convention as a regular attendant and while there I did meet many of our subscribers for an eyeball QSO. I also had a chance to have lunch with both Jim Jennings, KE5HE, and also Jim Mortensen, N2HOS, who writes our Software column. If you live anywhere near this Texas location, I suggest you make a attempt to attend next year. You won't be disappointed.

PACTOR POPULAR?

If you have been listening on the bands of late, then you have noticed the sudden increase in the use of PACTOR. Unlike most new toys and improvements we Hams have received over the years, I have never seen such excitement on the bands. (Except maybe when SSB was first introduced.) PACTOR is everywhere and I'm excited about this but with some reservations. It seems that some operators in their enthusiasm, have slipped some in respecting the other operating modes. It is important that we all observe what semblance of a "Gentlemen's Agreement" bandplan we currently have. Please try to keep PACTOR and other "burst modes" below .080 on the bands. If it is to crowded when and where you wish to operate, may I suggest to check out the WARC bands. I have been listening there and find plenty of room for more operators. If you need an antenna for these bands, there are many types available from a multitude of sources at prices as reasonable as your PACTOR upgrade.

Continued on page 25

SOFTWARE

Jim Mortensen, N2HOS
P.O. BOX 328
Indian Rocks Bch, FL 34635

THREE DIMENSIONS-Part I

All software directs the computer to accomplish a specific task, if the correct command is issued at the keyboard. Most programs fulfill that mission, but we often find the productivity gain anticipated from the use of the software scarcely exceeds the efficiency loss inherent in the program's design. Or find the command set onerous and unworkable. Unless we must use the software to perform a necessary function, it drifts to the unused and dusty portion of our hard disk. On occasion, given good fortune, we find a piece of software that accomplishes its chore with a semblance of ease and grace. Once learned, we find ourselves using it more frequently and in ways never planned. In a rare stroke of good luck, perhaps every few years or so, we discover something even better, something that transforms us. We call it exceptional software, exceptional because it leaps beyond the mere execution of its appointed agenda, and unleashes the power of the hardware that surrounds it. The interface virtually eliminates the need for learning and, thus, seemingly elevates our skills, then leads us into new areas thought to be well beyond our capability. Exceptional software--EXPRESS--a tour de force by TY1PS and my candidate for digital software of this or almost any other year.

I could describe EXPRESS as a terminal program for the PCI 4000 Clover board. True ,but is a bit like describing an FT1000D as a unit capable of transmitting and receiving 5 WPM in CW. We must look beyond the basic description and attempt to measure the program's total impact. And we will. But for now be assured the troika created here--the relationship between Clover and Express and the user--is a five hundred-foot home run, a perfect blend that changes forever the way you look at and use your computer and HF equipment. Try it and explore all three dimensions of communication--text, graphics and sound. One taste and you will never look back, for these changes are so dramatic as to make digital communication the only radically new and exciting game in town.

Clover has been widely publicized and reviewed and we won't add to the thousands of technical and promotional words previously devoted to the subject. For the most part, however, all the reviewers looked through the wrong end of the telescope. The bulk of the material concludes erroneously that Clover is solely the tool of the high-volume traffic handler, the station in the business of pushing hundreds of messages on their way each day. Its use by the Winlink network is sufficient testimony to its capabilities in that regard. Jay, WS7I, made news suggesting that Clover was a slick conversational mode as well. No one had thought much about it prior to his comment in the last issue of the Journal. Though there is no flood of QSO's on the air yet, they will surely come as the hardware finds its way into additional computers around the world.

There is more here, much more. I viewed Clover in this conventional way until I walked into the Hal booth and sat down at one of the computers. In all honesty, suffering acutely from the Dayton syndrome I grabbed the chair because I could not continue to stand a moment longer, and it was the only empty seat in sight. After the first few seconds of sheer pleasure from the shift in gravitational forces, I glanced up and saw the Express interface. Even in its early form, even before Peter TY1PS whispered science-fiction tales in my ear, even I saw potential for solving the radio "blahs" that infect us all. Little did I know! I convinced myself. The Hal folk accepted my credit card number, shipped Clover, the hardware side of the equation that filled my summer with countless hours of experimentation and pleasure.

Peter TY1PS kept me up past MY bedtime despite his five-hour headstart. He provided the genius and stamina leading to the work of art we now call Express 2.0. We linked at 2200Z for a three to five hour marathons several times a week! I took leave during the dinner hour. He often collapsed in bed before we were through, but the data transfer was completed nonetheless. And despite conditions that averaged marginal to poor, we rarely failed to make the link and subsequent exchanges. While comments on the DX Cluster suggested the bands were dead and buried, we pushed data back and forth on bands so quiet we could hear the pins drop. Much of the early summer was spent on moving the final version of Scanner (now complete as V 2.13) across the Atlantic. Then the fun began and Express and its three dimensions became the subject of our daily link and the vehicle for the link. And the age of the High Density QSO was upon us.

REQUIREMENTS

State-of-the-art implementation of HDQ technology demands a significant hardware lineup. Impressive things can happen without each item listed (and some things may be borrowed or hired), but come as close as your budget allows. Remember, everything listed here, except the computer, costs far less than a first class amplifier. Scratch the amplifier off your wish list ... you won't need it. Sell the one you have, then invest in the pleasure of pure communication.

The recipe for **HDQ.** First, have three empty slots in a computer that is equal to or better than a 386/25 (speed is not critical) with 4 megabytes of RAM, running Windows 3.1. Add one Clover board. Test the PCI-4000 and familiarize yourself with its basic operation and the supplied software. Add a video card delivering 32K colors on a 480X640 screen. Learn how to change video drivers via Windows Setup because, although you may wish to view graphics in the hi-color mode, it may be best to switch back to your standard screen for normal use. Add an entry level sound card. The original Sound Blaster or its equivalent is fine. Then, buy or locate some method of scanning both black-and-white and color images into your computer. A flat bed scanner is the best and most expensive but there are many other options. Some computer service outlets or copy shops will scan your material to disk for a modest fee. Add an improved Paint program. PaintShopPro, a popular shareware program, is perfect for this use and is far superior to the one included in Windows. Finally, get a copy of Express from the ADRS (details later), find a healthy partner and get ready to C O M M U N I C A T E!

THE SUMMER OF '93

In the last issue of the Journal I bemoaned our inability to use the potential of our new modes. I belittled the classic one hundred word QSO. I challenged keyboarders around the world, and myself, to create new ways of using the narrow bandwidth and high throughput now available to us. Well, we climbed that

mountain (or at least arrived at the halfway mark) much sooner than I had thought possible. And did it with a mode most consider unsuitable to the task! **HDQ** made routine the real time exchange of three-dimensional personal information, enhancing the sense of friendship we strive to develop in this hobby. Three dimensions ... word, picture and voice! **HDQ** reinvents the way you practice this hobby, refreshes your interest, brings others back into active use of the bands and draws new talent into the digital world.

There are tradeoffs besides those included in the budget considerations. If you are only interested in DX-ing, beware. This approach might take many years to even find the first 100 countries! Then again, you might be the only one who tries it! If chasing prefixes is your game, forget it. Same with counties. If your interest centers on any activity that requires huge numbers of contacts, this mode is not for you. This is the dawning of the three-hour-three-dimensional contact, the use of technology to learn more about your counterpart at the other end of the HF skip. This is "one-a-day" brand hamming, and it is radio as it ought to be, or so it seems to me. It makes slow scan TV look as old fashioned as the daguerreotype, SSB as inadequate as signal flags and RTTY graphics as primitive as the yellow pad and pencil.

Diary: Clover up and running on 11 May. Loaded the Express version picked up at Dayton. Warren, W2NRE, and I linked. I sent him a Word Perfect file via Express. I compressed the file in advance only to discover that Express takes care of all of that. On 12 May I discovered in my first link with Peter, TY1PS, that Express had a bug or two in the LEADDLL.DLL. On 14 May the revised file came to me for distribution to all hands. This huge file passed with no problem. It was then I discovered the first piece of magic. Both parties can CHAT while the file transfers in the background! Of course it slows throughput a bit, but it offers much in return. Everything from instructions on installing the new file to family news and future plans flashed back and forth. 540K in files moved that day!

15 May. Jacques, 9X5LJ, called me after I had tried to link with TY1PS and we had a QSO despite terrible conditions. Peter in Nigeria. 16 and 17 May moved the final version of the DLL file and new version of Express. Now, even if the link is cut in the middle of the transfer, the next link will pick it up the exact byte count. On 18 May moved more housekeeping files and at one point were moving 2.5KB per minute on five watts, and that on a bad band. Linked until 0400 Benin time!

22 May, a historic day. The band conditions--noisy, noisy, noisy and weak. But the world's first transatlantic Cloverized photos arrived on these shores. I didn't realize how perfect they were until several days later when I installed the new VGA card. Three attempts were required to accomplish the successful transfer. Twice the files existed but were empty. Peter fixed the bug on the fly while we switched to Winlink to move several pieces of traffic for ZS5S! Drive in debugging has arrived. Fixed and the pix moved with no delay.

Stop and look at some pictures we moved back and forth. The quality of the "**World's First,**" photo is not apparent here. Keep in mind that is a box camera negative and several decades old. I wish you could see it on my 65K color computer screen since it probably is better than the original. "**Warren**" is Peter's photograph of the photograph I sent him. Despite the quality loss inherent in taking pictures of a computer screen and the conversion from color to gray scale, the picture is remarkably close to the original. "**Lem**" is a well-traveled photo. I downloaded it from a BBS, scanned it, sent it to Peter. He photographed it and returned it to me. Unlike some wines it travels well!

Keep in mind that in a program like PaintShopPro, the images can be manipulated extensively. Size, contrast, brightness, color balance, conversion to gray--all can be accomplished. Learning time is minimal and the results rewarding, so tinker with the images until you find exactly the look you want. Most scanning software has many of the same options and, since the scanners seem to darken the graphic as it moves it into your computer, do some work there as well.

Diary: By 28 May we were experimenting with compression rates and resulting tradeoffs. Compressing one picture 60 points on a 255-point scale doubled the speed of the 30 point picture, but halved the quality. I learned my first serious lesson on VGA drivers on 29 May. I ran Setup for Windows, clicked Options to change the driver, selected a 32K option and, according to Windows, installed it. A blank screen rewarded my efforts. Several more attempts delivered the same result. Moral, if your VGA card has a 256-color limit and is therefore a mere kitten, don't waste time trying to make a tiger out of it. Order a new board and ignore what Windows says it can do for you! Ordering the board direct from the factory as recommended by the first-rate IBM support 800 number is a story for later.

More the same day. With SFI of 98 and A index of 14 we moved a 300K file in one hour. The last of the file size errors ran today. In one small file I received 4888 bytes instead of the 4757 sent. Corrected that day and never again a problem.

2 June saw the newest version of Express arrive, 395K. Contains the first Baud-rate meter and other cosmetic improvements as well as bug extinction. On my side, discovered that GIF files won't move without translation. Downloaded **VPIC**, shareware file conversion-viewing program. It changes any file to any type, runs slide shows of graphic files, etc. Very worthwhile. Converted several NASA space shots to BMP for transmission. Today ran up to 700 baud on 15 meters, the very quiet band, though the A index was up to 30. The key to speed is the S/N ratio (signal to noise) and Phase. Both show constantly on the Express screen. Moved 500K in one hour today, even with overhead represented by all the chatting.

Peter in 5V-land until June 11, at which point I had my new VGA card installed. Wow! The final version of Scanner sent over today. Only the Help files remain to be updated. 12 June, talked to Peter by phone again. A good client gave me the use of an international credit card for the month. His company had signed a long term contract for long distance and got a month of free calls anywhere. Hi!

13 June, SFI 87/12/5. Couldn't hold a link, the first time. My new scanner arrived and installed without a hitch. Well, one hitch. Tried to scan at 600 DPI. Kept getting "out of memory" message. Seems we scan at 65-75 DPI to get these spectacular results. Scanning at 600 requires a gigabyte of ram!

17 June passed a 450K file (pix of Gen) in 45 minutes at 1200 bauds at the peak. Then, a pix of me. Same size, but transferred in less than 15 minutes! Why? Only because lack of complex detail in picture. Interesting lesson. Neutral backgrounds compress at a much higher level.

By 20 June we were playing games--the Papaya World Cup Match. I would send a pix. Peter would have 15 seconds to guess location. He didn't miss one. Nor did I until he sent a picture of a restaurant in a small village in China! Fortunately for him, he had to take his beam down. I was ready to blow him away with pix of Alzada, MT! I'll get him next time.

30 June. Antenna back up. Peter blamed delay on heavy rain and ask for the 800 number for ordering Noah's Ark. More

pix back and forth. Everything ran at 12-1300 baud today. Despite compression, the figure is equal to 1200 baud land line link. They keep improving. Also received on 2 July custom modem BBS scriptfile for Prowin, to be used by the ADRS bulletin board that will soon be running.

3 July. Terrible bands. Finally gave up. 4 July good condx and I passed over two big pix. And, yes, Peter missed the second one. He guessed Yosemite not Yellowstone. Hi! One for the home team.

8 July a big package arrived from TY. I was home five minutes between an all day meeting and a fast trip to the airport. Among the goodies were a stack of photographs ... pictures of the photos I had sent him. The quality was unbelievable. They blew me away and somehow proved the whole experiment! A snapshot in the hand is worth two on the screen for sure. He shot five rolls of film trying to find the correct exposure. (Use five seconds.)

11 July. Both of us back from a busy business schedule. Back to serious things. Great pix moving both ways. 12 July started well but fell apart. Worst QRM ever. CW, Pactor, Amtor, everybody calling right on top of us! **LISTEN FIRST!**

13 July. Almost 1.2 megs back and forth. We experimented with notching and filtering today. Since rigs are the same on both ends, that's easy! Notched out the careless CW (or intentional) and throughput climbed from 475 baud, in gradual steps, to 1100, then 1300. As always, hold the ALC way down when using Clover. We turned AGC off, put in the 2.0 Khz filter instead of the 2.4 and squeezed that even further. Big improvement. Testing now dithered images for better printing in 300 DPI laser printers. Much less of the quality is lost in switching from color to B&W. Conditions: 87/8/2!

Next month we will take an in-depth look at the software and how it operates. Peter has written Express in Visual Basic for Windows 3.1 and taken full advantage of the merits of VB. If all works as planned, there will be many screen captures that will give the look and feel of the program elements. And we will have an update on its progress and availability.

SUMMER NOTES

There are two or three items of interest that can't wait for a later issue. The first, DOS 6.0. This is a very worthwhile addition. Installation is a breeze. MEMMAKER, except for the very few, is the perfect answer to memory management problems. Type it at the DOS prompt and it evaluates the system and memory, alters the Config.SYS and Autoexec.BAT and then tells you about how much new memory it has squeezed out of your configuration. Strongly recommended. DEFRAG is good medicine for your hard disk when used regularly. MOVE is a long overdue file utility that will save lots of time. DBLSPACE is a winner. Type the word and double your hard drive! It is almost that simple.

Two caveats about DBLSPACE. First, make certain that you have removed all the TSR's that are normally launched when your computer boots up. DOS tells you to do it at least twice. They mean it for the only trouble reported with this compression scheme is what happens to those who fail to follow the directions. Second, partition your disk. There is no real uncompress command in DOS 6. Maybe later, I have been told. But for now, in case of trouble, I want an escape route. Thus I use a "D" drive and leave it uncompressed. I can always take data off the compressed drive, move it to the "D" drive and uncompress in the process. The drive need not be large ... just enough to handle your largest program .. but some day you might be very happy to have it.

***

PC-ANYWHERE performs as advertised. If you need to control your computer from a remote location (and think for a moment about the ramifications of that thought) PC-A does it. The screen on the base computer is an exact replica of the remote screen even though it is running Win3.1. Any computing task can be ordered remotely up to and including rebooting. It is a fascinating idea, and maybe Warren, W2NRE, will write up his summer experiences later this year.

***

Version 2.1 of Lan-Link is now available. This adds Pactor in all of its glory for PK-232 and KAM. 2.11 will be available soon and will include the MFJ1278. If you are not in line for an automatic upgrade, download LL210EXE.ZIP from Joe's BBS at 301-593-9067.

***

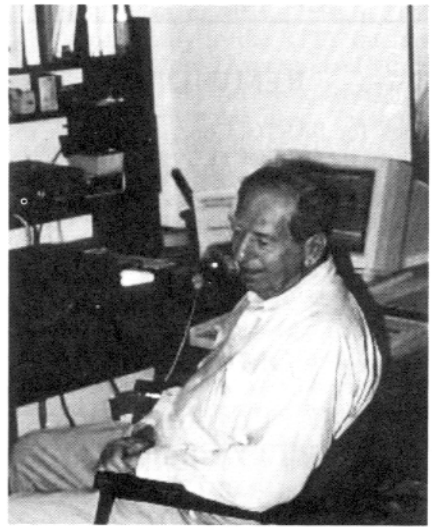
Lazlo N9FMR has completed his review of KENTROL for Windows. I hope Dale can find room for it in this issue. If you use Kenwood equipment you will be interested. Thanks Lazlo. (**ED:** Probably next month.)

***

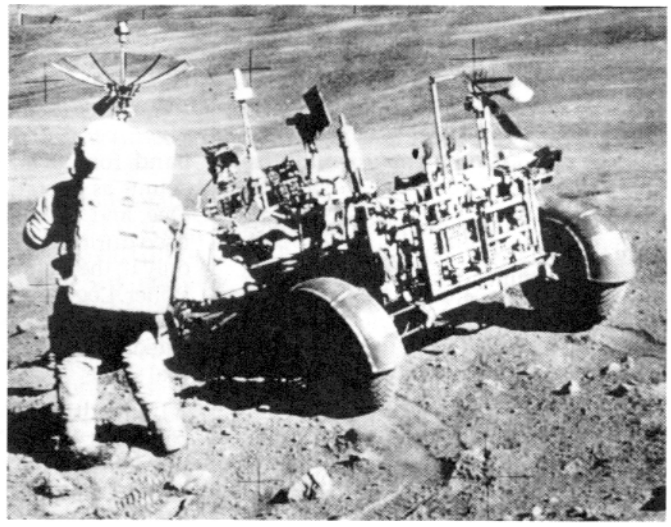
Claris (a subsidiary of Apple Computer) is invading the Windows world with a data base and integrated software package. The latter, ClarisWorks takes a big lead in this category. Word processor, spreadsheet and data base combine as one program. Don't buy any integrated software without looking at Claris. More later.

See you next month with Part II of Three Dimensions. 73

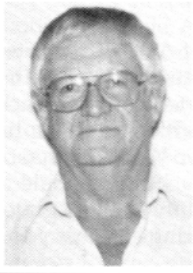
de **Jim, N2HOS SK** ■



Warren, W2NRE, praticing Ham radio instead of law.



The LEM. Famous lunar vehicle.



CONTESTING

Richard Lawton, N6GG
14395 Bevers Wy
Pioneer, CA 95666

RTTY Contests - Coming Events

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

Date:	Contest:
AUG 21-22	SARTG WW RTTY (Sweden)
SEP 25-26	CQ/RTTY Journal WW RTTY (USA)
OCT 16-17	JARTS WW RTTY (Japan)
NOV 13-14	WAE RTTY (Germany)
JAN 1-2	ARRL RTTY Roundup (USA)

-- -- -- REMINDER: -- -- --

Logs for SARTG Contest must be received by October 11, 1993.

Mail to:

SARTG Contest Manager
Bo Ohlsson, SM4CMG
Skulsta 1258
S-710 41 Fellingsbro
SWEDEN

-- -- -- COMING UP: -- -- --

CQ/RTTY Journal WW RTTY Contest

September 25-26

Sponsored by CQ Magazine and RTTY Journal

Contest period: STARTS at 0000 UTC Saturday, and ENDS at 2400 UTC Sunday, a total of 48 hours. Not more than 30 hours of operating time is allowed for single op stations. Off times may be taken at any time during contest period, but may not be less than 3 hours duration. All ON and OFF times must be clearly noted in the log and Summary sheet. (Multi-op stations may operate the full 48 hours.)

NOTE: Single op stations may operate more than 30 hours, but only the *first* 30 hours will count toward official score. (This allows rarer DX to give their multiplier to more stations.

Bands: 80, 40, 20, 15, and 10M. (five bands)

Operator Classes: There is now a **High Power** category (more than 150 watts) and a **Low Power** catagory (less than 150 watts). **ONLY** Single Op, All Band entries, and Multi-op single transmitter entries are eligible to enter the High or Low Power catagories. Enter one or the other, and so note in your log. Single band Assisted and Multi-multi entries are not eligible to enter these catagories.

A) **Single Op, All Band and Single Band.** One person performs all operating and logging functions. Use of Spotting Nets, DX Alert Packet Systems, telephone, etc., is NOT permitted.

B) **Single Op, Assisted, All Band Only.** One person performs all operating and logging functions. However, the use of DX Spotting nets or any other form of DX alerting assistance IS allowed. The operator can change bands at any time. Single op stations are allowed only one transmitted signal at any given time.

C) **Multi-Op, Single Transmitter.** All band entry only. More than one person operates, logs, checks for dupes, use of spotting, etc.

NOTE: Only one (1) transmitter and one (1) band permitted during the same period (defined as ten [10] minutes). Once the station has begun operation on a given band, it MUST remain on that band for 10 minutes; listening time counts as operating time. **EXCEPTION:** One, and only one, other band may be used during the same time period if, and only if, the station worked is a new multiplier. Logs found in violation of the ten minute rule will be automatically reclassified as multi-multi to reflect their actual status.

D) **Multi-op, Multi-transmitter.** All band entry only. No limit to number of transmitters, but only one (1) signal per band permitted. All transmitters must be located within a 500 meter diameter, or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

Modes: Contacts may be made using Baudot (RTTY), ASCII, Amtor (FEC and ARQ), and Packet. (No unattended operation or contacts through gateways or digipeaters.)

Valid Contacts: A given station may be contacted only once per band, regardless of the digital mode employed. Additional contacts are allowed with the same station on each of the other bands.

Exchange: Stations within the 48 Continental United States and the 13 Canadian areas must transmit RST + State or VE area + CQ Zone number. All other stations must transmit RST + CQ Zone number.

Countries: The ARRL and WAE DX Country lists will be used. **NOTE: USA states and Canada areas also count as country multipliers.** Example: The first US State and Canadian area you work not only counts as a multiplier for the state or area, but will also count as a country multiplier for each band.

QSO Points: One (1) QSO point for contacts within your own country. Two (2) QSO points for contacts outside your own country but within your own continent. Three (3) QSO points for contacts outside your own continent.

Multiplier Points: One (1) multiplier point for each US state (48) and each Canadian area (13) on each band. One (1) multiplier point for each DX country in the ARRL and/or WAE lists on each band. **NOTE: KH6 and KL7 are country multipliers only - not state multipliers.** One (1) multiplier point for each CQ Zone worked on each band - a maximum of 40 per band.

The 13 Canadian areas are:

VO1, VE2, VE7

VO2, VE3, VE8 , N.W.T.

VE1 N.B., VE4, VY Yukon

VE1 N.S. , VE5

VE1 , P.E.I., VE6

Final Score: Total of QSO points times the total multipliers.

Contest Entries and Logging Instructions: CQ WW RTTY DX logs and forms should be used to facilitate scoring and checking. **All logs must:**

1. Show times in UTC.
2. All sent and received exchanges are to be logged (callsign, RST, Zone, Country, State/VE area, points claimed).
3. Indicate State/VE area, and country multiplier *only the first time it is worked on each band.*
4. Use a separate log sheet for *each band.*
5. Have a list of stations QSOed on *each band.* (a *dupesheet*).

6. Have a *multiplier check sheet* for *each band.*

7. An overall *SUMMARY SHEET* showing total QSOs, points, Zones, Countries, and State/VE areas worked.

8. Each entry must be accompanied by a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed.

Contest forms are available from CQ, The RTTY Journal, and the Contest Director. The RTTY Journal's address is:

RTTY Journal
1904 Carolton Ln
Fallbrook, CA 92028

Please include a large SASE with 2 units of US first-class postage or IRCs.

Awards: Plaques will be awarded to the first-place finishers in each of the operator classes. Certificates will be awarded to second and third. Certificates will be awarded to the first-place finishers in each DX country.

Deadline: All entries must be postmarked no later than December 1, 1993. An extension may be given if requested.

Mail logs to:

ROY GOULD, KT1N
CQ WW RTTY DX CONTEST DIRECTOR
BOX DX
STOW, MA 01775 USA

COMMENTS: This is the most popular world-wide RTTY DX contest. It's also the most challenging. With the whole world participating, the CQ Zone multipliers, band multipliers, States and VE areas counting as different countries, there's a lot to keep track of. I strongly recommend the **RTTY by WF1B** program. It's really a ball - especially when you work the same station on different bands! (No typing of the call is needed.) If you get stuck in a big pileup, note which ones are successful in raising the runner. If they all use a "DE" in front of their call, you can bet that the runner is using the WF1B program. That's the way the program selects callers - those with a "DE" preceeding the call get detected on the screen. We now have the low power/high power classes, which should bring more participants. With all those multipliers around, the question becomes, shall I "Hunt and Pounce", or shall I call CQ? Well, you'll have to do both to make a good score. The rarer place you're in, the more a CQ will get you more QSOs. But in order to get those rarer mults, you've got to go hunting. With 48 states, 13 VE areas and 2 countries to go after on EACH band, look for lots of activity on 80 and 40M for all those easy multipliers, in between the static crashes! During September, 20M is still the old standby. 15M should be getting better, but 10M will probably be quite unreliable.

JARTS WW RTTY Contest

October 16-17, 1993

Sponsored by JARTS (President: JA1ACB)

Supported by Japanese CQ Magazine

NOTE: New rules about Band Mults, QSO points, and Multi-op exchange.

Contest Period: STARTS at 0000 UTC Saturday, October 16th, and ENDS at 2400 UTC Sunday, October 17th, a total of 48 hours. You can operate all 48 hours. (No OFF periods required.)

Bands: 80, 40, 20, 15, and 10M (five bands). Japanese RTTY segments are:

BAND	JARTTY SEGMENT
80M	3.520 --- 3.525 MHz note!
40M	7.025 --- 7.040 MHz note!
20M	14.070 -- 14.112 MHz
15M	21.070 -- 21.125 MHz
10M	28.070 -- 28.150 MHz

Mode: Baudot (RTTY) only.

Operator Classes:

A) Single Operator, All Band

B) Multi-Operator, Single Transmitter

C) SWL

Message Exchange: RST + Operator's age. (00 acceptable for YL and XYL. All Multi-op stations must send 99 as operator age.)

QSO Points:

Two (2) points for QSO within your own continent.

Three (3) points for QSO outside your own continent.

Multiplier: Each DXCC country and JA/VK/W/VE call area count as a multiplier. But you cannot count JA/VK/W/VE *country* as a multiplier. **Multiplier will count once per band.** You can count your own country or call area (JA/VK/W/VE) as a multiplier.

Final Score: Total of QSO points times total of multipliers. (For SWL's, same rules as above.

Awards: First place plaques to top winner in all three classes. First through fifth place will receive certificates, all three classes in each continent. Special award for 12th from last in all three classes. NOTE: Awards will be issued based on participation of 20 or more entries in each class.

Logs and Summary: The logs to contain: BAND, DATE/TIME UTC, CALLSIGN, RST/AGE sent and received, MULTIPLIERS, and POINTS claimed. Any entry making more than 200 QSOs must submit duplicate checksheet. Use separate logsheets for each band, and include a Summary Sheet showing the scoring, class, your call, name and address. Multi-Op stations please include names and callsigns of all operators. Logsheets and Summary sheets are available from Contest Manager, JH1BIH.

Deadline: Logs must be received by December 31, 1993.

Mail to:

JARTS Contest Manager
Hiroshi Aihara, JH1BIH
1-29 Honcho
Shiki Saitama 353
JAPAN

Comments: This is the 2nd Annual JARTS WW RTTY Contest. The first one was a lot of fun. From the clever "age exchange" we discovered just how young we all are! And who the bashful YL ops are, too! **NOTE:** New rules show that JARTS now has BAND MULTIPLIERS! This should significantly improve participation because it opens up ALL the bands by encouraging additional multipliers. As noted in the above rules, Japanese RTTY bands on 40 and 80M are different than USA/VE. I asked Hiro, JH1BIH, if he would tell us the actual RTTY bands for Japanese operators. Hence the above list. Notice that 80M (3.525 to 3.530 MHz) is only 5 kHz wide, and is way down in the CW band! Also, on 40M, (7.025 to 7.040 MHz) is partially in the RTTY International DX Window. I have worked JAs on RTTY on both of these frequencies, so they are actively being used. These frequencies are legitimate for RTTY for any country in the world, though not the ARRL's choice for USA. Nonetheless, we can, and should, use them, because that is where the DX is. October propagation conditions are usually getting good again, with less low band static and better high band paths, world-wide. The JARTS Contest is probably too new to have RTTY contest logging programs written for it, but I suspect that once the word gets around about JARTS, it won't be long before we'll have one - or two - or more! Regarding the NO-TIME-OFF: there are no time-off periods that must be taken. Just operate until you fall asleep from shear exhaustion. When you wake up, get a cup of coffee, kick yourself, and hit the CQ button! Seriously though, you're free to pace yourself based on band conditions, and not on running out of time. If conditions are hot, give it a shot, until either conditions - or you - poop out. Then check your crystal ball, set your alarm clock and go hit the sack. If ALL the bands are pretty much dead (are you sure?), try one more CQ on the band most likely to be open. You'll sleep more comfortably if no one answers - won't you? If you don't intend to make a huge score, consider going for the award for 12th from last place in your class. It will require very precise timing and judgement on your part - and you have to send in your logs to JARTS Contest Manager, JH1BIH. Only he can decide. This is probably the most difficult award one can ever achieve in Contesting! If that's what can turn you on, go for it! And ah-h-h, Good Luck!

-- -- -- Hint of the Month -- -- -

Here's a couple of Shareware programs I have been using daily for the past several years that come in very handy for contest work. They are: **QuikMenu** and **Remind/Calendar.**

QuikMenu is a superb graphic-type menu system for DOS. Once installed, it serves as a single-key selection of any program you have on your hard disk. Just look at the on-screen menu and press the ONE key you selected for the subject, and presto - with a little chirp - there it is. (A mouse can also be used to select the program button.) Besides having all the goodies of some other menu programs, QuikMenu has; free form screen layout, choice of fonts and colors, resizeable push buttons, phone dialer, appointment calendar, Time/Date setup, numerous and colorful automatic screensavers, up to 40 pages of menus, etc., and it has USAGE TRACKING. Usage tracking is a logging program that keeps track of the time spent on each program. It's intent is for businesses to keep track of time spent on computer application programs. For contesters, it can be used to determine the exact ON/OFF times in a contest. When you fire up to go on the air, the program you use is automatically time-logged, using the Time/Date setup in your computer. And it generates a log file to keep track of every single program you have used, for years! The Time Log can be easily scanned at any time through the Utility Menu. QuikMenu is NOT a memory-resident TSR so it won't get in the way. Registration fee is $35 - and worth every penny. For a registered copy, contact OSCS Software, 1-800-545-1392 (in Oregon).

Remind/Calendar is a great reminder program. It will pop up to inform you of anything you had previously asked it to, each time you fire up the computer. I use it to warn me of up-and-coming contests. It's easy to install, and won't bother you at all, unless it is a special day - such as a birthday, or aniversary, or a Holiday. Then the computer will play a tune; like, Happy Birthday, Auld Lange Syne, or Jingle Bells. You can pre-program Remind to notify you about every single contest for the year, complete with warning messages days or weeks in advance. These warnings pop up each time you fire up the computer. Example: enter the Contest date; "ARRL RTTY Roundup... PREPARE!!" Specify how many days you want to be forewarned; enter "five days". Then, five days before the Contest, when you turn on your computer the first message on the screen is, "ARRL RTTY Roundup... PREPARE!! In five days!" And a loud beep comes from the computer speaker. Next day, same thing - but it says, "In four days!" and so on. This program has many other neat little things, too. It warns you when to reset your clocks for Daylight Savings Time, notes important dates in history, like Pearl Harbor Day, Flag Day, Columbus Day, etc.. The Calendar is a colorful, full-screen display, complete with footnotes of special days of that month, and markers on days set for reminders. You can even look back on the calendar to see what day of the week you were born on. Or look ahead to see the date Easter occurs in the year 2009! (It's April 12.) This program was written by Dr. Robert M. W. Tsou, MD, just for fun, and to learn how to program a computer. Registration is $10. It's intriguing, colorful, delightful, and a real pleasure to use. For a registered copy, send $10 to: Robert M. W. Tsou MD, 28441 Cedarbluff Dr., Rancho Palos Verdes, CA 90274.

((73)) 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!

ADRS

The American Digital Radio Society

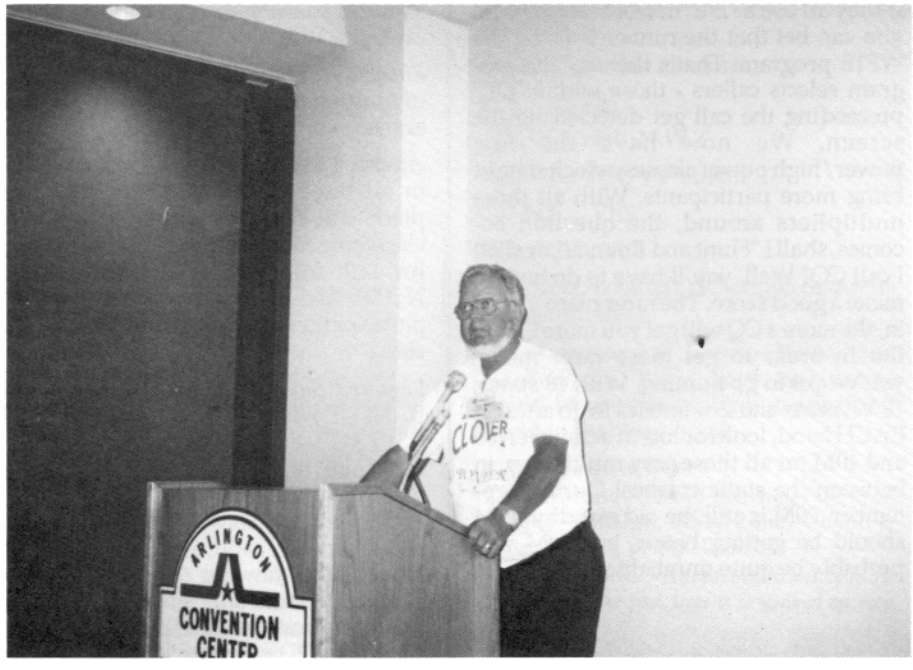
Invites you to become a member!

Enroll now and join a dedicated group of amateurs who are forging a strong voice for the digital community. You can help make a difference.

Please send your check for $15 to:

ADRS
30 Rockefeller Plaza 35th floor
Attn: Mary Boyle
New York, NY 10012

Make the check payable to **ADRS**. Contributions are also needed and welcome!

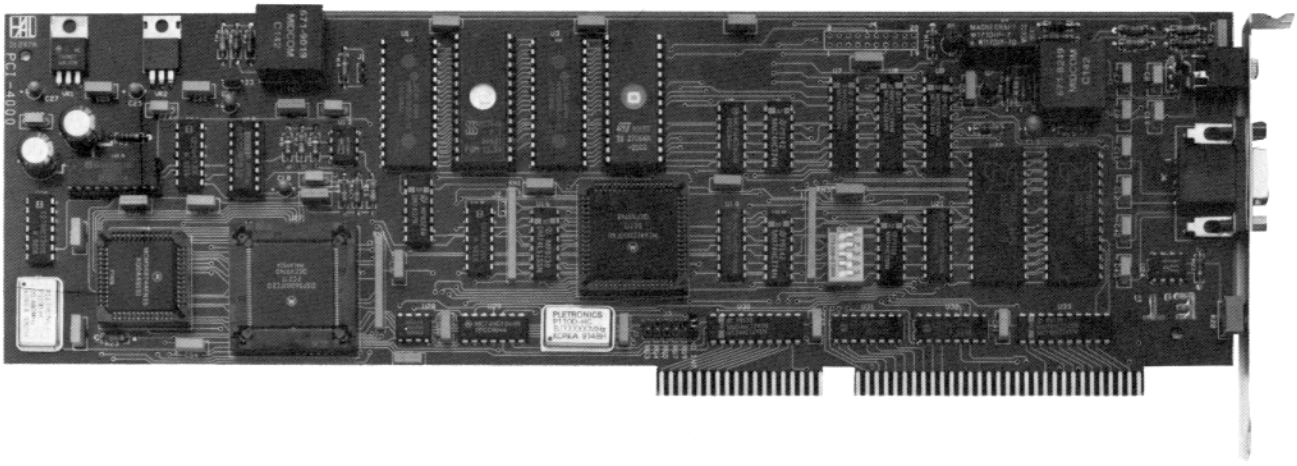


Jim Jennings, KE5HE, giving Clover presentation at ARRL HAMCON in Arlington, TX June '93. Jim is also founding Director of ADRS.

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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P.O. Box 365
Urbana, IL 61801
Phone (217) 367-7373
FAX (217) 367-1701

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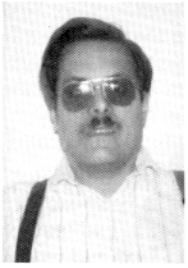

PACTOR

Phil Sussman, KB8LUJ
P.O. BOX 31
Clayton, OH 45315

*** CONNECTED: KB8LUJ

When this column began last month, I did not anticipate the flurry of interest PACTOR would generate. PACTOR and CLOVER were the primary topics of discussion at Dayton of those who work the HF digital modes.

Before moving on, I need to mention a few items. First, at the RTTY/Digital Dinner at the Radisson, on Saturday evening, April 24th, there was a moving tribute to John Troost, TG9VT,sk, by Radhames Bonilla, HI3AB. For those of you unable to attend, I would be remiss if I did not report several of the attendees were observed a little teary eyed. You also missed a good dinner! Then I must acknowledge the warm welcome I received from everyone I met at Dayton. Many operators that I had known for years, but had never met, were present. Indeed it can be said that digital operators are some of the most polite and considerate people on the air. And that attitude permeated the atmosphere at Dayton as well.

Of course, thanks to those who contributed to my mailbox. I received a very nice letter from Werner Zielke, DJ2HZ, sysop of DK0MHZ, who's been operating PACTOR under an "official special license" from the German government since December of 1991. Mail also arrived from Joe, K4IHP, a long time PACTOR user in Atlanta, GA. Jules, W2JGR, sent some handy info, as did Jack, N4TEB. Thanks to Ken, N4SO; Jim, KD8LZ; and Max, K4EGZ, for the kind words. Chris, DK1QG, provided a copy of his 9th edition PACTOR standby list.

Also, I received some packages. Schnedler Systems of Asheville, NC, sent a copy of BK-MULTI with PACTOR for review. I promised to hook it up to my old AEA CP-1 and check out the PACTOR mode. Dennis Hevener, of Personal Database Applications (PDA) in Duluth, GA, provided a LOGIC 3 update with the understanding that I would look at it, from a digital point of view. An SCS PACTOR-Controller PTC arrived from Germany (courtesy SCS) for testing. And a PacComm PacTOR Controller came from PacComm, of Tampa, FL for evaluation. I certainly won't run out of things to do.

PACTOR BASICS

Almost everyone I met at Dayton who expressed an interest in PACTOR also asked for an explanation of the mode. So, as promised, here are some PACTOR basics as an introduction for some or a refresher to others.

PACTOR is a digital mode. A digital mode reduces information to a series of on or off conditions. Each condition is called a bit and is represented by a zero (off) or a one (on). PACTOR utilizes the American National Standard Code for Information Interchange (ASCII) which consists of 8 bits, which gives 2^8 or 256 combinations. Each combination is numbered from 000 to 255 [decimal] and is known as a character. Characters can be represented in binary (base 2), decimal (base 10), or hexadecimal (base 16). Upper and lower case are supported, so capital "A" is represented by 01000001 (binary), 065 (decimal), or $41 (hexadecimal, the $ to differentiate from decimal) and lower case "a" by 01100001, 097, or $61, respectively. Seven of the bits [128 characters, 000 to 127 ($00 to $7F)] represent letters, numbers, figures, and control codes. The first 32 characters [000 to 031 ($00 to $1F)] are commonly called the control characters and are used for housekeeping functions, like carriage return, line feed, etc. The eighth bit, also called the high-order bit, can be used for parity (error checking of which there are 5 variations) or to create 128 more characters. These additional characters [128 to 255 ($80 to $FF)] are often called the graphics character set. The usual PACTOR configuration is 8 bits with no parity, allowing transfer of all 256 characters. This makes the transmission of graphics popular, and the subject of a future column.

MARK AND SPACE

We transmit data serially, one bit at a time, by FSK (F1B, Frequency shift keying) or AFSK (J2B, Audio frequency shift keying) using a MODEM (contraction of MOdulator/DEModulator). FSK is used on equipment with a separate built-in FSK or RTTY mode. AFSK uses an external MODEM fed to the microphone jack of a transciever in the SSB mode. An FSK unit transmits a constant RF frequency while idle, called MARK, and shifts frequency downward to another, called SPACE, in time with each bit. Operating frequency is usually specified in terms of MARK. The frequency difference between MARK and SPACE is called the SHIFT. An FSK MODEM commonly uses a shift of 170Hz. The PACTOR mode of an AFSK MODEM modulates an SSB transmitter with audio tones, commonly 2110 Hz MARK and 2310 SPACE. Others use 1200Hz MARK / 1400Hz SPACE on units without FSK narrow filters on receive -or- 2100Hz MARK / 2300Hz SPACE for those with narrow FSK filters. But AFSK MODEMS commonly maintain a 200Hz SHIFT on PACTOR. (RTTY BAUDOT uses 2125Hz MARK and 2295Hz SPACE with 170Hz SHIFT) A convention on HF is for higher RF frequency to be MARK. AFSK modems use the lower AUDIO frequency for MARK, so it is standard to use lower sideband (LSB) on all bands. On LSB, AFSK MARK is higher in RF frequency than SPACE. (LSMFT for non-smokers: Lower Space Means Fine Teleprinting) When decoding digital signals, SHIFT is the important factor. When adjusted properly, J2B can not be distinguished from F1B on the air.

Most SSB rigs display the frequency of the suppressed carrier, not MARK, when transmitting. The modulating frequency of an AFSK modem influences the exact RF MARK frequency. (Rigs using FSK usually display MARK frequency) And communications between AFSK and FSK units introduce a difference of 15Hz when the two SHIFTS are straddle tuned. (200Hz - 170Hz = 30Hz, 30Hz/2 = 15Hz) These disparities lead to discrepancies between the exact RF MARK frequency and the frequency display of an SSB transciever. (See Jim Jennings column, The Link, RJ, FEB-93, pp20, for an excellent article on how to set your dial.)

BITS AND BAUDS

Since we transmit serially and need to achieve synchronization, we add start and stop pulses to each character. This makes each character about 10 bits in length. Baud is a unit of signalling speed measured as 'events per second'. If we transmit 100 bits per second (10 characters @ 10 bits each), we are sending at a rate of 100 baud. Sending 10 characters, (each 10 bits long) per second is 100 WPM. [Words per minute (WPM) is characters per second (CPS) times 10.] If we transmit 10 characters per second, with each composed of 7 bits (instead of 10), we are sending at a rate of 70 baud; but we are still transmitting 10 (shorter) characters per second, so we are still sending 100 WPM. The baud rate is based on the length of the characters and the number of bits transmitted per sec-

ond, while WPM is strictly based on the number of characters transmitted per second. The shorter the character length, the more words per minute (WPM) can be transmitted at the same baud rate.

BAUDOT uses 5 bits per character and slightly longer start and stop bits. In comparison a BAUDOT character is about 75 percent the length of an ASCII character. Usual BAUDOT operation is at 45 baud (60WPM), 50 baud (67WPM), 56 baud (75WPM), and 75 baud (100WPM). As you might have guessed, the slower the rate, the more reliable the communication. So 45 baud BAUDOT is most popular and reliable. On HF frequencies speeds above 50 to 75 baud are subject to slurring due to multipath interference. This is called intersymbol interference (ISI). The bandwidth of BAUDOT with a 170Hz SHIFT is about 249Hz. (Note: BW = 1.2 times SHIFT plus BAUD. (Receiver IF bandwidth, splatter, intermodulation, and adjacent signal separation are not being considered) AMTOR is an adaptation of SITOR (maritime link protocol). It was designed to overcome the limitations of ISI by linking two stations together for the purpose of establishing reliable communications at higher speeds. The concept is simple enough, one station sends a few characters and pauses. The other station sends an acknowledgement (ACK) or a non-acknowledgement (NAK) and waits. If an ACK is received, the next characters are sent, and if a NAK is received the sending station repeats the last group. AMTOR is limited to 100 baud (133WPM, since it also uses the 5 bit BAUDOT character set) and is very reliable under difficult HF conditions. However, it is slow. AMTOR with a SHIFT of 170Hz yeilds a bandwidth of 304Hz.

PACKET was developed to transmit data by radio faster and with the larger ASCII character set. It uses 1200 Baud at VHF and is limited to 300 baud (300WPM) on HF frequencies. PACKET transmissions, like AMTOR, are sent to linked stations, and like AMTOR, transmission errors cause repeats. With a wider bandwidth on HF than AMTOR/BAUDOT, faster transmission speed, and more data per burst, PACKET exacts a high overhead. In other words, it is not very efficient under marginal conditions. Repeats abound on HF because PACKET requires a good signal-to-noise ratio. That's great on VHF FM, where higher speeds are routine, but PACKET and HF don't mix well. PACKET supports multiple links on the same frequency, by spacing between frames and collision repeats. The bandwidth of an HF PACKET signal with 200hz SHIFT is 540Hz.

PACTOR is a new mode that combines the reliability and error checking of AMTOR with the 8 bit character set and speed of PACKET. PACTOR sends characters in one second bursts and waits for acknowledgements. Good data is acknowledged; however, bad data is not discarded but stored for comparison with other transmissions. In this way good data can be derived from corrupted frames. The process is called MEMORY ARQ and can be implemented in several ways. MEMORY ARQ reduces the need to request repeats. In addition the throughput is doubled as the baud rate shifts from 100 baud (100WPM) to 200 baud (200WPM) under good HF band conditions. This increased speed along with good error checking ability, and narrow bandwidth, makes PACTOR a mode that uses the best of AMTOR and PACKET without the liabilities. PACTOR bandwidth switches from 304Hz to 404Hz (170Hz SHIFT) or 340Hz to 440Hz (200Hz SHIFT). It's no wonder that PACTOR is so popular. More join the PACTOR bandwagon every day. As I have said before, all it takes is one PACTOR QSO to be convinced. Yes, PACTOR is the wave of the future.

DAYTON PACTOR REPORT

The theme of the Dayton Hamvention this year was "... More than a hobby." (I sometimes mumble 'its only a hobby' to myself) Certainly, Amateur Radio is more than a hobby, especially during emergencies or disasters. However, it also holds a special place for many of us. The ranks of amateur operators have grown large, with a rich diversity, too. As I see it, digital is the leading edge, the frontier, of technology. To keep the lead, the place to be was the DIGITAL DIGEST FORUM, which was held at noon on Saturday.

Luckily, I happened to meet Hans-Peter Helfert, DL6MAA, one of the German inventors of PACTOR, while wandering around inside the main exhibit hall just before the start of the Digital Forum. Peter was a cordial man, and a bit younger than I expected. As we journeyed to Meeting Room #4, he told me the speech on PACTOR he was to give, would be his first in English.

Ray Petit, W7GHM, did a masterful job of discussing CLOVER. Of particular interest were a number of improvements, the amount of strenuous testing over the last year and the many advantages CLOVER offers over other modes of transmission.

Peter was the next speaker and offered an explanation of the mode and how it achieved the best of both PACKET and AMTOR technology. For a first time presentation in English, he did pretty well.

After the forum, I spent some time with Peter wandering about the Hamvention discussing PACTOR (what else?). He had expected to see a lot of hams, but he was surprised by the vastness of Dayton. He had not seen some PACTOR units being marketed in the US and sought them out. Later he told me that he had been nervous about his speech and had been practicing on the plane trip to the US. His English was pretty good, but perhaps my perception was tainted, having been seasoned by years of listening to DX stations.

Since Peter had to leave early Sunday morning, he regrettably was unable to attend the RTTY/Digital Dinner or visit the Hospitality Suite. We said our goodbyes; however, he noted my address and FAX number and promised to keep us advised of his latest developments. Peter says new and exciting plans are in the works for PACTOR-2, so stay in touch with this column for the latest news.

CLOVER -vs- PACTOR?

Actually, I do not think CLOVER and PACTOR compete against each other. Rather they appear complementary. Each has a job which is does quite well. CLOVER is a high speed data moving protocol, no doubt about that. It is well suited for high speed messaging and large file transfers. Keyboarding on CLOVER just to chat, while possible, certainly is under utilization. (Sort of like taking a semi-tractor to do the grocery shopping) PACTOR is a keyboard friendly linking protocol, which is good for QSOs. PACTOR can send files and graphics, but that is not the purpose of the mode. My prediction is that we will see a transition in the HF spectrum with CLOVER supplanting PACKET and PACTOR taking the place of AMTOR. And BAUDOT, the ole faithful standby, will be with us for many more years. Am I right? Only time will tell!

PACTOR EXHIBITORS

I tried to visit and introduce myself to every vendor who offered PACTOR products at Dayton. All were interested in promoting PACTOR and I attempted to find a liaison with each to keep us advised of their latest developments. Most were eager to forge an outlet for communications or promotion, and couldn't wait to put something in the mail to me. A number have done so. But I am sure I missed a few, too.

With so many new PACTOR users on the air, I ask the manufacturers and vendors of PACTOR equipment to please keep us informed of their products, applications, whatever. This flow of information is vital to keep our readers informed and up to date. If you desire a fair PACTOR product evaluation, you will find it here, too. My address is on the masthead. To those who are already sending information, or products to evaluate, thank you very much!

UNABASHED PROMOTION

I received some letters asking what I recommended in the way of a PACTOR TNC, or asking which unit was 'best'. With the number of PACTOR TNCs on market, it is hard to recommend one over another. There are so many variables in products and personal preferences. In my reviews I will attempt to illustrate the features and benefits of a given unit and how well it does the job for which it was constructed. Does it meet those 'wild manufacturers claims?'

However, I will say this. We, as readers of RTTY Journal, have an obligation to Journal advertisers to give them first consideration when contemplating a purchase. If you say, 'I saw your ad', or 'read about your product in the RTTY Journal', it will give them impetus to be favorable to us all and that benefits the entire digital community.

INTO THE JAWS...

Now I take my step into the lion's den. No doubt about it, something must be done about operating frequencies. Two problems need to be addressed. First, burst modes (AMTOR, PACTOR, CLOVER) are eroding the 14.080MHz to 14.090MHz, traditional RTTY window. Secondly, keyboard QSOs are being hammered by unattended stations.

With so many new digital users, some QRM may be inadvertent, since some may not be aware of the informal bandplans or may not carefully listen for activity before transmitting. Others should know better. With respect to both problems, some 'adopt' frequencies and then interfere (deliberately?) with other modes attempting to use that frequency. Should CLOVER operate indiscriminately (ie. automatically) on 14.082MHz? Should a PACTOR BBS make a home on 14.085MHz? Should PACKET messages transfer nonstop on 14.089MHz all night long?? Arrgh....

GENTLEMEN (and fair ladies) PLEASE! How about some breathing room for DX and RTTY? Let's keep the burst modes below 14.080MHz or above 14.090MHz. Also, please listen carefully before transmitting as the frequency may be occupied by a weak signal.

Certainly I do not have all the answers. Our intentions are honorable; but, usable spectrum is at a premium. Still we must coexist! Digital operators, being the professionals we are, certainly can reach an accommodation. If we do nothing, the situation is bound to deteriorate. No matter the outcome, it will take compromise with no party entirely satisfied. Let us solve this dilemma peaceably, without blame or recrimination, NOW, in 1993! (See Hits & Misses)

Next month some thoughts from Pete Detwiler, sysop of the big WA2MFY BBS, and of course more information, hints, and tips about PACTOR.

A hearty thank you goes out to all whom contributed to this month. This column can not exist without your help. Please keep your cards, notes, letters and information coming. We need whatever we can get.

Thanks for sharing your time with me. Until next time, de Phil - KB8LUJ. May God Bless you and yours. Link d-o-w-n.

.*** DISCONNECTED: KB8LUJ

Packet: KB8LUJ @ WA8ZWJ.OH.NA - FAX : (513) 275-6387

Correction Notice!

The TY1PS Scanner Setup article on page 22 of the April 93 issue of the RDJ has a couple of errors. Here are the corrections.

The descriptions for the IRQ 2 and IRQ 9 in the table are wrong. These two interrupts are tied together in the computer but you can still use them. IRQ 2/9 are available on the bus and may be accessed the same as other IRQ lines. IRQ 2/9 notations are also missing from the pictures. Both can be located on pin B9 of an XT/AT bus connector. Make a note in your April issue to refer to this page.

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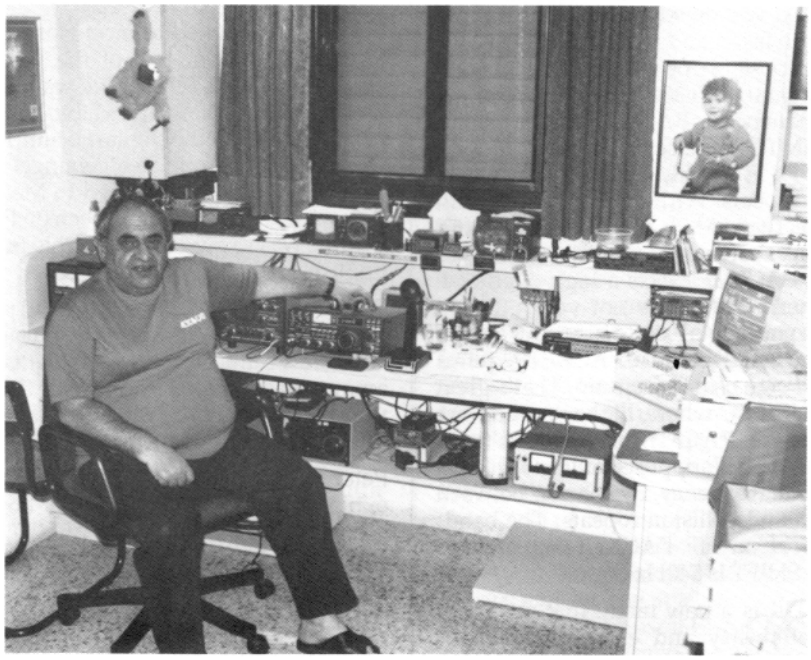
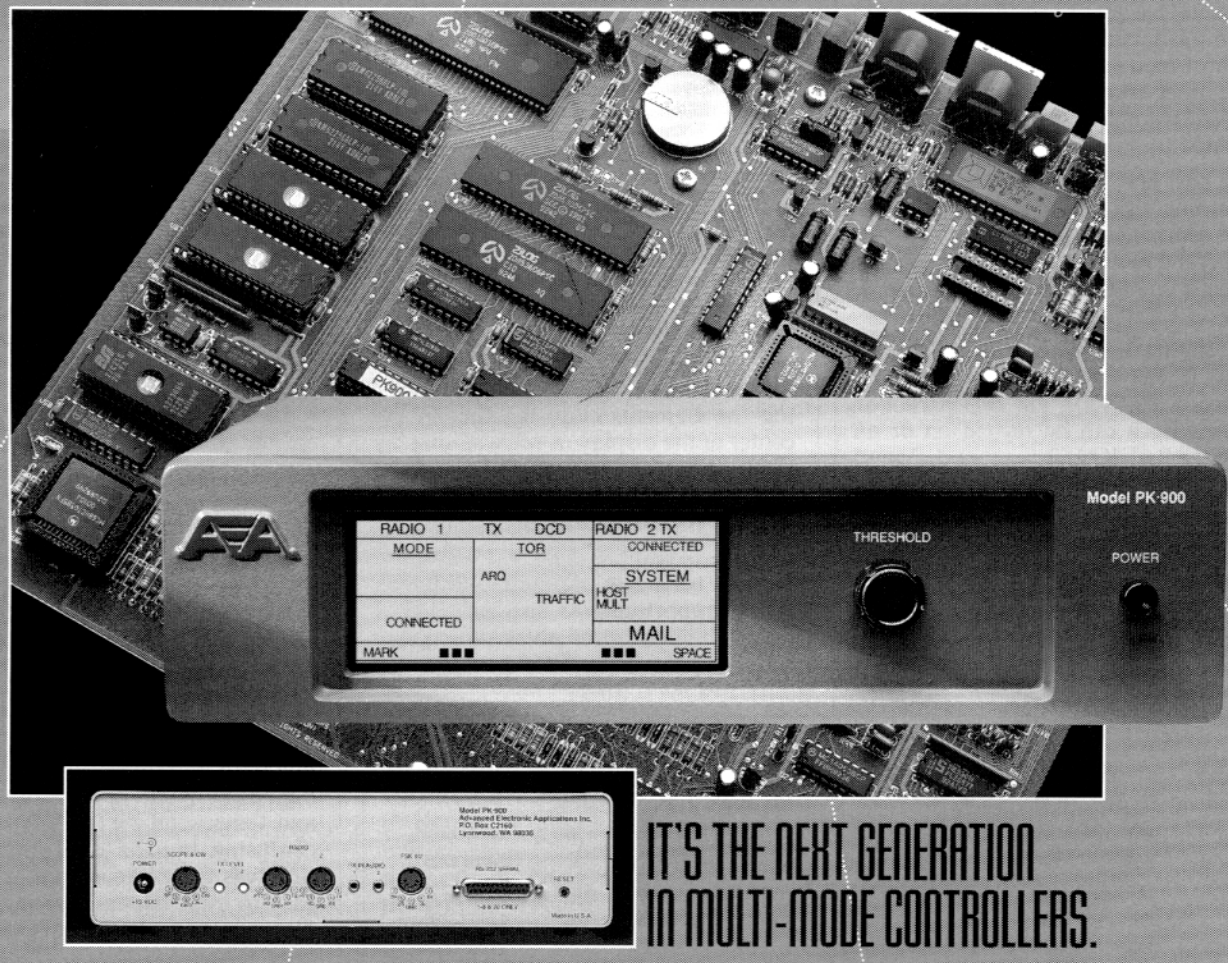


Arie, 4X6UO, at his operating position in his shack in Herzliya, Isreal. Arie is the most active RTTYer in 4X-land. You can find him almost daily on 14086KHz around 0100-0230Z. QSL to WB3CQN.

INTRODUCING THE PK-900... NEW FROM THE INSIDE OUT!



IT'S THE NEXT GENERATION IN MULTI-MODE CONTROLLERS.

Now, there's a new standard of excellence in multi-mode digital controllers...the new PK-900 from AEA. It incorporates all of the features which made the PK-232 the most popular multi-mode controller in the industry. But that's just the start. AEA's new PK-900 also features dual port HF or VHF on either port; low cost 9600 baud plug-in option; memory ARQ and VHF DCD state machine circuit; powerful triple processor system; zero crossing detector for the sharpest Gray Scale FAX you've ever seen; and many other new software selectable features.

Inside and out, the new PK-900 from AEA is what other multi-mode controllers will now be measured against.

- Processors used: Zilog 64180, Motorola 68HC05C4, Motorola 68HC05B4
- Data rates: 45 to 1200 baud standard, up to 19.2K baud with external modems
- Dimensions: 11.75" (29.84cm) x 11.75" (29.84cm) x 3.5" (8.89cm) Weight: 4.6 lbs. (2.08 kg)
- Power requirements: 12 VDC at 1.1 amps

PACTOR INCLUDED

Connect with us for what's new in multi-mode controllers.
Call our literature request line at 1-800-432-8873.

Advanced Electronic Applications, Inc.
PO Box C2160, 2006 - 196th St. SW, Lynnwood, WA 98036

Connect with us

REVIEW, PK-900

Part Two

by, Phil Sussman, KB8LUJ[1]

Part one covered installation and hardware testing and now we put the PK-900 into action. AEA says the PK-900 will operate in the dumb terminal mode. HOST mode operation may be preferable, where there is dual port software available. I wanted to see what I could accomplish using a dumb terminal, so I put host mode software concerns aside for another article. Lacking 15 shades of grey software, I could not properly test PK-FAX.

Since part one, AEA sent me a package containing the missing manual pages, some replacement DIN plugs (did take solder) and new 05.MAR.93' firmware to correct a bug affecting reverse forwarding.

The PK-900 has two ports. I used an ICOM IC-761 for HF on port #1 and a Kenwood TR-7400A for VHF packet on port #2. Each can be turned on or off using the RADIO 1/2 command. Port #1 can adopt any one of 12 'modems' while Port #2 (limited to PACKET) has 10 'modems' governing HF PACKET, VHF PACKET, 9600 BAUD (optional), or DISCONNECT HEADER. The MODem command is used to select modems.

Here is the list 'MODEMS' as viewed by the DIRectory command:

	Radio Port 1					Radio Port 2		
Modem	Type	BPS	Shift	Freq	Modem	Type	Shift	Freq
1	FSK	45	170	2125/2295	1	Internal	200	1070/1270
2	FSK	100	170	2125/2295	2	Internal	200	2025/2225
3	FSK	45	200	2110/2310	3	Internal	1000	1200/2200
4	FSK	100	200	2110/2310	4	Internal	1000	1200/2200 eq
5	FSK	100	425	2125/2550	5	Internal	200	1180/980
6	FSK	100	850	2125/2975	6	Internal	200	1850/1650
7	FSK	100	850	2125/1275	7	Internal	800	2100/1300
8	ANALOG			900/2500	8	Internal	800	2100/1300 eq
9	FSK	2400	800	1300/2100	9	Internal	Option	9600 bps
10	FSK	300	200	2110/2310	10	Modem disconnect		header
11	FSK	1200	1000	1200/2200				
12	Morse 750 Hz center frequency							

The PK-900 has software controlled filter frequencies (and thus shifts) which are optimized for each mode yet allows the user to change characteristics. MARK and SPACE frequencies can be displayed or changed. The command MARK by itself returns the current MARK frequency. MARK and a frequency (MARK 2125) sets MARK to that frequency. Same for the SPACE command. That's flexibility!

I chose each mode and tested functions. Every mode change switches in a new modem. This provides automatic adjustment and change of some parameters, such as filter frequency and timing tailored to the selected mode.

Of note, Control-B (^B) puts your callsign (from AutoAnswer Back, AAB) into the TX buffer to be transmitted. Control-T (^T) adds the time (and Date, if DAYSTAMP is ON) into the buffer. Control-D (^D) when encountered in text while transmitting returns the unit to receive. Control-F (^F) acts the same as (^D), but sends a MORSE ID (from AAB) before returning to receive.

TUNING

The PK-900 has three main tuning indicator types, using a 20 segment bargraph at the bottom of the LCD. Only one type can be used at a time and is selected by the BAR command. They are: Discriminator MARK/SPACE [BAR 0] tuning to achieve maximum equal separation of active elements; Center tune [BAR 2] tuning to merge the display at center; and Magic-eye [BAR 3] tuning by bringing the elements close together in the center of the display. A MORSE display [BAR 1] has (selected in MORSE mode) a bar at far left and tunes for maximum deflection to the right. BAR 6 is the LCD test.

Correct tuning is important, so I took ample opportunity to test each BAR. I have religiously used an oscilloscope to set my tuning. I connected a scope to the DIN jack and covered my scope screen. I tuned BAUDOT, AMTOR, PACKET, and PACTOR signals, using only the PK-900 indicator. Since tuning is influenced by mode, I tried each mode and BAR. The tuning was sharp and accurate. I randomly checked the scope and found the BAR display to be very accurate. I preferred MARK/SPACE display, although the others worked just as well. Probably the handicap of familiarity.

"THRESHOLD" is the only front panel adjustment and adjusts Port #1 sensitivity. Proper setting gives a DCD (data carrier detect) display when receiving data and yet lets DCD extinguish with no data present. This keeps 'garbage' from spewing across the screen. With the PK-900 connected to low level discriminator output of the IC-761, a comfortable setting was about 1 to 2 o'clock. Once set, the control needed no attention, even with mode changes, except when tuning weak signals.

The BRight command sets backlighting brilliance from 0 (off) to 100 (maximum). The default of 50 was quite adequate.

HF & VHF PACKET

When transmitting, the output data must be directed to the desired port. This is done by defining the CHSwitch character. I used vertical separator (cmd: CHS $7C). The PK-900 allows 10 logical channels on port #1 (0-9) and 26 on port #2 (A-Z). To transmit on the VHF FM radio connected to port 2, I typed "|A" at cmd: to direct my output to port #2. Once assigned, OUTPUT uses that port until redirected. I then connected to the local cluster. (C 'callsign')

While connected to the cluster, I entered command mode (Ctl-C) and switched to port 1 (|0). I had configured port #2 for HF packet. (HB 300/1200, VHF OFF/ON, etc.) Some PK-900 commands require two delimiters, one for port #1 and the other for port #2. I arranged with another station to work me on HF PACKET both with and without MAILdrop on. It was possible to make an HF connect AND maintain the VHF link with the cluster. In dumb terminal, data from the first port is prefixed 'p1 ' and the second by 'p2 '. It was a little confusing, but the 'dual stream' operation was not difficult to master. It was easy to establish an HF connection. To disconnect, go to cmd: (CTRL-C) and type 'D'.

There is a gateway which allows packet transmissions between ports. It is governed by the MYGATE command. If MYGate is set to KB8LUJ-6, for example, other stations can 'digipeat' between ports using VIA. (C W6XXX VIA KB8LUJ-6) Thus a packet station on port #1 can connect to another on port #2. On HF, a US control operator must be General Class or higher, and must monitor all linked data. Gating is only possible between PACKET stations. The gateway worked briefly, but the HF link kept timing out. I attributed this to band conditions not equipment problems.

Two other features are Packet lite protocol and an interesting experimental Meteor scatter protocol.

BAUDOT

To begin a BAUDOT transmission, type

"X" at cmd: prompt. A transmission is terminated by a CTRL-D or CTRL-F in the buffer, or by typing "R" at the cmd: prompt.

ASCII

ASCII commands are the same as RTTY. I couldn't find any one using ASCII, save W1AW bulletin broadcasts.

AMTOR

AMTOR links were fast and easy. I connected to APLINK systems, called CQ in FEC mode (FEC starts and ^D ends), and made QSOs in ARQ. Changeover is the usual '+?'. To BREAK (reverse link direction while receiving) type 'AC' at the cmd: prompt. Operation was smooth and straight-forward. No problems here.

NAVTEX

NAVTEX stands for Navigational Telex. Broadcasts are made, according to the PK-900 manual, on 518 KHz using Mode B AMTOR (SITOR). I was unable to detect anything on that frequency and could not test this mode.

PACTOR

PACTOR is a new mode combining the best features of PACKET and AMTOR and is designed for HF communications. Data frames are sent by one station and received by another where they are error checked. Correction can be made using a protocol called Memory ARQ. One reason PACTOR TNC's function differently under adverse conditions is the implementation of memory ARQ. As storage accuracy improves, so does frame reconstruction. If each bit of a bad frame is assigned an analog value (say 0 to 8) rather than merely a logic one or a logic zero, more accurate representations can be made. If a TNC employs an analog to digital converter to measure and assign relative values to bits of a bad frame, accuracy is substantially increased.

I made several contacts in the regular (PTC 'callsign') and long path (PTS '!callsign', an exclamation point precedes the call) modes. 'K' at the cmd: prompt lets you load the type ahead buffer. Changeover is made by typing CTRL- Z, in the buffer. BREAK is handled identically to AMTOR by typing 'AC' at the cmd: prompt. "PTS" at the cmd: prompt initiates a CQ (FEC-PACTOR); "PTL" monitors PACTOR traffic, "PTC" starts a PACTOR connect, and "PT" sets PACTOR STANDBY. The newer software responds to a connect request in either STANDBY or LISTEN modes. Detection of a request in PACTOR LISTEN mode will switch to STANDBY and establish the link.

Like AMTOR, a (^D) or (^F) in transmitted text or the letter 'R' at the cmd: prompt terminates a link.

In PACTOR, if you see something on the screen, that's what was sent. Repeating names and RSTs is a thing of the past. In one instance 20 meters was dropping as I completed a PACTOR QSO, and as I got up from my chair the rig suddenly started switching on and off. Startled, I looked at the S-meter (I leave the meter in the SWR position, so anything shown is an S reading) but it wasn't moving. Nevertheless printing slowly began to scroll across my screen. "HALLO, Phil..." typed a station in Italy. I was absolutely amazed.

Once the senders TNC started transmitting only every other frame. Yet the PK-900 kept rephasing and data continued to flow. (albeit very slow)

In another QSO, I linked with a PACTOR station operating about 700 Hz away from an AMTOR signal. The AMTOR station was about S-9 plus 20 db while the PACTOR station was about S-3. Using an FSK narrow filter, PACTOR data continued to flow without interruption, most of the time at the 200 baud rate.

Sending graphics is possible by sending a file of ASCII text.

The implementation of "Huffman Compression" was high and low bit switched and dependent on buffer status. Huffman is a software routine that shortens average character length. When sending text, this can improve throughput by as much as 100%. When PTHuff is set to 1, (from 0) Huffman is transmitted when the PK-900 judges it will be more efficient. Huffman requires 7 data bits, so it is automatically bypassed when sending 8 bit characters (graphics). Some manufacturers engage Huffman more rigorously than others. There are two schools of thought on which is more efficient, but that's beyond the scope of this review. Huffman always decodes whenever compressed data is received. PTHuff only determines whether *transmitted* data may be compressed.

PACTOR memory ARQ yielded a sensitivity 2-3db better than a PK-232MBX. PACTOR frames were retrieved well into noise, at times even with a big signal nearby. Sensitivity, is related to band conditions, filter sharpness, type of analog to digital Memory ARQ implementation, etc. Every db is important; but, exact measurements can be misleading. I tried my typical test: "does it work for me?" In this case, YES!

MORSE

I could tune and copy CW up to 50 wpm without difficulty. Proper tuning is critical. Human ears have more tolerance for a weak signal or a poor fist than digital decoders. Don't expect perfect copy of a poor signal.

SIGNAL ANALYSIS

SIAM stands for Signal Identification and Acquisition mode. With so many digital signals, it is often confusing what type of signal you have tuned. SIAM determines the baud rate and general type of signal.

A display of...

0.70 50 Baud, Baudot, RXREV ON indicates a 70% probability of decoding 50 baud, BAUDOT, with mark and space reversed. Neat, eh!

SIAM identifies ASCII, AMTOR (FEC & ARQ), BAUDOT, and TDM. If you type OK, the mode and parameters identified will all be set for you to copy. Hopefully, soon we will be able to add Clover and PACTOR to the list of identifiables.

The SIAM routine continues until exited. Outside the ham bands SIAM may have trouble with some encrypted signals. SIAM is not perfect, but it is helpful.

TDM

TDM refers to Time Division Multiplexing, or Moore code (CCIR 342). This mode has 1, 2, or 4 independent data channels. TDM is selected by TD at the cmd: prompt and a number of baud rates can be selected.

MAILDROP

A 17Kb RAM maildrop stores BBS type messages. With cmd: 3RD party ON, mail can be left from one user to another. If not, messages may only be sent to or from the operator. Maildrop is common to all modes, but the cmd: MAILdrop ON allows PACKET access and TMAIL ON allows access from AMTOR or PACTOR modes.

Maildrop is full service and permits reverse forwarding and routing. The MDC command lets sysop read and edit any message. The structure and format are similar to the PK-88 or PK-232.

EXTERNAL MODEM

An external 9600 baud modem is an option. I did not have the optional board, and could not test this feature.

MY WISH LIST

The manual is large, but I would like to see: expanded specs, a theory of operation, a troubleshooting guide, an index, a good parts list, and some fundamentals on each mode. With so many functions, adequate documentation is a must. A 'crib sheet' for easy reference would be nice, too.

With respect to hardware, a 5K-10K buffer resistor in the AFSK circuits with a

jumper bypass would be a nice touch. Also, I'd like to see a grounding screw.

ATTA BOY ...

The PK-900 is chock full of features, no doubt about that. The big command set and programmable functions give much flexibility to operations, which can be customized to most any need.

Many things are right about the PK-900. The use of DSP, accurate tuning and good filters that offer superior sensitivity and performance.

The cables and connectors supplied aid installation. Hookup information is as complete as can be found anywhere. Speaking of the manual, it's nice to see a binder where you can insert or remove pages without ripping it apart. I'm always misplacing supplements.

PACTOR is now a standard feature on the PK-900. If you don't have PACTOR in your PK-900, contact AEA Technical Support (206-775-7373) for assistance.

HOW DOES IT STACK UP

How does the PK-900 operate? Quite well, I would say. Excellent filters are the key to the overall good operation of this unit. The analog Memory ARQ in PACTOR increases overall sensitivity to a level I would consider better than average. Tuning is sharp and easy.

A PK-900 has two ports, the second strictly PACKET; so as a minimum, you need at least two receivers or transceivers. If you want a lot of modes -or- if you monitor a DXPACKET cluster and work lots of HF digital, the PK-900 deserves your attention. The PK-900 gates PACKET between ports, which offers interesting possibilities for VHF/UHF crossbanding.

This device has far more features than I would normally use. It's nice to know they are around, in case I want to try something out of the ordinary.

There were no problems with overheating after leaving the unit turned on continually for weeks. With the new software, the PK-900 did not lock-up at any time during a QSO.

This firmware based multimode controller allows upgrades merely by replacement EPROMS. Of course, the most efficient operation would be from HOST mode with good software. Since PC-PAKRATT for windows (unsure of correct name for this new software) is due out anytime, look for a software review on that package.

A frequent complaint of multimode controllers is they compromise performance for features. With the PK-900, that ain't necessarily so. The PK-900 uses DSP (digital signal processing) to enhance the many features and modes. Moreover, it has excellent programming flexibility with an extensive command set. It is a high quality, dual port, multimode controller that is jam packed with features. The PK-900 is a lot of TNC per dollar.

For more info call the Upgrade/Order hotline at 206-774-1722 or 800-432-8873 for literature. The PK-900, by Advanced Electronic Applications, Inc. (AEA), 2006 196th St. S.W., Lynwood, WA 98036-7042 has a list price $ 569.00 US.

Thank you for reading.

73 de **Phil, KB8LUJ** ■

May God Bless you and yours.

1. P.O. BOX 31, Clayton, OH 45315

1992 JARTS RTTY Contest Results

CLASS A (Single Op)

	Call	QSOs	Pts	Mlti	Total
01	P40RY	804	2395	83	198785
02	AA5AU	463	1089	67	72963
03	VE3FJB	432	1068	68	72624
04	7Q7XX	386	1149	60	68940
05	5U7M	399	1194	56	66864
06	JA2IVY	341	879	67	58893
07	XE1LL	408	907	61	55327
08	N6GG	381	922	54	49788
09	JA3DLE/1	304	764	59	45076
10	AH6JF	332	991	39	38649
11	W6WZ/0	207	682	56	38192
12	KP2N	331	814	43	35002
13	OH2LU	219	578	60	34680
14	4X4UO	240	640	53	33920
15	W1BYH	257	588	57	33516
16	JA2DHG	195	509	54	32576
17	OH2BBT	236	605	53	32065
18	AL7BB	285	714	42	29988
19	HBO/HB9NL	222	615	47	28905
20	KK6PD	267	620	46	28520
21	JR1RCQ	167	438	57	24966
22	JH1BIH	175	432	54	23328
23	N0FMR	175	410	51	20910
24	N2FF	166	405	51	20655
25	XE1/JA1QXY	196	459	44	20196
26	JA1JDD	172	431	44	18964
27	JA3MQY	171	412	46	18952
28	EZ9L	169	411	46	18906
29	JH7QXJ	144	394	45	17730
30	JE1GMM	151	368	48	17664
31	CT1AUR	152	419	42	17598
32	TI2CBJ	188	434	36	15624
33	DJOMBG	134	373	40	14920
34	WA6VZI	147	349	42	14658
35	JH0FBH/1	139	329	44	14476
36	JF3JIQ	122	309	43	13287
37	DJ7BP	137	275	45	12375
38	JN3TMW	115	281	40	11240
39	KD2YG	95	238	47	11186
40	VE6ZX	178	392	28	10976
41	DL1RPA	101	283	38	10754
42	VE7IRA	117	293	33	9669
43	JQ1NGT	123	302	32	9664
44	DL9GGA	97	229	40	9160
45	SP3BGD	73	202	41	8282
46	KI4MI	99	222	36	7992
47	SM4RGD	84	214	37	7918
48	WB4DQF	79	212	36	7632
49	KF9CX	105	242	30	7260
50	JA1WYQ	76	186	37	6882
51	W2JGR/0	109	227	29	6583
52	JA1XRA	61	160	40	6400
53	LA7AJ	73	206	31	6386
54	WA8RXI	83	189	32	6048
55	JR6LDE	85	205	27	5535
56	IK1HSR	60	162	33	5346
57	WA4MCZ	60	167	32	5344
58	JA3JA	74	178	30	5340
59	W8PBX	71	169	31	5239
60	VE7IN	81	193	27	5211
61	SP2UUU	62	160	32	5120
62	JA0DGK	64	161	30	4830
63	JK1UNZ	58	144	33	4752
64	JG1JMH	80	168	28	4704
65	K9RRB/3	58	142	33	4586
66	SM7BGE	58	138	32	4416
67	SM6BSK	63	143	30	4290
68	JA2NNF	59	152	28	4256
69	JA3LDH	46	125	34	4250
70	KD7H	81	193	22	4246
71	JA1BWA	63	151	28	4228
72	AB4U	44	115	35	4025
73	LA3RIA	70	120	33	3960
74	KE9CV	58	136	27	3672
75	WA1MPB/4	51	120	30	3600
76	VK3EBP	90	136	25	3400
77	HP1AC	79	177	19	3363
78	DL7TR	50	124	25	3100
79	SP3SUN	50	124	25	3100
80	VK2EG	48	139	22	3058
81	SM4GVR	43	119	23	2737
82	JH1QDB	40	100	24	2400
83	JF1CST	55	114	21	2394
84	KB8LUJ	41	97	23	2231
85	JA2ESR	41	106	21	2226
86	VE2AXO	34	87	23	2001
87	JR3MTO	33	80	25	2009
88	KD6AZN	37	85	21	1785
89	JF3LOP	29	72	24	1728
90	W1HFN	42	63	25	1575
91	JL1AVD	31	73	21	1533
92	WS7I	37	84	18	1512
93	DF5BX	29	79	18	1422
94	SM3EZO	29	71	19	1349
95	W4IF	24	54	21	1344
96	JA1AYC	36	70	19	1330
97	JH3CUL	29	64	19	1216
98	SM4CMG	27	71	17	1207
99	OZ7XE	32	69	15	1035
100	JR1SCZ	39	67	15	1005
101	JE2FUP	18	52	14	728
102	JA3JWB	22	50	13	650
103	VE1CGF	19	41	14	574
104	KF4XV	19	41	14	574
105	KA3TOV	20	44	13	572
106	JF3EIG	15	35	12	420
107	JA4RTX	16	39	10	390
108	K2PEQ	13	35	11	385
109	VK2BQS	14	31	10	310
110	W6SX	14	31	10	310
111	JA4ENN/1	9	23	7	161
112	JH1TYU	9	23	7	161
113	W4MTE	8	21	6	126
114	JA1EUL	6	18	4	72
115	JE2LCP	5	15	4	60
116	JA5MOO/4	5	14	4	56
117	JA3WNB	5	13	4	52
118	JF2WEQ	4	9	4	36
119	JJ1BMB	2	6	2	12
120	7L2DKB	2	4	1	4

CLASS B (Multi-Op)

01	UZPCWA	455	1084	75	81300
02	SP2ZCD	15	34	12	405

CLASS C (SWL)

01	J13KDH	100	212	38	8056
02	DE0GMH	75	187	28	5236
03	BRS27239	53	132	28	3696
04	ONL6945	42	107	33	3531
05	DL-SWL-YL (Babine)	28	74	19	1406
06	DL-SWL (Elmer)	16	42	13	546

Submitted by Hiro, JH1BIH, JARTS contest Mgr.

PacComm's PacTOR Controller

- Licensed from the German inventors.
- PACTOR, AMTOR, and RTTY modes, Packet option
- Error-free data transmission
- Up to four times faster than AMTOR
- Complete ASCII character set supported
- Memory-ARQ with analog to digital converter restores bad data packets
- On-line data compression. (Can be disabled)
- Automatic speed adaptation 100 or 200 baud data rates
- UNPROTO mode (FEC)
- Listen mode to monitor PACTOR QSOs
- CW Identification capability
- Built in Message System
- Automatic logbook function which is accessable over the air and locally
- LED digital tuning display
- 16 status LEDs
- Selectable for either 'High Tones' or 'Low Tones'
- Terminal programs included
- VHF packet card may easily be added internally at low cost
- One year warranty, 30 day return privelege.

PacComm's PacTOR Controller, Front View

See the reviews of PacComm's PacTOR Controller:
January 1993 issue of **QST**, and February 1993 issue of **Ham Radio Today** (UK).
Call or write PacComm for a reprint of these articles.

Why Can't It All Be Done In Software?

One of the key features of the PACTOR mode is Memory-ARQ. Copies of corrupted frames are saved and correlated with frames received later.

The key to proper Memory-ARQ operation is an analog to digital converter (ADC)- an item of hardware.

The ADC converts the actual strength of each received bit into an 8 bit value which is stored in memory for later comparison. Thus each bit can have an exact representation of its received value. If Memory-ARQ is attempted without the ADC, the value of each bit must be rounded down to a zero or up to a one and the 'marginal value' of the signal is lost.

Beware of cheap 'software only' PACTOR implementations. They are NOT recommended by the German inventors of PACTOR. Most anyone's implementation of PACTOR will work fine under good conditions. When the QRM is tough and the band is fading, the PacComm PACTOR will continue to decode signals too weak to hear.

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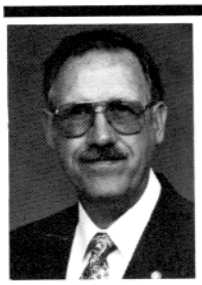


HORNET'S NEST

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

Hi Gang! Summer is upon us, the lawn needs mowing, the garden needs weeding, and vacation plans abound. It seems there's never enough time for all of the pleasant things to do, yet plenty of time to keep one busy with chores.

It appears to me that the American Radio Relay League (ARRL) is once again forging ahead with plans for the digital community, and allocated digital frequencies, that are certainly not well thought out, probably unworkable as written, based upon "the experience of a group of amateurs using automatic control of HF under a Special Temporary Authorization (STA)", and extremely unpopular with the very folks who utilize the digital frequencies. RM-8218, which outlines the ARRL's position on HF digital modes and frequencies, is flawed, not designed upon true experience and operating realities, reflects political positions within the ARRL, (as opposed to well thought out technical and operating positions), and most difficult to understand, disregards the positions and recommendations of its own appointed Digital Committee. This ill conceived petition must be shown for what it truly is, a politically based program, designed by the ARRL to satisfy the personal and political desires of a very few Directors, which if favorably enacted upon by the Federal Communications Commission (FCC), would become a huge liability to the digital community. As in the past, if we all make our desires known to the FCC concerning RM-8218, then this abomination will be defeated, and we can go forward with a meaningful, well thought out, technically responsible petition. To do nothing.....will allow this petition to be considered under its own light.

ARRL bashing has become a favored trend recently, and this author probably rates pretty high on the League's "most wanted" hit list. However, quite honestly, the League deserves what it gets with respect to its unwarranted treatment of the digital community. For example, one only has to read carefully the item "ARRL Supports Changes in HF Digital Rules", (Page 75, July 1993 "QST"), to understand the political motives and activities of the ARRL. Note that the second paragraph of this item clearly stipulates that the digital community had additional input concerning the League's position with respect to RM-8218, yet the League asked the FCC to rule on its current petition, without regard to the input of the digital users. In other words, the League doesn't care about the day-to-day users of the digital authorizations, and certainly doesn't want those users to have a voice in decisions that the League makes. Who are these "mightier than thou" decision makers in the ARRL? And, just as significant, how many of them have yet to send out their first baud on the digital bands? What kind of experience do they draw upon in making these decisions for you and I? They have clearly ignored, and in fact refuted, the positions taken by their own Digital Committee, and it appears to me that the League's political agenda reigns supreme!

And let me make one further point about the League's ability to communicate with its members, with digital users, and the amateur radio public in general. You'll hear screams, gnashing of teeth, and cries of foul concerning "out of date" data used in editorials such as The Hornet's Nest. The League will go out of its way to point out that the "lead time" for publication of items and articles in "QST" is three to four months. But I hasten to point out to the League, that the packet radio BBS's, MSO's, and other automated systems, not to mention the airwaves themselves, are full of ARRL Bulletins. I read them, most of us read them.....and most certainly digital enthusiasts read ANY and ALL ARRL Bulletins that even hint about ARRL policy concerning digital matters. So I for one don't want to hear excuses from the ARRL that QST information may be outdated when QST arrives in the field, when they have a quasi real-time capability to communicate their policies and decisions via the ARRL Bulletins. In simpler terms, ARRL actions concerning digital matters get front-burner attention within the digital crowd, and if the League is interested in having current and timely data being circulated within the amateur population, it only has to provide this data on a timely basis via its bulletin network.

Although the word is getting around fast, I'm happy to report that there appears to be an alternative voice in amateur radio, one that speaks solely to digital matters. As I reported earlier this year, the "American Digital Radio Society" (ADRS), was initially formed during the Dayton HAMVENTION in April 1993. The newly formed ADRS's goal is to provide an alternative voice within amateur radio concerning digital matters, especially when it comes to proposed or current petitions and legislation filed with the FCC. It provides you and I with a voice, and just as importantly, a choice, when it comes to input to the FCC concerning digital matters. For years we all have been badgered, chastised and otherwise bad-mouthed when individual amateurs spoke directly to the FCC concerning our feelings on a variety of subjects. In other words, the ARRL wanted everything funneled through the League, with no direct contacts from individual amateurs and the FCC. A single voice speaking to our Government regulators. This concept is not all bad, except that the ARRL, for what ever reason, did not provide input to the FCC that truly represented the opinions and desires of the amateur population, especially when it came to digital matters. The single voice in this case spoke of its own political agenda, without regard to the feelings and desires of the average digital user.

With the advent of the ADRS, we now have an organization dedicated to providing input to the FCC which truly represents our feelings and desires, which speaks to current technology and modes of operation, and most importantly, is made up of day-to-day users of the various digital modes. Who better to represent us with our Government regulators than those who utilize the digital modes on a routine basis, versus those who set in the Ivory Tower and have little or no knowledge of these modes, and who are never seen utilizing these modes? I realize that it is monetarily difficult for many digital users to provide financial support to a variety of amateur radio organizations. At the same time however, I ask that you consider how much "bang for the buck" you'll get in supporting the ADRS, versus other organizations. The ADRS is dedicated in its day-to-day operations to representing YOU, your thoughts and desires concerning digital operations, and nothing else. It's focused entirely upon digital matters, and is not internally loaded with a bureaucracy that requires balancing the political motives of a few, to the disadvantage of the many!

I urge all amateurs who utilize the various digital modes, whether it be CW, RTTY, ASCII, Packet, AMTOR, SSTV, Pactor or Clover, to join and support the

ADRS. It will speak in a single voice, on a single subject, with veracity, common sense and technical expertise, that no other amateur organization can. The ADRS annual dues of $15.00 for individuals will be well spent in providing your thoughts and desires on digital matters. Applications for membership in the ADRS should be forwarded to Jim, N2HOS, at 65 Holly Place, Briarcliff Manor, NY, 10510.

Until next time.....73 and see you on the bands. de **Dick, K0VKH** ■

THE LINK

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

REVISITING DIGITAL SIGNAL TUNING

I have had several letters concerning the selection of frequencies for the various digital modes which has prompted me to try to explain this apparently confusing thing about MARK, SPACE, and CENTER frequencies. Even at the recent ADRS board meeting the question about the need for further explanation came up. So here goes, this time I will use pictures, HI.

WHY THE NEED?

For years, the use of MARK frequency in referring to digital signals has been the standard in amateur radio. This standard became established because when amateurs applied FSK techniques to CW transmitters, it was very simple to shift down 170 Hz to obtain the SPACE frequency. The dial reading on the transmitter then became the MARK frequency. (The dial reading on the receiver normally had to be shifted to accommodate the MARK tone of 2125 Hz.) Packet came along using slightly different tones, but in this case the accepted tuning procedure was simply the LSB dial reading on the transceiver. Now Clover has entered the scene with even different tones yet and to further complicate the matter further CLOVER does not have a MARK tone. So now we have these different digital modes, each with slightly different tuning requirements.

The standards accepted at this time by MBO's is to use LSB dial frequency for Clover and MARK frequency for AMTOR and PACTOR. Each of these modes is considered a 500 Hz bandwidth mode, that is they occupy 500 Hz of spectrum. However, using the currently accepted standards, each of the 3 modes mentioned occupy a different 500 Hz segment of the band. As the bands become more crowded, it becomes more important that we be as efficient as possible is using the spectrum. Already I hear some saying that the MBO's are taking up all of the digital space.

Since each of the modes requires 500 Hz spectrum, the most efficient use of the bands would be obtained if all the digital modes used a 500 Hz channelization concept, the first channel having it's center 250 Hz up from the bottom of the subband and the last channel having it's center 250 Hz down from the top.

To explain this in more detail, refer first to Figure 1. I have shown in Figure 1 the occupied channels (broad lines) and tones for CLOVER, AMTOR, and PACTOR. I assumed that the dial frequency used with each mode is at 500 Hz increments. For example, let us assume that D (Dial Freq.) is 7072.5 KHz in the following discussion. That being the case the occupied RF spectrum of a CLOVER signal would be from 7070.0 KHz to 7070.5 KHz. If 7070.0 is the band edge, then the lowest one could tune the CLOVER LSB Dial would be 7072.5 KHz. The center frequency of the CLOVER signal is 2250 Hz below the LSB Dial frequency.

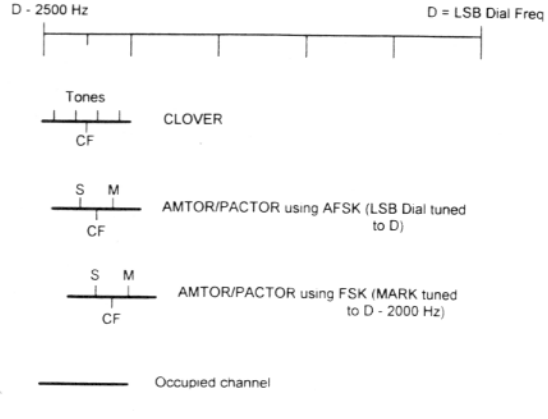


FIGURE 1

OCCUPIED CHANNELS Using Conventional Tuning

Again setting the LSB Dial at 7072.5 KHz, an AMTOR/PACTOR signal using 170 Hz shift (I realize that the standard for PACTOR is 200 Hz) would occupy a 500 Hz channel as shown in Figure 1 for AFSK. The actual occupied RF spectrum of this signal would be 7070.04 KHz to 7070.54 KHz. The center frequency of these signals would be 2210 Hz below the LSB Dial frequency.

Now for a look at what happens when you use FSK and your rig indicates MARK frequency. The closest MARK frequency (on the 500 Hz spacing) to what we have indicated above is 7070.5 KHz. The occupied channel of such a signal is shown by the third example in Figure 1 and the occupied RF spectrum would be from 7070.165 KHz to 7070.665 KHz and the center frequency would be 7070.415 KHz.

What I have tried to explain by this is that using the conventional tuning methods for each of the different operating modes results in offsets in the corresponding occupied channels. For example, in order to put a CLOVER signal and an AMTOR/PACTOR signal in the band without interference (using 500 Hz channel spacing) a minimum of 1.5 KHz is required. The CLOVER could be put in the first 500 Hz segment and presumably the AMTOR/PACTOR in the next 500 Hz segment. But notice that the AMTOR/PACTOR signal will occupy some of the third 500 Hz segment. This inefficiency of RF spectrum utilization is the problem that we should strive to eliminate and is the reason for using the "CENTER FREQUENCY" concept.

THE CENTER FREQUENCY CONCEPT

It should be obvious to all, since the occupied bandwidth of each of the signals we are discussing is 500 Hz, that if we put the edge (or center) of each of the channels on the same frequencies with 500 Hz spacing that none of the signals will slop over into an adjacent channel. It turns out that except for amateur radio (I am told) all other radio services use the center frequency concept. This makes sense to me, knowing the RF frequencies that you are occupying is rather fundamental.

What if all digital modes then used common center RF frequencies? Figure 2 shows the result for the modes we have been talking about. The result, considering that we have compatible modes using 500 Hz bandwidths, is

we can put any of the signals in a 500 Hz channel and not encroach on an adjacent channel. As a result we have better utilization of the spectrum.

If you are having trouble following what is going on, I find that it helps if you get a pencil and paper and sketch out the frequencies. In order to do this you need the following information:

CLOVER Tones: 2062.5, 2187.5, 2312.5, and 2437.5 Hz (CF of Tones = 2250 Hz)

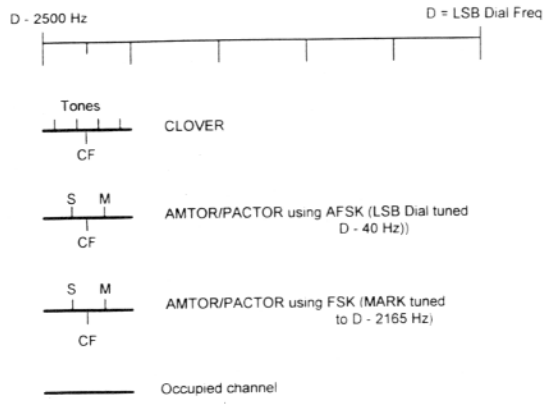


FIGURE 2

OCCUPIED CHANNELS Using Center Frequency Concept

AMTOR/PACTOR Tones (170 Hz shift): 2125 and 2295 Hz (CF of Tones = 2210 Hz)

PACTOR Tones (200 Hz shift): 2110 and 2310 Hz (CF of Tones = 2210 Hz)

Note: The RF transmitted frequency corresponding to a particular tone is the LSB frequency minus the tone frequency.

HOW DO YOU TUNE YOUR RADIO?

The answer to that question obviously depends on the mode being used and whether you are using LSB (tuning Suppressed Carrier) or FSK (tuning MARK) on your radio. The TS-940 is an exception since it tunes the SPACE frequency in the FSK mode.

First let's consider an AMTOR signal with a specified Center Frequency of 7070.25 KHz. The occupied channel of this signal would be 7070.0 to 7070.5 KHz. If you are using AFSK (LSB) on your radio, what frequency do you set the dial to? Well, the center of the AMTOR signal tones is 2210 Hz. The Suppressed Carrier Frequency (LSB Dial) must then be set to 2.21 KHz above the CF of the AMTOR signal or 7072.46 KHz. So you would tune you LSB Dial 2.21 KHz above the specified Center Frequency for AMTOR/PACTOR. Notice that it makes no difference whether you are using 200 or 170 Hz shift on PACTOR because the center frequency of the audio tones is the same in both those situations. What are you doing now in this situation, given that the AMTOR signal is specified in terms of the MARK frequency? You tune your LSB Dial 2.125 KHz higher than the MARK. There is no additional complexity involved since we are saying just add 2.21 KHz to the Center Frequency instead.

What if you use FSK and now tune the MARK frequency? Again let us use the example given above where the Center Frequency of the AMTOR signal is 7070.25 KHz. The Radio Frequency of the MARK signal is 1/2 the shift above the Center Frequency. The SPACE signal is always the lowest Radio Frequency, remember LSMFT (Low Space Means Fine Teleprinting). Since the shift is 170 Hz, 1/2 of which is 85 Hz, you set your Mark Dial to read 85 Hz above the specified Center Frequency. In this case the MARK Dial would be 7070.335 KHz. Now I will admit that none of the radios I am familiar with will tune to the nearest Hz, so lets just round that off to 7070.34 KHz. So just add 90 Hz instead of 85 Hz. In fact many of you may not indicate better than 100 Hz, so you will have to punt a bit. Most of the newer radios, i.e. IC-765, TS-850, FT-1000, will tune to 10 Hz and stay there for months on end however if they are left on.

What if you want to tune a CLOVER signal on 7070.25 KHz Center Frequency? That turns out to be the easy one. Again you just add the CF of the CLOVER tones to 7070.25 KHz. Since the center frequency of the CLOVER tones is 2250 Hz, we get 7070.25 KHz plus 2.25 KHz or 7072.5 KHz.

For a summary of the tuning information, refer to Figure 3.

Why Did All These Complexities Come About?

Maybe that is a good question, but one could make the argument that the 170 Hz shift is the part that is out of step. How did we ever come up with that shift? It is certainly not what you would call a round number. As I remember, in the early RTTY days the basic oscillator ran at 85 Hz (or maybe it was 21.25 Hz). Using that oscillator, all of the commonly used tones could be generated using harmonics. 2125 Hz is the 25th harmonic of 85 Hz, 2295 Hz is the 27th harmonic of 85 Hz, 2550 Hz (used in 425 Hz shift) is the 30th harmonic of 85 Hz and 2975 Hz (used in 850 Hz shift) is the 35th harmonic of 85 Hz. Using the conventional CCIT formula for bandwidth, a 100 Baud - 170 Hz shift signal has a bandwidth of about 305 Hz as I recall. However, experience has shown that it is difficult to operate these signal closer than with a 500 Hz spacing. The justification for moving the 170 Hz signals from where we are familiar is not because of CLOVER, it is because that is what has to be done in order to use the spectrum more efficiently. The developers of CLOVER properly analyzed the situation when they picked the Quad-Tone set for that mode.

Summary

I hope this explanation has been clear to all. With the growth that I am sure we will see with these digital modes in the future, it is going to be imperative that we use the spectrum as efficiently as possible. To start with, all MBO's should be using the Center Frequency concept with Center Frequencies of XXX.25 KHz and XXX.75 KHz. If this happens, the general crowd will eventually follow. If you are using CLOVER, your dial should read XXX.25 KHz or XXX.75 KHz. If you are using AMTOR/PACTOR AFSK (LSB), your dial should read XXX.46 KHz or XXX.96 KHz. If you are using AMTOR/PACTOR FSK (MARK), your dial should read XXX.34 KHz or XXX.84 KHz. If you are using AMTOR/PACTOR FSK (SPACE), your dial should read XXX.17 KHz or XXX.67 KHz.

GOD BLESS and 73

de Jim, KE5HE ■

AMTOR/PACTOR using AFSK (LSB) - Tune CF + 2.21 KHz

AMTOR/PACTOR using FSK (MARK) - Tune CF + 0.085 KHz

AMTOR/PACTOR using FSK (SPACE) - Tune CF - 0.085 KHz

CLOVER using LSB - Tune CF + 2.25 KHz

FIGURE 3

Tuning Information

DX NEWS

Jules Freundlich, W2JGR
825 Summit Ave., Apt 1401
Minneapolis, MN 55403-3188

We had bad news, in July, for all those who aspire to a RTTY DXCC Honor Roll. According to ARRL DX Bulletin 36 (ARLD036), the ARRL DX Advisory Committee (DXAC) voted down a proposal, 10 to 6, to add Band, or Mode-Specific honor rolls to the DXCC Program. They cited concern about a proliferation of awards. Why this should be a problem, now that the DXCC records have been computerized, is not at all clear to me.

If you are already on the Mixed Honor Roll, your RTTY DXCC endorsements, or your single band endorsements, have no singular end point of fulfillment. If you have not yet reached the Honor Roll level on Mixed Mode, you can "look forward" to being listed on the Mixed Mode Honor Roll when you do reach that level on RTTY. The RTTY distinction of your very difficult achievement will have been lost. In other words, your unique accomplishment (as you climbed up the RTTY endorsement ladder) will be "derecognized". The same comments apply, of course, to single band aspirants.

This is a sad commentary on an otherwise excellently administered awards program, which purportedly is designed to recognize various levels/modes of operating achievement. We can only hope that a future enlightened DXAC will correct what appears to be a shortsighted collective error of judgement. Our appreciation is extended to the six DXAC members who did vote in favor of the proposal.

Speaking of super-operators...do you know that UZ9CWA is only eight countries away, on 80 meters, from achieving 5BDXCC on RTTY? They already have four band DXCC on 10-40 meters confirmed. Does any other station come close to this? It looks like we may be petitioning the DXAC again, this time for a distinctive RTTY 5BDXCC award. Stay tuned.

In spite of the declining sunspot activity, there is lots of DX happening, and scheduled to happen in the forthcoming months. We will just have to work harder to fill the logbook, and make sure to be in the right place at the right time. I think you will find most of the action on 20 meters, with an occasional 15 meter opening.

DX DOINGS

ANGUILLA, VP2E - John, KA3DBN, will be on Anguilla for about 10 days as VP2EBN, starting August 28th. Following that stint, he plans to trek over the water to PJ, St. Maarten, for a couple of days. QSL to his home CBA.

BAHAMAS, C6A - John, W9ILY, and Ed, K2ZDC, will fire up their TS-450S/AT into an R-7 vertical, controlled by a 486 laptop driven by a PK232MBX TNC, from this sunny island, 17-20 October. Operation will be all bands 10-80 (maybe 160). They will do RTTY, AMTOR and Packet. QSL C6A/W9ILY and C6A/K2ZDC direct to W9ILY, or via the bureau.

BELAU, KC6 - A group of JA's from the Kyoto Amateur Radio Club was scheduled to operate from here during the second week of August. If you worked them, QSL to JA3OIN.

BOUVET, 3Y - This long shot, by a Russian group on an around the world cruise, continues to be reported. The DX Magazine stated that the callsign 3Y/R0L has been issued to Yuri Zaruba, UA9OBA. Since this is the middle of the Antarctic winter, a landing soon is highly unlikely.

BOSNIA-HERZEGOVINA, T9 - The new T9 prefix became effective May 12, 1993. Contacts made with stations using the 4N and 4O prefixes prior to this date are valid for DXCC. Contacts made on or after May 12 must be with stations using the T9 prefix to be acceptable for DXCC credit.

BRUNEI, V8 - Gerald, V85GA, likes 20 meters mostly, and can be found around 1430Z or 2230Z. QSL to P. O. Box 1200, B.S.B. 1912, Brunei, Borneo.

CENTRAL AFRICAN REPUBLIC, TL - TL8NG continues to elude me, but he has been reported on 15 meters at 1720 and 2000Z.

CHINA, BY - Rick of BY1QH fame has been operating BT2000BJ, a special event station indicating China's bid for the 2000 Olympics. Look for his big signal during a 20 meters transpolar opening between 1300-1630Z. QSL to BY1QH. BV7WB, a new call, may also be found around the same time.

ERITREA, E5 - Eritrea became totally independent from Ethiopia, as a result of a 3 day referendum held in April. A 98.25% voter turnout was almost unanimous. As a result of the subsequent and highly successful training exercise conducted by the E35X group, led by Einar, LA1EE, we should shortly be seeing the appearance of some transient Dxpeditioners as well as some "regulars". As this is being written at the beginning of August, we are awaiting DXAC action on the DXCC country status of Eritrea.

ETHIOPIA, ET - Dragen, ET3YU, has joined Sid, ET3SID in providing a new one to the deserving. Both stations give notably fast QSL returns in less than three weeks. Recent reports indicate most activity by them is on 15 meters between 1615-1730Z, although ET3YU does operate as late as 2145Z on 20 meters. QSL ET3YU to P.O. Box 60349, Addis Ababa.

EQUATORIAL GUINEA, 3C - As hoped, Ed, 3C1TR took a break from SSB, and has made showings on RTTY on 15 and 20 meters. Ed may appear almost any time, depending on propagation. No discernible operating time pattern can yet be seen. Lets hope we see more of him. QSL to K8JP.

FINLAND, OH - Welcome Mikko, OH3LIM, to RTTY. He can be found on 20 meters around 2230-0100Z.

GIBRALTER, ZB - Goran, ZB2/SM4DHF will be active from the Rock from 22-28 September, including the CQWW RTTY Contest. He will also operate W/SSB before and after the contest, including the WARC bands. QSL to: SM4DHF Goran Ostman, Wallenstrales v. 54, S-692 36 Kumla, Sweden.

GUANTANAMO BAY, KG4 - It is nice to see RTTY again from Gitmo. KG4HG may be found on 20 meters around 0030Z or 1230Z, or on 15 meters around 2000Z. QSL to Humes, KG4HG, PSC 1005 Box 47, FPO AE 09593-0146, USA

GUINEA-BISSAU, J5 - Mark, J5UAI had been active on RTTY until he had to return his borrowed laptop computer. Mark will be active from J5 until July 1995, and seeks the loan of a computer until that time. Any offers? QSL Mark to NW8F. (Tnx OPDX/BARF80)

HONG KONG, VR2 - VR2GC has been active on both 15 and 20 meters, depending upon propagation. Listen around 1500-1700Z. QSL Tom to HARTS, P.O. Box 541, Hong Kong.

ICELAND, TF - After completing his graduate work in the States, Kris, TF3KX, is back home for good and is again active on RTTY. He is looking forward particularly to all the RTTY contests. Look for him on 20 meters after 2215Z. QSL to Kristinn Andersen, Skulaskeid 10, 220 Hafnerfjordur, Iceland.

IRAQ, YI - With the advent of individually licensed station, we have seen several new call signs appear. They all seem to like 15 meters. YI1OMR shows around 1505Z. QSL to Box 27104, Baghdad.

YI1HS, a YL named Hafsa also comes up around 1200Z. YI1AL was reported to be on the same band around the same time.

KAMPUCHEA, XU - If you are lucky, you can find Gerritt, XU3DWC on 20 meters between 1300-1500Z. He will be in XU-land until some time in September.

KOREA, HL - HL5AWS has been appearing quite regularly as conditions allow. He can be found mostly on 20 meters between 1145-1630Z, with an occasional appearance on 15 meters, in the same time slot.

MACEDONIA, Z3 - Another prefix change occurred when the ITU assigned the Z3A-Z3Z block to this former Yugoslav Republic. 4N5 stations began using the new prefix early in the summer. One of the most active is club station Z31GBC, which has been operating at 50 baud.

MELLISH REEF, VK9Z - Ken, V73C, with eight operators will fire up on September 19, for 10 days, using 5 HF rigs, 160-6 meters, including RTTY furnished by Ken. RTTY frequencies will be 14080 and 21080. Like other expeditions of its kind, this one is expensive and needs your support. Donations may be sent to Murray D. Adams, WA4DAN, 1993 Mellish Reef Dxpedition, 403 East 14th Street, Greenville, SC 27858, or to Bill Horner, VK3CRR, 1993 Mellish Reef Dxpedition, 26 Iron St., Gympie, QLD4570, Australia.

MONGOLIA, JT - BAT, JT1CS has put Zone 23 back on RTTY, courtesy of the Microlog AIR-1 donated by Glenn, AE0Q. After learning of Bat's need from John, N0FAC, Glenn spotted the gear for sale on his local BBS, grabbed it, and sent it air mail via Japan. Bat can best be found on 20 meters between 1300-1500Z. QSL to Box 125, Ulan Bator, Mongolia, via Japan.

MOUNT ATHOS, SV/A - Would you believe that the latest rumor has Doc, JA3PFZ, soon on his way to operate from the holy mountain? Watch the weekly VK2SG RTTY DX NOTES for any late breaking information.

NAMIBIA, V51 - Gerd, V51GB can sometimes be found, propagation permitting, on 15 meters around 1700Z. QSL to P.O. Box 1165, Tsumeb 9000, Namibia with the equivalent of 5 IRC's for return postage. Do not send IRC's as his Post does not accept them.

NEW ZEALAND, ZL - If you have your antenna in the right direction, you may find ZL1VT on 20 meters around 0400Z.

OMAN, A4 - Bill, A45ZW is now active on RTTY from this Sultanate. Bill can be found working the RTTY contests as well as rag chewing. He is not new to RTTY, as he brought his RTTY, SSTV, and SSB gear from EL2 and TU2 a few years back. Bill is running a Yaesu 767, R5 vertical, and a PK-232. QSL to K1SE.

PETER I IS, 3Y - This country is Number One of the Most Wanted RTTY DX Countries. More details have been provided by Ralph, K0IR, the team leader, on preparations for the 1994 expedition to this Antarctic outpost. See sidebar for latest release. We also learned from Ralph, that, in addition to the usual logistics planning, license applications, and landing permits, the expedition is required to submit an Environmental Impact Statement to the National Science Foundation!

It seems that any American going below 60 degrees south, (Peter I is at 68 deg. 49 min S.) and setting up camp, or traveling overland must file such a document. The document must detail how the activity will impact the natural environment and wildlife. It must detail how potential problems will be dealt with--disruption of the natural surfaces, fuel spills, potential pollutants, noise pollution, etc. Everything brought ashore (or produced while ashore) must be removed and the method of removal and storage must be outlined. The purpose of the visit must be indicated, supply sources listed, etc., etc. Planning for a DXpedition isn't as simple(?) as it used to be!!

PRATAS I, BV9? - An expedition to this island in the South China Sea, located about 350 miles from Taiwan, has been promised for several months. The latest word, at the time we went to press, was that it would take place in September, by members of the Chinese Taipei Amateur Radio League (CTARL). Operations are to be on all bands and modes. A petition for seperate DXCC country status has been submitted to the DXAC. WFWL.

ST. PAUL I., CY9 - A group of Canadian operators should be active from here, as CY9CWI, about the time you read this. They were scheduled to be active August 14-18. qsl to the West Island Amateur Radio Club, P. O. Box 884, Pointe-Claire/Dorval, Quebec H9R 4Z6, Canada

ST. PETER AND ST. PAUL ROCKS, PY0 - Karl Leite, PS7KM, who led a previous expedition to this place in 1989, as well as to the other Brazilian islands of Trinidade in 1988, and Fernando de Noronha in 1987, will again head a group , in early 1994, to activate this lonely crag in the South Atlantic, for three weeks. Calls will be PS7SK and PS7SP. This ambitious effort will include RTTY, CW, SSB, Packet, and Satellite modes, at an estmated total cost of US$4000. The prior RTTY attempt in 1989 met with limited success due to an accident which resulted in personal injury.

For RTTY operation, the group is seeking a small laptop/notebook computer. If you can lend such equipment, please advise PS7KM. (See sidebar page 26.)

PS7KM will be QSL Manager for RTTY. Contributions should be airmailed (registered) to Natal DX Group, Caixa Postal 385, 59001-970 Natal, RN -Brazil.

SINGAPORE, 9V - Look for 9V1JY and 9V1YW in the 20 meters RTTY slot starting around 1215Z, their dinner time.

SOUTH COOK, ZK1 - Nob, JF2MBF, who recently completed his multimonth Pacific circuit has advised that some of his friends will go to South Cook in October, and will be QRV on 160 meter RTTY...a nice one to snag on top band!

SRI LANKA, 4S7 - 4S7RM sometimes appears on 20 meters as late as 1730Z.

TROMELIN, FR/T - Look for Jacques, FR5ZU to be here toward the end of September. QSL via VE2NW.

TUNISIA, 3V - There has not been a legitimate operation from Tunisia in several years. We have seen a series of reports that Romeo, 3W3RR/AH0M, would lead a multinational expedition of 16 operators after he has completed his stint at Libya, 5A. The last word is that it might materialize at the end of August. All bands and modes (including RTTY), with three operating positions are promised.

UGANDA, 5X - As expected more stations are appearing on RTTY. They include 5X1C, (QSL via Box 9276, Kampala), and 5X1GH. Look for them on 20 meters between 1930-2200Z.

WAKE ISLAND, KH9 - A radio propagation experiment is being combined with a DXpedition to Wake Island by the Cal Poly Amateur Radio Club for late August or early September. Activity will be on "all bands and modes." We assume RTTY is included, but it was not specifically mentioned. Call sign is yet to be announced. QSL all contacts to: Oklahoma DX Association, P. O. Box 88, Wellston, OK 74881.

WALVIS BAY, ZS9 - We are happy to see Ian, ZS9A, again active on RTTY. Look for him on 15 meters between 1400-1600Z. QSL to ZS1IS.

MORE RTTY OPERATING HINTS

I am indebted to Dave, KD2YG, for his "ten best" hints for more effective RTTY operating:

#1 - If you can't print him, don't call him.

#2 - Listen.

#3 - Be at the QRG at the right UTC. Be alert to surprise appearances by rare DX.

#4 - In a simplex pile-up, sending your call more times in a row han anyone elses, is as likely to cover the DX station's reply to you, as it is to get you a QSO. (See #2) #5 - Rare DX should work split, and announce it often.

#6 - RTTY DX contests are not necessarily the best time to work new countries.

#7 -Never send RYRYRYRYRY unless you are a DX station waiting out the pileup. RYRYRYRYRY, when translated, usually means "lid on frequency."

#8 - It's OK to get mad at your computer.

#9 - It's alright to not get that new one you hear in a pileup. Remember that somebody else will always work 'em first...will always have more countries worked and confirmed...will always have more rig, more watts, more tower, more gain, more propagation, more time, more luck, and less wife.

#10 - Actually some wives (and husbands) are very understanding.

Thanks Dave, I think you've said it all. (Hope the new twin babies are flourishing and not taking too much time from chasing DX.)

QSL POTPOURRI

Dima, UT5RP has advised that even registered airmail letters addressed to him have been diverted. Several cards sent during January-April 1993 were never received. Anyone who sent their card this way to Dima, and have not received their Ukraine QSLs in return, should request their local sending post office to trace the delivery of the envelopes. Dima's address is good in any callbook. He suggests using double sealed envelopes. He cannot use IRC's, as the local post office doesn't know what they are. It looks to me like Dima should, as several Russians are now doing, get himself a stateside QSL manager.

This must be some kind of a record for direct response time. (Guiness Book of Records, take note!) Carl, K6WZ, received a QSL card for a 1985 QSO with Frank, TI9WI, seven years and three months after his submission. If you still need a card for this one, try the followimg address: Jose Franco Arias D., 2021 Guadeloupe St. 100-2611, Austin, TX 78705. Good luck!

It is estimated that the cards for the AH1A, Howland Island expedition will be in the mail by the end of September. They were printed in Belgium, and arrived in Denver on 16 July.

Kudos to Frank, CN8NP who answers all cards received and doesn't require return postage.

We received word from Pasquale, 4M5RY, that he is planning another expedition to YV0 in the near future. Date is as yet not firm. I suggest that Pasquale obtain a stateside QSL Manager for that operation. See the following paragraph.

Are you a DX station that needs a QSL Manager? If so, Ted, N6EQZ is volunteering for any DX station who needs one. Send info to N6EQZ @ N6EQZ.#APL.WA.USA.NA.

Reports of the demise of Box 88 in Moscow appear to be premature. ARRL reported that in a recent 1-1/2 week period, the incoming QSL Bureau received 48,000 cards. Spasiba Box 88!

RUSSIAN CALL SIGNS

Callsigns in the republics of the former USSR are undergoing major changes. New assignments include the following:

- 4J,4K - Azerbaydzhan
- 4L - Georgia
- EK - Armenia
- ER - Moldova
- EU, EV, EW - Belarus
- EX - Kyrgyzstan
- EY - Tadzhikistan
- EZ - Turkmeniya
- R, UA to UI, 4K - Russia
- UJ(?) to UM(?), UR to UZ, EM, EO Ukraine
- UN, UO, UP, UQ - Kazakhstan
- UK(?) - Uzbekistan

Implementation seems to be haphazard as some new prefixes have been appearing amongst the ones with which we are familiar. Because the status of phasing out old calls is not known, better ask for QTH verification.

WEEKLY RTTY DX BULLETINS

From time to time you have been referred to the "VK2SG RTTY DX NOTES". These bulletins, which originate on HF AMTOR, are a good source of timely RTTY DX information. They were originated many years ago by Syd Molon, VK2SG, "(DX1)", and given enhanced distribution by the late John Troost, TG9VT. While "DX1" now sits on the sidelines and rests with his well earned laurels, submitting DX tidbits for the NOTES, from time to time, the tradition is being carried on for him by a rotating trio of editors, consisting of Luciano, I5FLN, Bob, WB2CJL, and your DX Editor, W2JGR.

The NOTES are the only weekly on-the-air bulletins devoted exclusively to disseminating news of interest to RTTY DXers. They are issued early on Friday mornings UTC, and by Friday afternoon have generally been distributed around the world via the APLink network. APLink mailbox stations that regularly carry them are CE3GDN[1], I5FLN, VK2AGE, ZS5S, 9X5LJ, W5KSI, and others. Once you have logged into an APLink mailbox, to list bulletins, send an <LB> **command,** and then a <Read nnn> command. It's a good idea to make hard copy, as the bulletin (3K+ bytes) will scroll off your screen. For the frequencies of CE3GDN, see the footnote at the end of the DX NEWS.

The bulletins are also available in my PAMS (Personal AMTOR Mailbox System) on 21074 khz days. or 14074 khz nights. PAMS commands are the same as for APLink. You can also find the bulletins in the VHF Packet BBS System.

If you do not operate AMTOR, or VHF packet, you can usually pick the NOTES up from the MSO of K5FL operating on the National Autostart Frequency of 14085.625 khz (MARK) at 74 baud. Access command is <Enter> <MSO5FL>. A <Enter> < .DIR> command will tell you which bulletins are in the directory. To call up the bulletin of your choice, send **<Enter> < .READ bulletin name>.**

By making a habit of reading these weekly bulletins you can keep current on time critical DX happenings, as well as determining operating profiles of many of the rare and semi-rare ones. Of course, there is also the occasional unique tidbit to be found.

Readers of the "VK2SG RTTY DX NOTES" are invited to contribute their DX information via APlink. An appreciative credit is always given even if a submission cannot be used. Each edition tells you where to send your DX news for the coming week. If unable to reach the intended recipient directly, allow time for relaying delays. Deadline for receipt of your information by the "editor-of-the-week" is approximately 2100Z every Thursday.

HAVE DX NEWS?

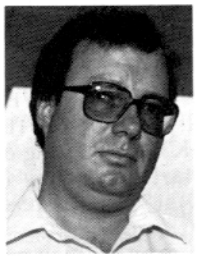
I can be reached directly by dropping mail into my PAMS, leaving a message in the APLink box of CE3GDN(1), sending me a packet message addressed to W2JGR @ WB0GDB.MN.USA.NA, finding me on RTTY, telephoning me at (612) 377 7269, or FAXing me at (612) 374 8161. If you FAX me, please address it with my 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 PAMS listens on 21074 khz during daylight hours, and 14074 khz at night, in the Central Time Zone. Set your chirping to WJGR.

THANKS - Thanks to the following for all your information: A45ZW, F8XT, I5FLN, JA3DLE/1, JF2MBF, KA3DBN, KD2YG, NA2M, WB2CJL, N4LIH, K6WZ, KE6XJ, N6EQZ, W6/G0AZT, K9AJ, W9ILY, AE0Q, K0IR, K0QC, N0FAC, PS7KM, SM4DHF, UT5RP, UZ9CWA, VK2SG, WB2CJL, and 4M5RY. 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, and 28135 KHz.



CLOVER

Jay Townsend, WS7I
P.O. BOX 644
Spokane, WA 99210

RAIN, RAIN GO AWAY

Its been raining for days and days here in the Pacific Northwest and the only good thing is that it floods only in the winter months, so that hasn't been a problem. Great weather for working in the radio shack and I have been busy. Betsy has recovered quite nicely from her operation and is back in full force so that's very good news.

Received another CLOVER board and have been doing a lot of things with it in the last month or so. As promised I have it hooked up to the W0RLI BBS software and will discuss that in some detail in this column.

CLOVER AND W0RLI BBS

I began my packet career some years ago running W0RLI software and used it in the early days of the Air Force MARS transcon packet system. We were forced to switch to another author's software and that was part of the reason that I retired from the Air Force MARS transcon system.

So it's been about ten years or so since I have played with packet BBS systems other than setting up FBB here about a year ago and trying to get it to interface with the WS7I PacketCluster system which wasn't very successful.

From Hal Communications BBS I downloaded the RLI software and set up an area in my computer for testing. There seemed to be a shortage of documentation on some of the RLI system. I then sent Hank, W0RLI, a message and asked about the current BBS version. Another download to get the latest version (15.6) and I was set. I printed up the doc's and began studying. It appeared that not only was CLOVER going to be necessary in this project, but I needed to have VHF access and use the G8BPQ code as well. Needless to say that sounded fun.

Since I happened to have an extra DRSI dual port VHF packet board in the shack that was awaiting for a new cluster site I used it for VHF. The BPQ code setup was quite easy and went quickly. The only problem there was/is that ports on 220 and 2 meters all looked about the same. Same node call. But all seemed to work.

On to the RLI code. After studying the examples I fired it up and all seemed to work fine. Only problem was that no where in the instructions could I find out how to get from the program into the system. I could have fired a note to Hank, but I decided that it must be there in the doc's -- somewhere. Nope! It's not. A control-E did the trick as I ran through the function keys, Alt keys and the Ctrl keys. Finally it dropped to the user. Somewhere there must be a complete set of doc's for the W0RLI code but they didn't come with the code that I downloaded from the BBSs I tried.

It worked fine on VHF and I set out to find a few CLOVER stations to copy. After using the Hal Communications software it was a little strange to use the RLI software but I quickly made a few contacts and established communications with WA7SJN on 40 meters who has a booming signal. K4JCX seems to hear me but evidently has limited access or I need to do something to access him that I don't know about.

All in all the adaptation to W0RLI software was effortless and it worked well right out of the box. The instructions on doing CLOVER are in the forward file and in some supplemental doc's that are included. Hank, as always, has done a bang up job in getting the BBS out. With the W0RLI CLOVER BBS is up and running I have been forwarded some traffic sucessfully. The guys doing CLOVER as part of the Winlink and the Clover Network are very helpful and I have had some great notes from Hank, W0RLI, WA7SJN, Bud, N0IA and N7CR here in Spokane, who got my first PCI 4000 board. Bud, N0IA reports that he has had very limited success with copying (listen mode) Clover on the band. N0IA sez "Hi, Jay. Really enjoyed your up-beat article in the RJ on CLOVER and using it for QSOs.. I have not quite had as positive an experience as you. I only operate the PCI-4000 with WinLink/BBS, but while I do copy some information "unproto", it is not frequent enough to determine what is going on between two linked stations... especially under weak signal conditions." Well Bud I continue to have great success and have clocked traffic from N6IYA to WA7SJN for many hours and indeed think that a "broadcast" method of bulletin transfer is possible. I think that using FEC modes might allow a network to really send a bunch of stuff.

Also received a note from Ian, G4EAN, the BARTG Secretary who had some questions about CLOVER and some comments on European importers and their prices. Seems they double the US price. Only thing I might mention on that

CLOVER NETWORK LISTING

CALL	FREQUENCIES
KB1PJ	7066
WA1URA	3625,30 - 7066,67,68 - 10135,136 - 14066,67,68 - 21066,68
W2NRE	7066,68 - 14066,68 - 18106 - 21066
W2TKU	7066,68 - 14066,68 - 21066
K4CJX	3630 - 7066,67,68 - 10135,136 - 14066,67,68 - 21066
KK4CQ	3630 - 7066,68 - 10135 - 14066,67 - 28128
KP4GE	14065 - 21065 (15 days, 20 nights)
W4NPX	3630 - 7066,68 - 10135,136 - 14066,68 - 21066 - 28130
W5XO	3625,30 - 7066,67,68,69 - 10135,136 - 14066,67,68,69 - 18084 -21066,67,69,69 - 24924 - 28084
N6IYA	64,65,66,67,68,69 ON 7 and14 (20 Days, 40 all hours)
N7CR	7064,66,68 - 10136 - 14066,68
W7IJ	3630 - 7076 - 10135,136 - 14078,79 - 21082
WA7SJN	7064
WA9WCN	3630- 7065,67- 10135- 14065,67- 21082- 28130
N0IA	3630- 7066,67,68,69- 10134,135- 14067,69- 18105- 21067,69
W0RLI	7065,67,68 - 14065,67,68 - 21065,67,68 (15/20 Days, 40 Nights)
KA0JRQ	3630 - 7065,67 - 10134,135 - 14065,67 - 18105 - 21075 - 24911
ZS5S	7039 - 14066 - 21066 (NA 0630-0730, 1700-0600)

This list was courtesy of Hank W0RLI and I think there are additional Winlink stations not listed.

NEWS

The news of the month is that CLOVER operations have moved to the low end of the digital areas and have vacated the traditional RTTY part of the band. This was in large part due to the efforts of the ADRS group and the efforts of Hank, W0RLI and K4JCX, as I have the story. This is quite a story of co-operation and came about very quickly before a RTTY contest. It shows there is promise for OUR future in Digital ... Bright and Clear.

What remains is a national CLOVER keyboarding frequency and if there are suggestions please forward them in to

is to contact Hal Communications direct and see what they can do.

CLOVER RUMORS

I have finally established an inside source that tells me some of the news from Hal Communications. Actually I have two, an official source and an un-official one also! CLOVER release 6 is about ready for distribution and should include Binary File transfer, an improved Chat mode, and compression as well as other features. According to my source this should be ready about the time this column is being read. Some tests have indicated that 4 Megabytes of 2 meter messages was reduced to a 40 kilobyte file and sent. Man that really speeds things up. There are also some requests on the Hal BBS for a net of CLOVER users. N2HOS reports, in a long CLOVER QSO that Peter TY1PS, software will be ready by September and that ADRS will have more information on the software.

Next month along with the news of CLOVER we will have the long awaited look at the PK-900 that I have been testing with Windows and the PKratt software. This was a project that has been in the making for a long time.

Send me your comments and ideas. The Radio Therapy BBS is once again up and running. Its 509.533.0539 and still a part of FidoNet 346/3. This BBS is also part of the ADRS system and will have the breaking news from them.

73, de **Jay, Ws7i** ■

WS7I @ WS7I.#EWA.WA.USA.NA MCImail : JTownsend FidoNet : 346/3 Radio Therapy BBS 509.533.0539

Hits & Misses continued from page 2

While I'm on this subject of burst modes. Where are you running your ALC control? I have talked to numerous Hams about this critical control, most of them complaining about Hams running this control wide open. The experts tell me that this is not necessary at all. They recommend turning down the control until the light (if you have one) just goes out or flickers slightly. Personally, I run mine just below where the light comes on when operating Clover.

Space Probelms

Space has become a problem in the past few issues even after increasing to 32 pages. I am already looking forward to starting the next issue because I have some interesting material to publish. So stay tuned. 73 for now.

de **Dale, W6IWO** ■

CQ World-Wide DX Contest All-Time RTTY Records

By Jay W. Townsend, WS7I

Single Operator/Single Band

World Record Holders

Yr	Band	Call	Score	#QSO	QPts	Zne	Cty	St&Pro
1992	3.5	YU3BQ	11,781	111	231	8	35	8
1992	7	W2UP	64,329	301	523	20	56	47
1992	14	4M5RY	270,256	599	1,778	23	73	56
1992	21	ZP5JCY	433,532	871	2,596	30	85	52
1992	28	ZD8LII	355,426	840	2,503	23	66	53
AFRICA								
	3.5		No Entry					
1988	7	EA8AKQ	12	2	6	1	1	0
1990	14	EA8RA	104,451	315	941	25	46	40
1992	21	ZS6EZ	382,630	772	2,305	27	87	52
1992	28	ZD8LII	355,426	840	2,503	23	66	53
ASIA								
1992	3.5	JR2CFD	153	10	17	4	3	2
1987	7	JA8EAT	1,911	35		8	8	5
1987	14	4X6MH	96,726	351		22	53	1
1992	21	JE2UFF	84,588	259	742	25	55	34
1990	28	JR1IJV	123,066	328	954	28	59	42
EUROPE								
1992	3.5	YU3BQ	11,781	111	231	8	35	8
1989	7	HB9DCQ	48,865	224	515	19	49	23
1989	14	YU2W	246,272	598	1,664	30	64	54
1992	21	LZ1MC	247,950	623	1,653	27	70	53
1990	28	4U1ITU	236,842	547	1,499	32	79	47
NORTH AMERICA								
1990	3.5	WA8TXT	3,108	73	84	3	3	31
1992	7	W2UP	64,329	301	523	20	56	47
1990	14	ZF1RY Op. G0AZT	209,635	673	1,625	21	59	49
1989	21	KE0KB	138,205	468	1,055	26	65	40
1990	28	AB8K	96,250	312	770	29	67	29
OCEANIA								
	3.5	No Entry						
	7	No Entry						
1990	14	VK3EBP	62,964	198	583	24	48	36
1990	21	YC1YMN	116,051	344	1,027	25	50	38
1989	28	KX6OI	49,572	206	612	18	37	26
SOUTH AMERICA								
	3.5	No Entry						
1991	7	HJ4QIM	21,634	129	373	8	11	39
1992	14	4M5RY	270,256	599	1,778	23	73	56
1991	28	ZP5JCY	235,884	599	1,787	23	57	52

Single Operator/All Band Assisted

	AF	No Entry						
1992	AS	JA3VXH	15,660	64	180	31	42	14
1992	EU	DK3GI	1,088,330	908	2,531	87	205	138
1992	NA	K1IU	971,412	911	2,028	96	222	161
		OC	No Entry					
		SA	No Entry					
World Record								
1992		DK3GI	1,088,330	908	2,531	87	205	138

Single Operator/All Band

1991	AF	CT3M Op. DJ6QT	1,075,584	941	2,801	82	213	89
1990	AS	JH1QDB/JD1	544,101	683	1,857	68	127	98
1992	EU	GU3HFN	1,223,849	1,081	3,007	80	191	136
1990	NA	TG9VT	1,142,946	1,090	2,702	91	182	150
1990	OC	KG6DX	591,839	633	1,867	80	134	103
1990	SA	HC5J Op. WS7I	1,364,972	1,143	3,362	89	185	132

Continued next page

World Record

1990	HC5J Op. WS7I	1,364,972	1,143	3,362	89	185	132

Multi-Operator/Single Xmtr.

Year	Band	Call	Score	#QSO	QPts	Zne	Cty	St&Pro
1992	AF	EG8CMR	963,116	1,048	3,127	59	120	129
1992	AS	UZ9CWA	2,547,575	1,508	4,525	108	348	107
1992	EU	UW2F	2,847,220	1,767	4,909	106	271	203
1991	NA	V2/G0AZT	1,680,607	1.577	3,743	78	180	191
1992	OC	VK2RT	151,632	326	972	36	61	59
1992	SA	P40RY	3,543,090	2,222	6,635	91	220	223
WORLD RECORD								
1992		P40RY	3,543,090	2,222	6,635	91	220	223

Multi-Operator/Multi Xmtr

		AF	No Entry					
1990	AS	JL1ZCG	315,806	409	1,174	69	115	85
1991	EU	LY2WW	927,710	916	2,285	87	236	83
1992	NA	W3LPL	3,111,748	2,233	4,556	116	326	241
1992	OC	T32RA	1,770,131	1,744	5,191	69	118	154
		SA	No Entry					
WORLD RECORD								
1992		W3LPL	3,111,748	2,233	4,556	116	326	241

These records were compiled from the RTTY Journal. If there is additional interest in expansion of these records please drop me a note. Include any spelling and/or corrections to the data.

73, Jay, Ws7i

QSL ROUTES de Betsy, WV7Y

Its been quite a while so we have a pretty good stack of Qsl routes for you. These routes are gleaned from the RTTY DX bulletins, the W6GO list, and from information that active DXers are sending to me.

3A/IK1HLG	Qsl POB 155, 17025 lOANO SV ITALY
5X1C	Qsl Box 9276, Kampala
5Z4FM	Qsl Box 34168, Nairobi
A71CW	Qsl Chris Box 22101, Doha, Qatar
CE0ZIS	Qsl Box 1, Juan Fernandez
ET3YU	Qsl POB 60349, Addis-Ababa
HK0DPA	Qsl Box 0890, San Andres Is., Colombia
KG5HG	Qsl KG4HG, PSC 1005 Box 47 FPO AE 09593-0146, USA
OK1AJN	Qsl P.O. Box 127, 46601 Jablonec, Czech Republic
S92ZM	Qsl Direct Sao Tome and NOT WB2CPV
UG6GG	Qsl 4X6XK, POB 10598, 17000 Nazareth,Israel
VR2GC	Qsl C/O Haris, GPO Box 54838, Hong Kong
VR2GC	Qsl HARTS, Box 541, Hong Kong
YI1OMR	Qsl Omar, Box 27104, Baghdad Iraq (No $-IRCs only)

3C1TR	Qsl K8JP	FP/NM7N	Qsl VE7YL
3D2RW	Qsl ZL1AMO	FR5ZU/G	Qsl VE2NW
4L1BR	Qsl UF6FFF	FS5UQ	Qsl W3HNK
4L8A	Qsl OZ1HPS	HC7SK	Qsl SM6DYK
4N4ENS	Qsl DJ0JV	J5UAI	Qsl NW8F
4N5GBC	Qsl YU5GBC	J5UAI	Qsl NW8F
4N5JA	Qsl YU5XTC	OM3LA	Qsl OK3LA
4U8ITU	Qsl DK7UY	OM3ZJW	Qsl OK3JW
4X/OK1FGC	Qsl OK1AJN	RT4UA	Qsl DK1RV
5N4/K5DEA	Qsl N5PSI	S21A	Qsl W4FRU
5T5KH	Qsl WB8LFO	T24JJ	Qsl JA2FJP
5X1DX	Qsl N3JCL	T5/DL1VJ	Qsl DL1VJ
5X1XT	Qsl WF5T	UL7P	Qsl UL7PBY
5Z4TT	Qsl SP5BUD	UO5OC	Qsl SP7LZD
7Z1IS	Qsl OE6EEG	UO5OC	Qsl I8YGZ
9K2ZZ	Qsl W8CNL	UZ3AYR	Qsl WB2RAJ
A22EX	Qsl N4CID	V73C	Qsl AH9C 93 CBA
A35MW	Qsl VK2BEX	VP8CIL	Qsl G0EHR
BT2000BJ	Qsl BY1QH	XU3DWC	Qsl PA0RYS
C91AI	Qsl CT1DGZ	Z32GX	Qsl YU5GBC
C91J	Qsl W8GIO	ZC4ST	Qsl G4SGD
CY9/WA2UJH	Qsl NW8F	ZK1AJJ	Qsl JA2TBS
E35X	Qsl LA6ZH	ZK3RW	Qsl ZL1AMO
EO5U	Qsl PA3BUD	ZS9A	Qsl ZS1IS
ER0TK	Qsl SP2LZD		
ER4OWQ	Qsl SP7LZD		
ET3DX	Qsl JH1AJT		

Peter I Island DXpedition Update

The Peter I DX'pedition team will sail from Port Stanley in the Falkland Islands on Jan. 23, 1994. Their vessel will be an icebreaker with the following specifications:

Length 132.5 meters

Breadth 26.5 meters

Draft 8.5 meters

Shaft output 22,000 HP.

Displacement 18,000 tons

Cruising Speed 15 knots

The vessel can steam through pack ice 8 feet thick, has two helicopters aboard, and is fully equipped with satellite navigation and satellite derived ice chart recorders. Helicopter landing on Peter I is still scheduled for Feb. 1, 1994.

The four HF transceivers and amplifiers will be augmented by the following Cushcraft antennas: two A3S tribanders, and one 40-2CD beam, one 15-3CD monobander. one 20-3CD monobander, and one 40-2CD monobander. Vertical antennas for 160, 80, and 40 meters will also be in use.

The operation is still scheduled for 16 days to allow everyone an opportunity for a QSO despite conditions. SSB, CW and RTTY will be utilized.

There is a full complement of operators, however two are still working out their personal schedules. Alternatives are available and more will be considered. The full team will be announced when everyone's schedule is a 100% go.

The possibility of recruiting a camp cook - engineer is being considered. However, the cost to that individual would be significant! Anyone interested?

Each operator will have a heavy financial burden. Contributions to help make the expedition possible will be greatly appreciated, and should be sent to Jerry Branson, AA6BB at 93787 Dorsey Lane, Junction City, OR 97448.

73 and Tnx. - Ralph, K0IR

HARDWARE

Mike Candy, KI7FX
9111- A Utah Dr
Fairchild, WA 99011

Greetings from the Inland Northwest and the St Croix River Valley! It's been a busy two months around here with lots of things happening on the test bench, and lots of projects being planned for upcoming RDJ editions. Between my part-time wood crafting business, my regular job, and all these computers, I managed to squeeze in a couple of weeks vacation in June/July. We had a great time in the St. Croix River Valley area of Western Wisconsin but the place we were staying was in a valley and the antenna wire that I strung between two trees just wasn't enough to make any contacts during Field Day '93. But, vacation time is over and it's time to get back to work. Last month, in my article on the Kantronics KPC-3 I mentioned that I would be taking a look at the KAM Enhancement Board. I installed my upgrade in May 93, using firmware version 6.1. I have heard a lot of comments and concerns about the KAM Enhancement, but I haven't had any of those problems here. Also this month, I am going to deviate a bit from the traditional HARDWARE Column and discuss an incredible SOFTWARE/HARDWARE enhancement for your shack. One of the most useful things to modernize the Ham Shack since the transistor. It's called HamWindows Plus, a SOFTWARE package from the folks at California Software, and can revolutionize the way you operate your shack!

KAM Enhancement Board

It Really Works

First of all, let's talk about the KAM Enhancement Upgrade for the Kantronics KAM. I have been running my KAM for a couple of years, and have been satisfied with it's performance. But when the KAM Enhancement Board was offered, I jumped at the chance to try it out. The new features of this upgrade were worth the $79.00 investment. Basically, the 128K RAM, Real-time clock and lithium battery backup were enough to sell me, but Firmware Version 6.1 includes a better "personal mailbox" function as well as better on-line help, and the "New-User" or "Expert" command set like the KPC-3 I reviewed last month. Of course, I saved the best for last - The enhancement board now includes Pactor, and when teamed up with Host Master II Plus, Version 3.1, you are all set!

Installing the KAM Enhancement was a breeze. The KAM comes apart and goes back together very easily, so don't worry about doing the modification yourself. It's a very simple process of opening the case, removing three chips (and any external modems you may have) on the main board and pressing the new enhancement board in place over the old socket openings. Do a "hard reset" of the processor, re-assemble the KAM and you are ready to go. Kantronics also included a jumper wire to help with grounding the KAM's case - make sure you don't forget to install this wire. Once I got things back together and reset the TNC's parameters, was back on the air within 30 minutes. If you are using Kantronic's Host Master II Plus, you should upgrade to Version 3.1 so you have access to the new features of the firmware, primarily the Pactor Mode while retaining the familiar Host Master II Plus "dual port" interface. Kantronics will provide registered users of Host Master with an update disk (Version 3.0 to Version 3.1 with Pactor Support) for no charge. Finally, At $79.00, the KAM Enhancement Board is a bargain. When you consider all of the new features and Pactor, it's a steal! If you are not already on Kantronic's mailing list, you can write to them at: Kantronics, 1202 E. 23rd Street, Lawrence, KS. 66046.

While we are on the subject of Host Master II Plus, I would like to address something to the Journal readers and HM2+'s author, James Orleff. With such an outstanding job that Kantronics has done with the dual-port (VHF-HF) features of the KAM, why isn't there better "contest" and "logging" support in the software? To throw a "Rig Control" program into this package would almost be too perfect! Is there something out there that I have missed? I would like to see a complete package that includes real DX Logging, Digital Operating/Contesting and Rig Control. Most good packages expect (require) a separate HF port and VHF port on the computer but KAM owners (and now AEA) know better. I may be greedy, but I want it all here. HF on the bottom of the screen, VHF PacketCluster in the middle of the screen and 5 lines of monitored VHF on the top of the screen with full HF Rig control AND easy WAS/WAZ database, callsign database, and contest dupe lookup and logging. Am I asking for too much here? Don't get me wrong, James Orleff has done an outstanding job of making Host Master II Plus work, but these (in my opinion) necessary add on's would make it the premiere system for KAM owners. Let me know what you are using, and what you think of the future for KAM users.

I Don't Do Windows Until Now!

Normally, this column is devoted to HARDWARE issues and reviews, but as we all know, to get the hardware working properly, software is the key. This month I need to stray away from the traditional hardware related topics and introduce a product that, although not exactly a hardware item, is more hardware intensive and hardware oriented for the ham shack than any other computer device that I have seen. It just might change the way you think about running your shack! The new product is called "HamWindows Plus" from the folks at California Software Inc. You can see their advertisements in the recent edition of QST magazine. HamWindows and the Radio Construction Set (HamWindows Plus) may be just what I am looking for.

First of all, I am not crazy about MS-Windows. I can go one step further and state that I don't like using Windows at all. I am an old DOS prompt nut, and if I don't see the old "C:\" I get nervous, ok? Additionally, I like to know where each byte of RAM is being used and on what task at all times. I currently run my multitasking '486 under DesqView, and I LIKE it. DesqView works well, so why change, right?

I have followed Windows evolution for many years, since the original Version 1 (yes, I still have a copy of that beast too). As Windows progressed through the last few years, it has gotten better at shielding the user from the DOS prompt, but little else. Version 3 was released, and was immediately replaced by Version 3.1 due to some serious problems with Version 3. The current Windows 3.1 is a much better product, but still has it's limitations on multitasking, and other processor intensive functions. It appears that HamWindows Plus has taken Windows to the next stage. It integrates all of the common Ham operator functions as well as "physical" control of your equipment in the shack under one, easy to use environment. Easy to use is the key word here, because when I am on the air, I don't want to worry about making the computer work properly - With HamWindows Plus, you don't need to worry. I must admit, because of HamWindows Plus, I have been using Windows a lot more. I am actually trying to get my landline BBS to work under Windows because I want

to run HamWindows all the time on my '486 machine too. HamWindows Plus is the best thing that ever happened to MS-Windows. Hams will like it too.

Let me start my discussion of this fine product by stating that I have been interested in computer control of external devices since the early days of computing. I am just one of those people who think that computers should work for us - not the other way around. I have experimented with different computer control interfaces and software in the past, and my objective was to make everything in the shack work under computer control. Most modern transceivers have computer connections and I couldn't stand to have mine remain unused. There are a lot of good articles in the HAM magazines for making different control devices for most radios, or you can contact your dealer and buy one for your rig. The California Software folks don't stop at HF radio control however. HamWindows Plus also includes full support for your VHF rig, rotor controller, and TNC. Now that's a handful for any software (and hardware) to handle. HamWindows Plus does it, and does it well.

All this external control does not come easy. This system will tax your computer's hardware to it's limit. If you are running an XT or '286 computer it won't work. You need a powerful computer - The California Software folks recommend at least a '386 running at 33 Mhz and 8 megabytes of RAM to get HamWindows Plus to work. I cheated a little, and I am running on a 486SX/25 with 6 meg's of RAM (it still works ok). If you have been thinking of upgrading your computer to a '486 at the current LOW prices, stop thinking about it and get down to your local computer dealer and get one.

When you visit your local computer dealer, tell him you want to run four serial comm ports on your computer at the same time and he will gladly install all four of them (and charge you for them). Ask him about running four serial ports with MS-Windows, and he will probably tell you "no problem". That is simply not the truth. With the standard PC configurations (excluding the IBM PS2) you CAN NOT run four serial ports AT THE SAME TIME! This is because the normal Industry Standard Architecture (ISA) bus does not implement hardware interrupt (IRQ) sharing. IRQ sharing allows multiple devices, such as COM ports, to use the same hardware interrupt. Note that by default, the COM1/COM3 and COM2/COM4 pairs of ports use the same interrupt. This is a hardware limitation; there is no possible workaround other than not using these pairs of ports simultaneously, or purchasing a communication port that will use the higher interrupts.

There are quite a few things that need to be resolved prior to hooking up your Mouse, Modem, TNC, HF Rig, Rotor, and/or VHF Rig to your computer. If you are thinking of catching up with the 90's and getting your computer to work for YOU, you owe it to yourself to get the RDJ's "RS-232C and COMPORT" booklet for five bucks. Don't waste your time and money buying a "standard" asynchronous communications board for Comm port 3 and 4 because you will be disappointed. Most "standard" comm ports use interrupts between 2 and 7 on the PC's bus and that is not enough. Your AT/386/486 PC can access interrupts up to 15, but there isn't much hardware available to let you use the "high" interrupts. The HamWindows Plus user manual has an excellent "tutorial" on what this all means, and how it all works together. The manual also mentions two manufacturers who can provide you with comm boards that work on interrupts between 2 and 15. I have contacted both of the manufacturers and found them to be very knowledgeable and helpful with solving PC related I/O problems. Sealevel Systems in Liberty, South Carolina, or Quatech Inc. located in Akron Ohio can provide you with Comm boards needed to get REAL simultaneous communications/control of 4 or more devices. If you are serious about PC serial communications, this is a must have item. MS-Windows has built-in communications support for IRQ's up to 15 but for maximum Windows performance, each port must have a unique IRQ and a 16550 Universal Asynchronous Receiver/Transmitter (UART). Many other software applications are now realizing this need and are writing their software to support these parameters. I will warn you ahead of time though, these comm boards aren't cheap, and they certainly aren't close in price to the cheap 30 dollar boards you find in the discount computer stores, but then again, you get what you pay for - support and compatibility (meaning, it WILL work).

SEALEVEL SYSTEMS provides a product called the COMM + 232/EX which can be configured for COM3: and COM4: or any other I/O address and can be configured to use interrupts 2-5, 10-12, and 15. Both ports are DB-9 AT style connectors attached to the back of the card. There are multiple configurations possible with this card, and for applications that can use it, IRQ sharing is supported. Additionally, they have software drivers that allow programs written only for COM1: and COM2: to share devices with COM3: and COM4: when needed. If you are going to be using any "high speed" devices (modems, etc) or MS-Windows, you really should, no, make that MUST get the optional 16550 UART chips for each port. The speed performance will be impressive. The COM + 232/EX has sockets for the UART chip, so if you must get the slower 16450's, you can add 16550's later. Sealevel Systems has quite a few other products available for different applications. Everything from Multi-Port Comm Boards, EPROM Programmers, Laptop Ports and Midi Boards, to Industrial Strength Keyboards (I think I need one of those)! I suggest that you contact Sealevel Systems if you are interested in multi-port communications with your PC. They offer special pricing programs for different situations. Their number is (803) 843-4343. I have done a lot of leg-work on this subject, and hopefully I can save you some time. The COMM + 232/EX retails for $179 from: Sealevel Systems Inc., 102 W. Main Street, Liberty, SC. 29657.

QUATECH INC. can provide you with a similar product, the DS-100 which has selectable and shareable interrupts on 2-7, 10-12, or 14-15. When you order this board, be sure and order the 16550 UART chips at the same time, because the UART chips are soldered on board. This board will work on IRQ 14 which is not supported with most other boards. Quatech also runs a landline BBS at (216) 434-2481 which will have all the latest information and software drivers you might find useful. Quatech is also a big company that provides a large array of products and services for the PC user. Contact Mike Cenker, or their resident HAM, Jim (N8CAH) at (216) 434-3154 if you have any questions about their products. The DS-100 retails for $147, and there are discount programs available from: Quatech Inc., 622 Wolf Ledges Parkway, Akron, OH. 44311.

HamWindows Plus

Finally, we can talk about the reason for this article - HamWindows Plus! As you can tell from my previous discussion on this package, I am impressed with it's capabilities and performance. It arrived on four high density disks and once I had it fully installed, took up only 13.9 megabytes of disk space. Only 13.9 you say? Wait till you see what it can do! I had my HamWindows Plus installed and running in about a half an hour, and it couldn't have been easier. The package includes a well written (and laid out) professionally bound 220 page manual, as well as a "Quick Start" guide to get your system working for you in minimal time. Once you have completed the "setup" functions and told the system what devices you have connected to the comm ports, you are presented with the Main Menu. This is where it gets real interesting! All of the main functions work together to form a single, easy to use interface. For example, if you want to scan around some int'l short wave frequencies, you must select the CON-

TROL Icon to activate the HF Rig control, then select the SWL Icon. If you want to check the CIA Fact Book, you should have already entered a callsign in the LOG area, and so on. Everything works together in a seamless, point-and-click environment which I stated earlier is the best way to go when you are on the air and you have no time to fiddle with the computer. MS-Windows has never been a speedy program, and HamWindows Plus can't do anything about that. I have noticed that HamWindows Plus seems to run much faster than having a similar amount of DOS/Windows applications running. For example, running my Yaesu CAT control program, a packet terminal program, and a word processor is much slower than running ALL the HamWindows Plus modules together.

There are some pretty incredible features to this software, and it was programed by HAM's who know what is important. Yup, there is a whole list of credits in the manual that mentions the programming team, and just about all of them are Hams. This doesn't mean that you are locked into another programmers (and another Hams) way of thinking though. Hamwindows Plus allows you to customize each module so it works the way you want it to, not the way the software designers decided.

With so many resources just a mouse-click away, you will wonder how you did without it in the past! The following descriptions are from the HamWindows Plus manual with my comments added, and will give you a good idea of it's capabilities. There are a LOT more features to this program, so I am going to mention some of the highlights. From the MAIN MENU, you can select any (or all) of the following functions:

LOG - A station LogWindow for logging and information lookup. This is the "center" of the system. It is more than just a log, as it is the coordinating module for data to and from your transceivers and TNC. It directly communicates with the DXCC country database (including the WAS and WAZ database), the QSL Manager database (option), the log database, the callbook database (option), the almanac database, the maps database, the SWL database and the awards database. Each time you enter a log entry, HamWindows keeps track of DXCC, WAZ and WAS awards for you too. The LogWindow also includes all kinds of interesting geographical information. Pretty incredible, isn't it? That is a lot of information to handle, and we are only in the first module! Oh, did I mention, this program is FUN? There is also a database to keep personal information and notes. What can you do when the DXCC country database gets updated or changed? You don't have to call California Software for an expensive update, you simply find K1EA's CT country database (available from most Ham BBS', including California Software's (free) HamWindows BBS), import the list, and run the update utility. The system will load the new file and update your "Prefix Master List" and "Country Master List" for you automatically.

MAPS - HamWindows Plus "MapWindow" has a Gray Line map, and 31 regional maps for you to explore. As the manual says "Unlike a traditional atlas... MapWindows is an active map; you point and click to where or what direction you want to go, and presto, you're there!" Referring back to the LogWindow, you can instantly call up the country/map of the station you are working by simply entering the callsign in the log. The Gray Line map is an important feature as well, but if you click on a country in the Gray Line map, you will have instant access to information about that country.

SWL - This SWLWindow includes over 9000 world band frequencies. All you have to do is find a station that is within your current time-line (current time of day), click on the station listed, and your radio will change to that frequency. You can import, update, or add different databases as your needs change. The import feature is fully configurable, so you can import just about any format SWL schedule. Instead of being locked into your rig's memory limitations, you now have unlimited frequencies that you can store with the SWLWindow. It's a great way to index and save your frequency lists.

SKED - This scheduler and macro system is used for unattended operation. The SchedWindow is an optional accessory and must be purchased separately.

ALMANAC - A Ham oriented AlmanacWindow and CIA World Fact Book is only a mouse-click away. The Almanac features names and callsign prefixes for 328 DXCC countries, interesting Ham facts, government, economic and many other topics.

TNC - The TNCWindow is used for connecting your VHF packet terminal to the local DX PacketCluster system. The TNC window can use Window's Dynamic Data Exchange (DDE) system to change the frequency of your VHF rig too.

SHIFT-TNC - For connecting to your HF packet terminal and accessing HF packet features.

CONTROL - The HF Transceiver ControlWindow for controlling your HF Rig is one of the nicest parts of HamWindows Plus. You can use the built in radios that are included with the software, or you can make your own with the Radio Construction Set (RCS) module. There are quite a few "transceivers" to select from and most modern computer controlled rigs are included.

SHIFT-CONTROL - The VHF Transceiver Control Window is similar to the HF Window in features. To control the HF and VHF rigs at the same time you will need to have two modules assigned to different comm ports.

RCS - The Radio Construction Set is used for building the radio of your choice (on the screen, of course). Once you have installed the correct setup file for your rig (in the setup module), you can proceed to the RCSWindow and build the radio of your dreams. You can build and use as many radios as you want, and use a different radio every day if you wish! You can also make your Yaesu radio look and act like a Kenwood TS-950 if you want to! Building radios is a lot of fun, and the RCS includes hundreds of different knobs, buttons, displays and meters to add to your setup.

The Hamwindows Plus Main Menu also includes a SETUP, UTILITIES, HELP, and EXIT function. The UTILITIES function warrants a bit of discussion on its own merit. These pop-up utilities make routine tasks easy. You can instantly call up information on US Ham band privileges by class, Metric to English conversions, Distance and bearing between two points, International Phonetic alphabet, Q-Signals, RST Codes, the entire RF Spectrum, and many other features. Again, all these features are just a mouse-click away.

I am getting awfully long winded here, but the final feature of this outstanding program is the SunSpot Breaker. HamWindows Plus includes a utility that works with the RCS module that can make the computer scan the Ham bands and graphically show you which ones are open! Your rig can now scan certain (predesignated) segments of each band, graph a pre-determined S-meter level and indicate the signal strength and display the frequency. Clicking on the frequency will change your radio to that frequency. This is a nice feature for finding which bands are open - Again, let the computer do the work!

Well, I think that is enough for this month. In summary, if you have the "right stuff" to run HamWindows Plus, you really should give it a try. I know you will be pleased. HamWindows plus is an outstanding program that was written by Hams for Hams and finally integrates all of the most needed operating features for the shack. HamWindows is easy to set up and operate and the manual is an excellent reference, not just for HamWindows, but for running DOS and MS-Windows. Remember, in order to run this program you must have Windows running "properly" and California Software does everything possible to help you along this path. My quest now, is to get HamWindows running my HF Digital modes somehow. I haven't seen any reference to a RTTY

window, but I am still searching. HamWindows open "Toolbook" programming code will make it easy to add this feature - Any takers? Let me know what you find! HamWindows Plus Version 3.0, including the Radio Construction Set is available for $189.95. If you just want to get the "entry level" package, the Radio Construction Set, you can have all of the features needed to control your rig including the SunSpot breaker for $69.95. As an added bonus, there is a free "surprise" included with the RCS. Don't tell anyone that I told you, but the RCS includes the SWLWindow too! HamWindows Plus may soon be a standard feature in all Ham Shacks and it's probably a good idea. Contact California Software Inc., 2121 E. Pacific Coast Hwy., #220, Corona del Mar, CA. 92625. (714) 729-4222 or the HamWindows BBS at (714) 729-4237.

That's it for this month. I look forward to hearing from you, and I apologize for not answering my mail as fast as I should. Returning from vacation put me 2 months behind schedule and I promise to get caught up this month. If you wish, you can contact me directly through the "Think Tank II" BBS at (509) 244-3511. There are lot's of Ham related file and message areas online so feel free to call in and look around. You can also reach me through Jay's (WS7I) PacketCluster: "KI7FX @ WS7I.WA.USA.NA".

73 de Mike, KI7FX ■.

PACKET

Richard Polivka, N6NKO
5800 South St. #221
Lakewood, CA 90713

THE SUMMER

As I type this out, the weather report says that the termperature today is to be at least 100 degrees. I would prefer cooler weather and birds chirping. Nevertheless, I have managed to get K5JB's version of NET ported over to Linux. This article will go into the changes needed to the code and how to set it up to run.

THE CHANGES

Whenever one does a software port across platforms, the person or team that is doing the port realize the project will not be easy and that the old adage "Portable Software Isn't" comes into play many times. The NET package is very large. The NOS package has grown, because of the many additions, to a very large package of source code. The NET package that I have was modified by Joe Buswell, K5JB, and is his version K28 of NET. The whole package consists of approximately 29,000 lines of source code. Admittedly, many commercial packages that are sold have source code counts two orders of magnitude larger. If you compare NET to those packages, then the whole thing seems trivial. This package is by no means trivial, much work has to be done to make a program like this work.

Any time you compile code that was developed using one compiler and attempt to compile it on another compiler, you can run into problems. They can be simple problems, like adding, changing, or deleting calls to software libraries and massive non-portable programming constructs that would involve a complete rewrite of the offending parts. The problems that I ran into were small and just involved some changes for display routines and library calls.

The whole process involves the first compile. That is the easiest way to find out if the task is going to be an easy one or a real pain. One has to edit the makefile to allow for proper compiling on their particular system. I used the Makefile.coh makefile for this compile. After the first run at the compiler, I now had the list of what had to be done.

CODE DIGGING

Amazingly, very little had to be done here. In the file "ftp.c", I removed the line "#include ys/inode.h". The linux system does not have an include file with this name. The linux system does not use the AT&T style of inodes for files. In the file "sys5_io.c", there is a #define for activating the code for the shell layers functions. That was disabled for the version that I am using since I have eight virtual terminals at my disposal at the keyboard. That involved changing the "#define SHL" to "#undef SHL". If I do not need the code, why have it in there.

There is a function in sys5_unix.c that is named "rename". I commented out the whole function for this implementation. The compiler did not complain at all about not having the function available when compiling the package.

In the file "telnet.c", I had to change the "#include: .h" to include .h". This was done just because the names were different and the functions are the same. This situation always occurs when you try to port over software that was designed on one platform and ported to another.

This program is set up for straight text with no highlighting. The package has an option that allows for highlighting of received text and that requires the curses package. The system here has curses available to it but the software, as written, does not call the correct functions, instead, it calls primitives that simulate the best of curses without the overhead of the initializing calls and window maintenance. Curses can be great to use but entail some overhead to maintain the windows.

With a program that is as complex as NET, there is usually a file that has an options setting. Usually it is found in one file, but here it is found in three files, "unixopt.h", "config.h", and "options.h". These files should be looked at to see if the configuration is correct for your installation.

NOW THE COMPILE

Once the configuration files are set up and the makefile is fixed up to suit your taste, run the compile. This will show you the errors that are present. The majority of the errors I encountered have been double declarations. There are a few other bugs, such as comparisons of different type variables. Hopefully, a solution soon.

Probably one of the hardest problems with porting this over has been finding the differences in implementations between the GNU gcc compiler and a standard (?) SVR3.2 C compiler. I believe that the gcc compiler is pickier in its implementation and that results in the user producing better and more portable code.

I have been working on a side project involving the porting of a version of the PA0GRI software that KF8NH says will work on Linux. The software conversion has been performed. But, in performing the compiling, the system compiles and "runs" but as soon as there is a screen scroll or something that precedes the scrolling, the program bombs off on a segmentation fault (a wild pointer?). I have had my share of wild pointers. I believe that the problem lies in a generational difference in the diffs files vs. the source files. Stay tuned on this one.

AVAILABILITY

I plan to post the source files that compile along with the makefile in the WB6YMH Ham BBS. The file name will be "K5JBLINU" and the suffix may be either "taz" or "tgz". The file should end up in the TCP-IP directory but will be put into the INCOMING directory first. The phone number for the BBS is 310-541-2503. The speed is good to 14400, 8N1. The regular UNIX version of this software is under "K5JBK28.TAZ" and that is in the TCP-IP directory. The files will be posted by the time this gets to print (REAL SOON NOW).

I hope that you have fun with this software and enjoy it fully. This cross-compile has been fun and a pain in the brain at times. I do not like to pursue wild pointers. I spent 40 hours once trying to find one wild pointer that was caused by someone not writing the code correctly which initialized the pointer with the incorrect type of variable. After tracking that one down and looking for others, I cursed the compiler. I will stick with the gcc compiler because it does not cut any slack and that is the way it should be.

Until next month, have fun and good luck typing away!

de Richard, N6NKO ■

Packet: n6nko@wb6ymh-2

Internet: richardp@owlsnest

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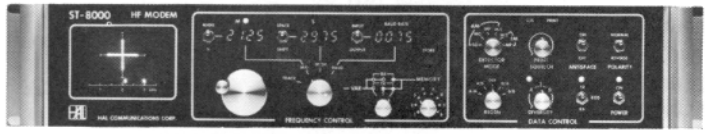

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