DIGITAL Journal

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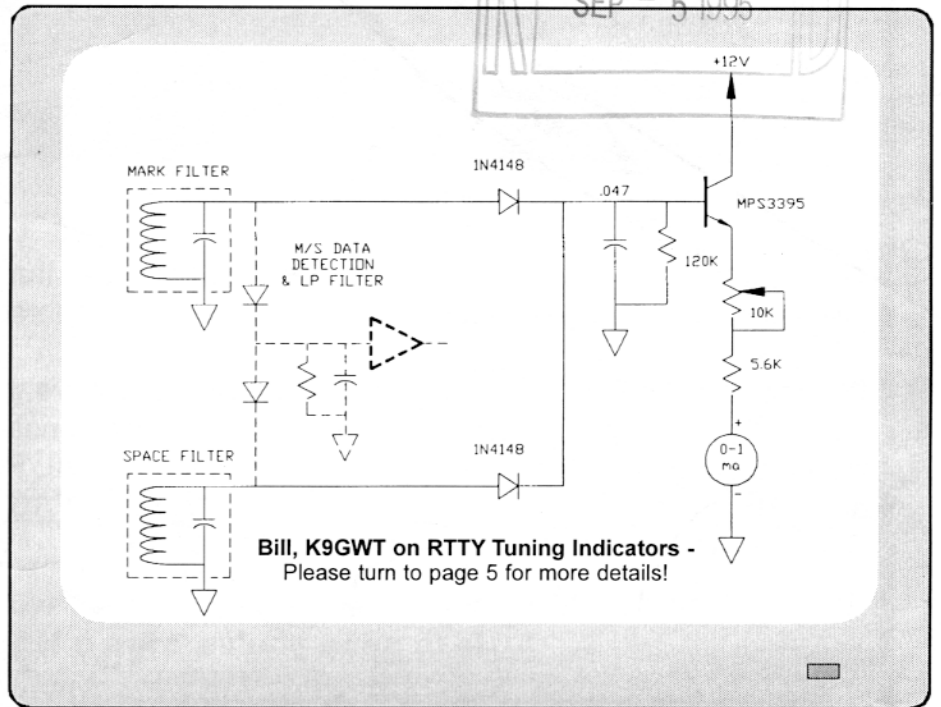*The Premier Source of Digital News and Knowledge Since 1953*

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SEP – 5 1995

Bill, K9GWT on RTTY Tuning Indicators –
Please turn to page 5 for more details!

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President's Corner
A view from the top

by Paul S. Richter, W4ZB
P.O. Box 19190 • Washington, DC 20036-9190 / CIS 70743,3517

By the time you read this, the IDRA directors' planning meeting in Orlando, Florida will have taken place and you should be seeing some of the results from that meeting shortly.

Jim Mortensen will have mastered Unix and learned how to update the News Bulletin and the brand new Digital Journal pages remotely on the IDRA's WWW Server. So keep a watch there for another outlet for Jim's almost limitless enthusiasm and energies.

Those of you interested in digital mode DXing can also thank Jules Freundlich for his on-going efforts to keep the DX Pages on the IDRA's WWW Server updated. That server now presents very timely and up to date digital DX information in a readily usuable form which is accessible almost instantly over the Internet by the world-wide ham community.

And those interested in RTTY contesting should not forget that the IDRA WWW server now contains a hyperlinked calendar with postings of the rules and related tips for all of the digital mode contests. Special thanks to Ron Stailey (AB5KD) and Rich Lawton (N6GG) for their efforts which permitted that. No more excuses about forgetting the contest dates or the rules!

Many IDRA members have superb credentials on the technical side of digital communications - both theory and practice - as well as in related computer and engineering topics. We need help from a few more volunteers in those areas to expand (and reorganize) the digital mode technical topic pages on the IDRA WWW server. There is a lot more to be done - to provide a high quality reservoir of technical information for digital mode ham communications and also to demonstrate areas of challenge for those who will be the digital mode technical innovators for tomorrow. Contact us if this is an area of interest to you!

IDRA is also looking for more input from its members scattered around the globe, particularly outside of North America. We need more reports about what is going on in the digital ham communications arena in different areas of the world. South America, Europe, all parts of Asia, Africa and Oceania. Don't take anything for granted: even though the world continues to shrink, great differences exist between different countries. Many who can't travel to see these differences first hand are interested in you and how you practice ham radio. Let us hear from you!

IDRA is also always seeking more members! Tell all of your ham collegues about the IDRA and invite them to join. Ask your friends who belong to TAPR and who don't also belong to the IDRA to join! More IDRA members means more revenue which will enable a further improved and larger Digital Journal, and better support for other IDRA activities. Go out and find some new members and make sure they sign up!

73, Paul Richter W4ZB

Beedle Beedle
The second in a series of digital snippets

by Crawford Mackeand, WA3ZKZ
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You don't sell the steak, you sell the sizzle. I don't know what adman or restaurateur was first responsible for this fundamental precept of communication, but it does cut right to the heart of things. I was reading an article somewhere in the last few days, on the selling of science and engineering to today's youth, and the writer pointed out that here was a nub of some difficulty. You don't sell the abstract quality of the excellence of the steak, you sell the recognizable memorable sizzle.

He went on to emphasize it very neatly as a facet of abstraction. Noting that far far more of us thrive on real things that we can touch and feel, or hear or see, than on abstract ideas or entities that we can't, he asked the question (without as far as I can remember, answering it), how do you sell math as a subject. A PR man's nightmare!! Those who love and have a facility for abstract thought will dive right in and wonder what's wrong with the rest of the class. (Who remembers the math teacher who could never understand what our difficulty was, let alone explain it?) But the rest of us struggle along, trying often in vain to find some, any, real peg to hang the ideas on.

Forty years ago I was leaning on a 2500 hp turbine-driven axial flow gas compressor, talking (or trying to talk) with an older colleague, who was bemoaning the difficulty of selling the idea of this wonderful beast and its other modern colleagues to today's potential engineer. Years ago, he said, it was easy. Instead of this thing we had a shed with 23 reciprocating "blowing engines" with flashing piston rods and wheels and works that you could see. There was glamor, to use his words. There was sizzle you could sell.

Amateur radio has the same problem today. You can't look at the rows of glowing filaments, or as in an earlier day listen to the crashing discharge of the gap. So apart from the commonplaceness of communication today, we have another selling problem. Or opportunity if you look at it that way. Given that in today's society, a small technical elite could never have the clout to retain even a fraction of the air space that today's ham population can politically support, where do we go? Is it going to be true that we will only sell ham radio to those who are comfortable with the abstract, (we seem to be close to the idea of a receiver implemented in software and you don't get much more abstract!), or to those who are more mature in years (Heaven forbid, we are slower on the uptake). We need to think about what we are going to sell. What is today's sizzle?

73, Crawford WA3ZKZ

Tuning Indicators for RTTY
and other digital modes -- Part 1

by Bill Henry, K9GWT
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We've been using RTTY on the HF bands for some 40 years now. Machines, demodulators, codes, and speeds "come and go", but one problem appears to always be with us - tuning the receiver for best RTTY reception. Get a group of RTTY'ers together, mention "tuning indicator", and settle back for a long and spirited discussion.

> "Why, I recall back in '53 we were running RTTY on 21.3 meters - upside down, backwards, and drifty. Oh yes, it was rough - snowed every day and it was always up-hill - - - h'mm - maybe that's another story. - - - Anyhow, the only thing that kept us up and running on the green keys was the little 'Jim-dandy Tuner-in-er'. That thing was so sharp you could tune the tenor right out of a quartet. Why can't someone make a RTTY tuning indicator like that anymore? These new TNC gadgets are fancy, but you can't tune 'em in worth a hoot."

Or something of that sort. The topic came up again at the RTTY Hospitality Suite at Dayton this year.

No doubt about it, the topic of RTTY Tuning Indicators is near and dear to the hearts of all RTTY-addicts. I note that (1) there have been very few articles on the topic over the past ten years, (2) a LOT of the current RTTY crowd is interested and has not seen the old articles, and (3) I'm uniquely qualified (old enough) to expound on the subject. So, here's what I've been able to dig-up or remember. No doubt, there are a lot more ideas and circuits, but these are ones I've known and/or used.

THE PROBLEM:
HF RTTY signals are generated by frequency shifting the carrier frequency of the transmitter signal. Trust me on this - it makes no difference if you use "AFSK tones" and LSB mode or the built-in "Direct FSK" jack and mode of the transceiver. The transmitted signal spectra and the signal received should be the same - one radio frequency for "Mark" and a different frequency for "Space". (AFSK vs FSK is another RTTY topic guaranteed to keep us going well into tomorrow.) The *PROBLEM* for all HF RTTY'ers is how to adjust the receiver frequency dial — that big knob in the middle of the front panel for you computer types. We need to turn the big knob so that we get the absolute best copy of the other guy's signal. "If you can't hear 'em, you can't work 'em." How true and it's amazing how many QSO's are missed if you aren't tuned-in. just right.

THE BASICS:
FSK RTTY signals are received by setting the receiver to SSB/CW, or FSK modes. In the good old days, we'd say "you have to turn on the BFO to make RTTY work" (as opposed to using AM). As we rotate the receiver frequency dial, the frequencies of the RTTY tones change up and down. We get the best RTTY reception when the tone frequencies exactly match our sharp RTTY filters. And that is what a RTTY tuning indicator has to do - show us when the received RTTY tones match the demodulator filters. In addition, it is also very handy if the indicator shows us which direction to turn the knob when the tuning isn't quite right. Many different indicator devices and circuits have been tried. Some are very simple; some are very cheap; some are quite expensive; some approach the complication of the RTTY demodulator itself. Some of us have even been known to use a separate demodulator, just for its tuning indicator. Here are some the more common ideas.

FLASHING LIGHTS:
The simplest tuning indicator is just a pair of flashing lights - one for Mark and another for Space. The lights (usually LED's) are driven by signals obtained from the demodulator Mark and Space filters. When the RTTY signal is correctly tuned, the two lights flash brightly and alternately. If tuning isn't correct, one light may flash more than the other - or appear to be brighter. When used on a strong received signal sent at "machine speed" (constant data stream), Mark/Space lights work well. However, they can be very confusing for tuning weak signals and not very good for tuning-in a guy who uses "hunt-and-peck" typing. Lights also provide no information about which direction tuning must be changed to make an improvement. Flashing lights are the cheapest tuning indicator - and sure do "impress the visitors". Most of us want lights - as well as a "good" indicator. A typical flashing light indicator circuit is shown in Figure 1.
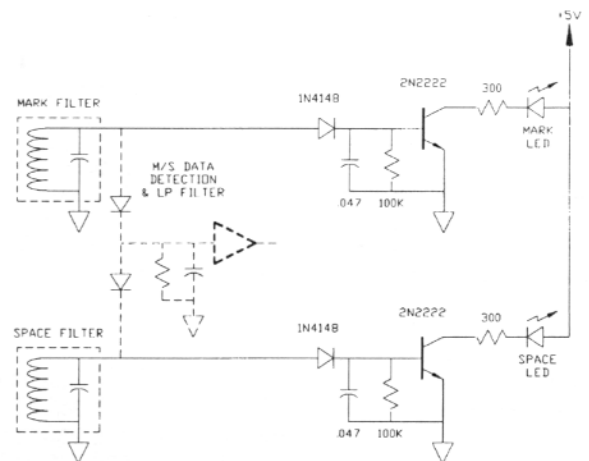
FIGURE 1. Flashing Lights' RTTY Tuning Indicator

TUNING METER ("Plus-Plus"):
The tuning meter or "plus-plus circuit" was first popularized by Irv Hoff (W6FFC) in his ST-5 and ST-6 demodulators. At the time, it was a low cost and effective tuning indicator for RTTY. Meters are not as cheap as they used to be and this is no longer the "bargain circuit" it once was. The circuit diagram of a "plus-plus" meter indicator is shown in Figure 2. The basic concept is that signals from both the Mark and Space filters are detected, filtered and summed. The summed output is smoothed by a large filter capacitor and then used
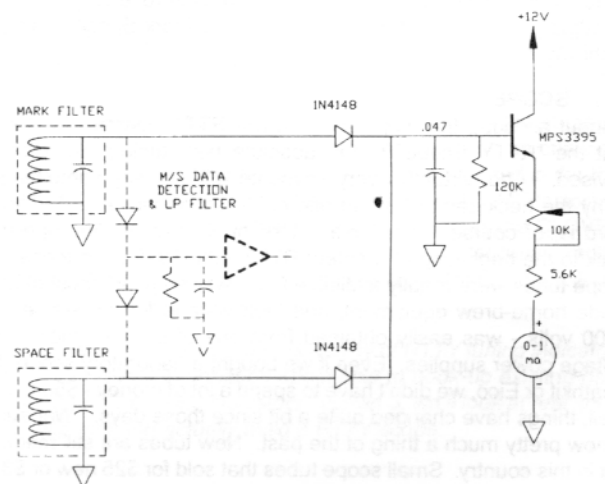
FIGURE 2. 'Tuning Meter' RTTY Tuning Indicator

to drive a 0 to 1 mA meter. As the receiver is tuned, the RTTY tones pass through the RTTY filters. The signal from the Mark filter grows in amplitude first, causing an up-scale meter deflection - to perhaps "0.5" on the scale. The meter needle also "bounces around" as the signal changes from Mark to Space. With continued tuning, we obtain a situation where both the Mark and Space received signals match the respective demodulator filters. Now, the meter reads up to about 0.7 and no longer "bounces around" as the signal switches between Mark and Space. With practice, this is a very simple to use but accurate tuning indicator. Receiver tuning accuracy of the order of ±15 Hz can be routinely obtained with the tuning meter on an ST-6. Although the tuning meter is more accurate than flashing lights, it still provides no information about which direction receiver tuning must be adjusted.

MARK-SPACE TUNING BARS:

Mark-Space tuning bars are the modern equivalent of the "plus-plus" tuning meter - but with much coarser indication than a meter. Usually, two 10 segment linear LED bars are used, one connected to measure the voltage at the Mark filter and the other to the Space filter. Good

FIGURE 3. "Tuning Bars" RTTY Tuning Indicator

tuning is indicted when the Mark and Space bars both show high amplitude (most segments of each illuminated). Tuning bar indicators are hard to read when signals are weak or interference is present. This circuit is relatively low cost and uses readily available modern components. Like the flashing lights and "plus-plus" meter, Mark-Space tuning bars do not show which direction receiver tuning must be adjusted. The circuit diagram of a typical Mark-Space Tuning Bar is shown in Figure 3.

RTTY SCOPE:

Without a doubt, the majority of old-line RTTY operators will swear that the "RTTY Scope" is the absolute best tuning indicator ever devised. And, virtually every advocate will also say something like "Why the heck can't I buy an affordable scope indicator?" The key word is, of course, "affordable". Use of an X-Y oscilloscope dates back to the beginning of amateur RTTY - the 1950's. In those days, scope tubes were readily available from "war-surplus", most of us still made home-brew equipment, and high voltage for the scope - say, 1500 volts - was easily obtained from one of the transmitter's high voltage power supplies. Even if we bought a "laboratory scope" from Heathkit or Eico, we didn't have to spend a lot of money - $50 to $100. Well, things have changed quite a bit since those days. War surplus is now pretty much a thing of the past. New tubes are still made, but not in this country. Small scope tubes that sold for $25 new or $3 surplus in the 1960's now go for $200 - and you wait 6 months to get them. Further, few stations now have transmitter HV supplies that can be readily taped for the scope and the there are even fewer of us with

FIGURE 4. "X-Y Scope" RTTY Tuning Indicator

the time or inclination to do "home-brew" projects. There have been a few RTTY-scopes manufactured commercially, but they have been discontinued due to high costs - and therefore high resale price. If you see one in good shape at a flea-market, better snap it up!

If you are lucky enough to have found a RTTY scope, connecting it to a RTTY demodulator is very simple. Just hook the horizontal (X) scope input to the Mark filter and the vertical input (Y) to the Space filter. A correctly tuned RTTY signal will show up as two ellipses on the screen - horizontal for Mark and vertical for Space. One ellipse or the other - or both - will have reduced amplitude if tuning is not correct; the crossed-loop pattern will also be rotated right or left when tuning is too low or too high. A scope tuning indicator is VERY sensitive and will easily show correct tuning of RTTY signals you may not even be able to hear. This is also a function of the quality of the RTTY demodulator filters and gain stages, but scopes and good RTTY demodulator designs seem to go together. Why does a scope work so well? First, a scope or, more properly, a cathode ray tube, is capable of showing signals whose characteristics may change quite rapidly - it has a very wide display bandwidth. Second, the scope takes full advantage of the averaging trait of the human eye. The traces change very rapidly - about 2000 times per second - but our eyes smooth the flashing CRT trace so that we see bright ellipses during the Mark and Space signals and much dimmer "squiggles" during noise or interference. With just a little practice, a good RTTY operator soon learns to tune so well that he can turn the receiver speaker off.

The scope display simultaneously shows the alternating-current (AC) signal from both the Mark and Space filters. Since the Space filter does not completely reject the Mark signal frequency, a Mark signal cause a large horizontal deflection ("X") and a small vertical deflection ("Y"), tracing an ellipse on the face of the CRT. As the receiver tuning is changed, the frequency of the Mark signal changes, and the X-Y signals change in both amplitude and phase - the X-signal decreases, Y signal increases, and the ellipse rotates. This rotation of the ellipse provides additional information which we quickly learn tells us which direction to tune the receiver. A similar effect happens on the Space signal and both ellipses appear to rotate over a narrow range as correct frequency tuning is approached. With just a little practice, RTTY tuning as close as 2 to 5 Hz is easily done (accuracy depends upon the RTTY demodulator filter bandwidth). A simplified diagram of a tuning scope is shown in Figure 4. Actual scope circuits will be shown in later parts of this article.

DEMODULATOR INDEPENDENT INDICATORS:

So far, all indicators discussed use signals obtained from the Mark and Space filters of the demodulator. The indicators simply show how closely matched our filters and received signal frequencies are matched. In most cases, this is the optimum way of measuring tuning accuracy. However, tuning indicators can also be made that are virtually independent of the demodulator or TNC used. These devices are a lot more versatile, work with virtually any demodulator,

and are simpler to connect - they do not require special connections to the modem. For complex modes such as CLOVER, this may be the only indicator that will work. This is also an ideal indicator if many different modes and tone combinations are to be us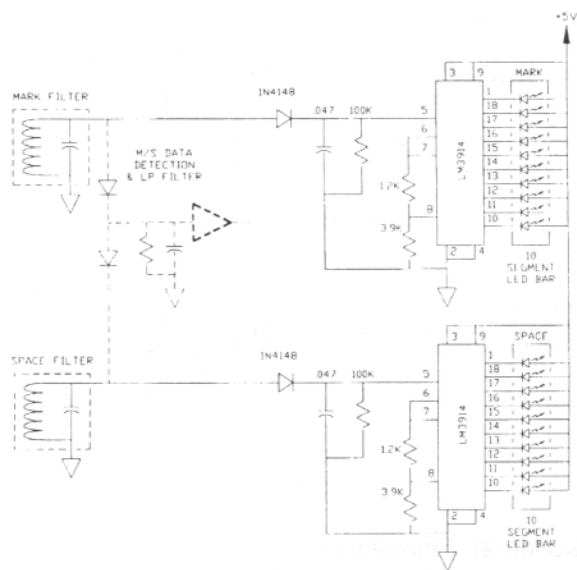e; for example, RTTY "high tones", RTTY "low tones", CW, FAX, etc. However, we must now be sure that the demodulator filters are tuned exactly on-frequency and that our tuning indicator is very well calibrated.

AUDIO SPECTRUM ANALYZER:

This is no doubt the most exotic and expensive of the RTTY tuning indicators. A $10,000 to $20,000 audio spectrum analyzer sure makes a great RTTY tuning indicator! Analyzers can also be made that cost considerably less. In theory, a spectrum analyzer shows exactly what is needed - tone frequency placement of both tones. It also shows RTTY shift, selective fading, signal bandwidth, and inter-ference. Connection of a spectrum analyzer as a tuning indicator is very simple, as shown in Figure 5. However, the analyzer display can
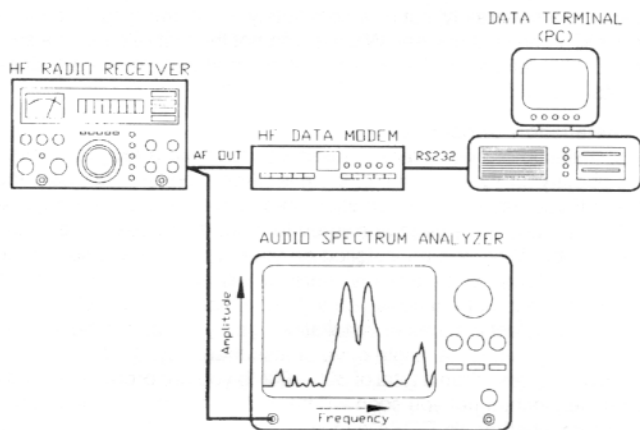
FIGURE 5. "Spectrum Analyzer" RTTY Tuning Indicator

easily be set-up to display more information than can be quickly ana-lyzed - too much information. Also, it is very difficult to set-up most analyzers to have the frequency resolution (tuning indication accura-cy) desired without also slowing the sweep rate of the display. Some FFT (Fast Fourier Transform) analyzers make good tuning indicators, but most analyzers are agonizingly slow if they are set for high reso-lution, particularly if a relatively wide frequency range is to be dis-played. Because of the high cost and the sweep time vs. resolution trade-off, use of an audio spectrum analyzer as an RTTY tuning indi-cator is more of an "engineer's toy" than a practical device. BUT - the spectrum analyzer concept leads to a version that responds quick-ly and is very accurate - the "Spectra-Tune".
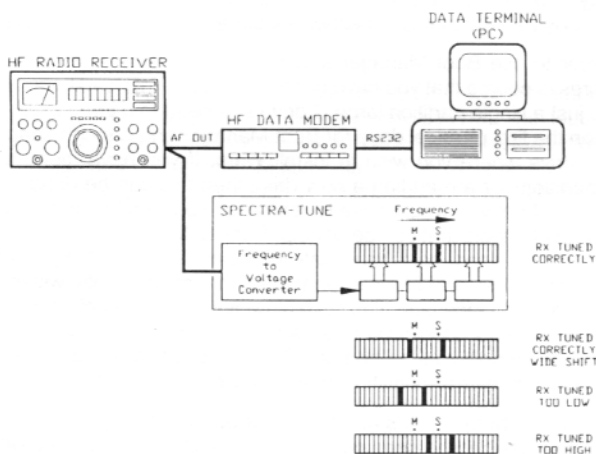
FIGURE 6. "Spectra-Tune" RTTY Tuning Indicator
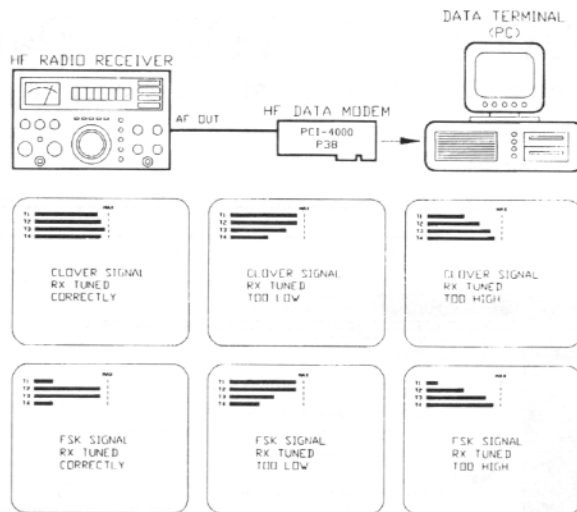
FIGURE 7. "Multi-Bar" RTTY Tuning Indicator

"SPECTRA-TUNE":

In 1984, HAL Communications Corp. introduced a tuning device that is a cross between the tuning bar and spectrum analyzer indicators. We called it the "Spectra-Tune" (tm). This indicator uses 2, 3, or 4 10-segment LED light bars, set-up so that each bar in progression represents a 10, 20, 50, or 100 Hz difference in frequency. The receiver audio output is connected directly to the Spectra-Tune and each tone or frequency component causes its respective LED seg-ment to light. The difference between Mark and Space frequencies - the "RTTY shift" - is easily seen, required tuning direction is obvious, and the signal can be quickly tuned to match front panel calibrations for Mark and Space. It's a very convenient and low-cost indicator. However, the Spectra-Tune is most useful for strong signals and is not as sensitive to weak signals as the scope indicator. The Spectra-Tune concept is also not limited to just LED bar displays. The HAL ST-8000 includes a "Spectra-Tune" display at the lower edge of its tuning CRT, providing both the wide range of the Spectra-Tune and the weak signal response of the scope. The block diagram of the Spectra-Tune is shown in Figure 6.

MULTI-BAR DISPLAYS:

Invention of CLOVER-II in 1990 brought a new challenge to tuning indicator technology. CLOVER-II uses 4 tones, up to 16 levels of phase shift, and 4 levels of amplitude shift. The X-Y scope pattern obtained by normal RTTY filters is completely useless as a tuning indicator. The Spectra-Tune provides a wide-bandwidth display which can be used for very strong signals but it really does not provide the ± 10 Hz tuning accuracy required for optimum CLOVER operation. A high quality FFT Audio Spectrum Analyzer (HP3561A) works quite well, thank you - for $14,000, it should! What evolved for the CLOVER-II modems (PCI-4000 and P38) is a four bar-graph display on the PC's CRT screen, one bar for each of the four tone channels. This four channel filter concept has recently been adapted in the PCI-4000 and P38 to show FSK mode tuning (RTTY, AMTOR, Pactor). In addition, CLOVER modem software actually measures the CLOVER-II center frequency and displays a ± 35 Hz zero-center tuning indica-tor screen. Typical 4-bar tuning indications used for CLOVER-II and FSK modes are shown in Figure 7.

This concludes Part 1, an old-timers survey of RTTY tuning indicators. In Part 2, I'll provide information about how to hook-up existing oscil-loscopes for RTTY tuning indicators. In Part 3, we'll look at real scope circuit diagrams and actually build a RTTY scope.

WARP FACTOR - Part 1

Taking a closer look at IBM's OS/2 Warp

by Steve Holton, N2QCA

1113 Sunset Street • Yorktown Heights, N.Y. 10598
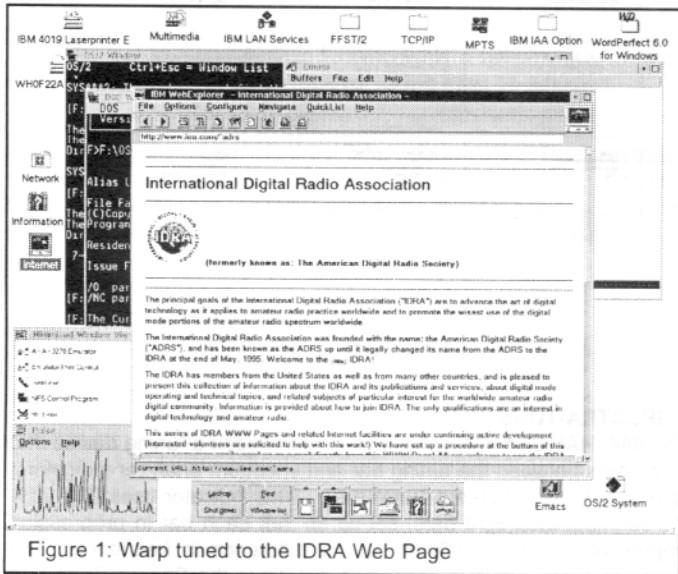
Figure 1: Warp tuned to the IDRA Web Page

After getting off to a false start in the last issue (page 4 - August '95), here is the complete article - ed.

IBM's OS/2 Warp brings a new level of Operating System capability and performance to the PC desktop. IBM's claim of "a better DOS than DOS and a better Windows than Windows" is not just marketing hype. In this article on Warp we'll look at the basic system, it's installation, capabilities and some first impressions. There is a little confusion in naming. OS/2 Warp actually comes in two flavors. The initial release of Warp last fall is officially known as Warp for Windows, and assumes you already have a copy of Windows. It uses your Windows Disks during installation to provide Windows support. Warp with WinOS/2, recently released (also called by some Warp FullPack), doesn't require that you own a copy of Windows. Warp with WinOS/2 costs more as it provides full Windows support. Once installed there is virtually no difference and thus you generally find people just call them both Warp interchangeably. Additional Warp packages are being released, the first of which is Warp Connect which is Warp with a number of connectivity features integrated, including IBM TCP/IP version 3.0, IBM LAN Server 4.0 requester, Novell NetWare client, IBM Peer for OS/2, and IBM Lan Distance Remote. Again Warp Connect comes in both a Windows and a WinOS/2 flavor.

The PC Operating System World

When the IBM PC first came out with 16Kb of memory, the Intel 8086/8088 processors of that era could only address 1MB of memory which looked gigantic. So the decision to limit DOS to just 640KB of that 1MB seemed eminently reasonable at the time. The next generation of Intel processor, the 80286, which appeared in the PC AT in 1984, could address up to 16MB of memory. The increased raw speed of the 80286 and simple use of the memory above 1MB (like RAM Disks) were immediately taken advantage of by DOS and DOS applications.

To make real use of the increased memory addressability of the 80286 required something more than just DOS. The 80286 offered something called protected mode which had two potential advantages. It made all memory directly addressable, and offered the opportunity to isolate the operating system from ill mannered applications. Early versions of both OS/2 and Windows tried to take advantage of the new protected mode of the 80286. Neither was all that successful. This was due in part to some severe limitations and deficiencies in the 80286 processor. This made programming for it downright ugly and left a lot to be desired in terms of being able to run old DOS applications along with

any new ones written for the 80286 in an efficient and reliable environment.

The advent of the Intel 80386 really changed the playing field in terms of what kind of system it could support. It offered real 32-bit programming that allowed simple access to up to 4GB of memory, a much simpler programming model, increased performance, and lastly and very importantly a good mechanism to support DOS applications in an efficient and realizable way. OS/2 version 2 was the first operating system that really attempted to exploit this potential head on.

Warp is a complete operating system in it's own right, just like DOS. Windows on the other hand, is an extension to DOS and depends on DOS. You can boot DOS or Warp, you don't boot Windows. Your machine may appear to come up in Windows but it in fact is booting DOS and then starting Windows as DOS program. Windows 95, when it arrives, will also be an operating system in it's own right and won't require DOS separately, but how completely a self-standing 32-bit system is still somewhat unclear. Warp is also not the first release of a system, it is truly release 3 of a system that has matured dramtically since the inital introduction of OS/2 in 1987.

Pre-Installation Considerations

The installation of OS/2 Warp requires you to make a few basic decisions about your system. One of them is where you want to install the system. If you have a single partition on a single hard drive the question may already have been answered for you. If you select the "Easy Install" option, Warp will be installed on your C drive in addition to the DOS(& Windows) that's already there. It will also install something called Dual Boot that will allow you to boot either Warp or DOS. While this is the simplest in terms of installation, it may not be the best in the long term. If you have a single drive of less than, say, 300MB, or multiple drives but less than a total of 300-400Mb you are probably already feeling the pinch. If not you soon will be, not so much from the operating system whether it's DOS/Windows, Warp or WIN95, but from the tremedous explosion in the size of the applications that are continuing to appear for the PC. Adding or upgrading your disks may be worth serious consideration. Especially given that 700-850MB hard drives are offering the best price per megabyte on the market today and their prices are currently falling through $250.

In order to install Warp in a drive/partition other than C: you need to install something called Boot Manager which comes with Warp. This allows you to have multiple bootable systems on your machine and select which one you want at bootup. The default is to wait 30 seconds before automatically booting the system you last booted. You can alter this to shorten/eliminate the timer and to have a fixed default system to boot. On my system I currently have 4 systems to choose from at boot time - PC/DOS 7 with Windows 3.11, Warp, Linux, and an earlier beta copy of Warp. One advantage of using boot manager and having multiple operating system partitions is that you can install a new system version in a partition and try it out without risking your current "production" system. You'll notice that I have done this with Warp, now that I'm happy with the released version I can go back and remove the earlier beta copy with out impacting either my current DOS or Warp system.

In order to use Boot Manager and have multiple bootable partitions requires of course that you have or can create multiple partitions. If you have just a single partition large C drive you need to have a least 1MB free on the first physical drive for Boot Manager and enough space on some drive where you wish to install Warp. If you have multiple drives/partitions or are adding a new drive then this can be done rather naturally. If not you would have to rearrange you existing drive. I know of two useful tools that can be of help. PartitionMagic by PowerQuest, which I have used, can manipulate disk partitions including: resizing them both larger and smaller; andmoving them physically within surrounding free space; and files system conversion from FAT to HPFS. I have also heard good reports on a package called Partition Resizer which can be downloaded from the SimTel repository at <ftp://oak.oakland.edu/SimTel/msdos/diskutil/presz112.zip>

In any case, before you start messing around with any partitions etc, let it be said to he who does not backup his system: caveat emptor! Let it further be said that he who does not have a regular backup scheme in place: (caveat emptor)!! Let me reiterate, that you can choose the

easy install and add Warp to your DOS system on your C drive. If, however, you want to take advantage of Boot Manager and are bit queasy about it maybe you should call on your computer Elmer for some help. It also makes sense to do a lot of the preliminaries under DOS before commencing the Warp installation process. You can back-up your data, setup partitions etc first and be satisfied that your famil-iar system is still working before actually installing Warp.

It should be noted that our friends at Microsoft have made Win95, in it's current form at least, cripple Boot Manger during it's installation process, effectively making Warp seem to disappear. By booting Warp from the installation diskette and running FDISK can restore Boot Manager and Warp as well as allowing Win95 to be available as well.

Installation

OS/2 Warp comes on both diskette and CDROM media. I installed from CDROM which is both the cheaper form and a faster install (20-25 vs 45-60 minutes) when compared to installation from diskettes. The CDROM package consists of two diskettes and a CDROM. The diskette version consists of some 20 or more diskettes. The installation begins by booting the diskette marked Installation, followed by the other diskette marked Diskette 1. At this point you must select between Easy and Advanced Installation. I choose the Advanced Install option, but only so I could install Warp on a different partition and drive from DOS & Windows utilizing Boot Manager. I selected everything for installation even though you can in Advanced Install which features and options you wish to install. The next step is the only tricky part of the installation which is installing boot manager and selecting a parti-tion where Warp is to be installed, and indicating which bootable parti-tions should be included in the Boot Manager Menu. The User's Guide that comes with Warp is really quite good - it includes a chapter on set-ting up a hard disk as well as another Advanced Installation with a number of examples of specific cases. The book "OS/2 Warp Unleashed" is also quite good and covers this whole area quite well. Speaking of books, there an ever growing number of good books about Warp. Certainly not in the volume as for DOS & Windows, but the overall quality and signal to noise ratio is a lot better in my opinion. An up to date list as well as a lot of other valuable information can be found on the OS/2 Warp homepage at: <http://www.austin.ibm.com/pspinfo/os2.html>. There you will also find pointers to some very active newsgroups and ftp sites.

Having selected a partition in which to install Warp the actual installa-tion proceeds by copy a number of files onto your hard disk. At this point the system will reboot bringing up a graphical OS/2 interface for the rest of the installation. When it does this it will present you with two screens before proceeding. The first is confirm your hardware config-uration. Warp will have present what it has detected in your configura-tion. You will almost certainly have to tell it about your printer. With luck it will have correctly identified any CD-ROM, Sound Card, or SCSI adapter that you have installed. If not you must select from a list of devices so it can install the correct device drivers. The second screen allows you the option to tailor the features to be installed. The installa-tion then proceeds to copy additional files and configure your system. It will also ask you to insert your windows diskettes if you're installing Warp for Windows. If you don't have the Windows installation diskettes because your system came pre-loaded: then you should have diskette images on your hard disk that you can point Warp to; or from which you can make actual diskettes from.

When the installation completes it will reboot your newly installed Warp system and offer you a tutorial as an hors-d'oeuvre. The total disk space required was 41MB for the entire system. This include 8MB for these selectable features: Multimedia, Tools & Games, Online Documentation, and Fonts - each of which requires about 2MB of disk space.

Bonus Pack

Included with OS/2 Warp is something called the Bonus Pack a sec-ond CDROM (or diskettes) containing a number of interesting OS/2 applications. The most widely touted, and justly so, is the IBM Internet Connection, but this is not all also included are: CompuServe Information Manager for OS/2; IBM Works and Personal Information Manager - a collection of application and productivity tools (Word processor, Spreadsheet, Database, Calendar & Planner, etc); FaxWorks for OS/2; HyperACCESS Lite for OS/2; MultiMedia Viewer; Video IN; and Person to Person. The Internet Connection consists of a browser - WebExplorer, Gopher, Telnet, FTP and a newreader all

with nice graphical interfaces. It also includes a TCP/IP stack with SLIP and a dialer. You can connect up to IBM Connection Service operated by IBM's Advantis subsidiary with just a few button clicks, or you can configure it to use other service providers.

Up and Running

Your Warp system has a new and rather distinctive appearance. It's graphical interface certainly doesn't look like DOS nor for that matter Windows. If you have, however, seen or used Win95 you'll notice some similarities. In fact a number of the look and feel departures Win95 made from Windows show a direct influence from OS/2. What you see is called the Workplace Shell Desktop. It is an object oriented model based on IBM's SOM(System Object Model). It takes a little get-ting used to, but is quite intuitive and easy to use and customize. A desktop is shown in figure 1. There's quite a lot to see on that desktop, so we'll take a tour of some of the key objects. Around the upper left and top of the desktop are a number of objects. These objects can rep-resent a number of things such as files, programs, devices, or folders containing additional objects. The upper left is the object for a printer, drag a printable file to it and it will print that file. Double click on the printer object and you will see what jobs are in it's print queue, you can manipulate these jobs or alter the printer settings. Double click on a program object and it will run that program. Double click on the Internet Folder object and the folder will open that folder and show icons for program objects for the IBM WebExplorer as Gopher, FTP etc. Double clicking on one of these program objects will open a window and run the program. In figure 1, you can see that I have started the WebExplorer and pointed it at what is hopefully a familiar home page!

The LaunchPad is another nice idea. It is located in the bar across the bottom of figure 1. Commonly used objects can be placed there, such that a single click on that object will directly invoke that object. Want to add an object to the LaunchPad, then just drag that object to the LaunchPad and it will be inserted into it. This will be a shadow of the object, the original will remain where it was. Also visible in figure 1 behind the IDRS home page are three otherwindows. There is a DOS window which presents the rather familiar DOS prompt from where you can run your favorite DOS programs. Behind that is an OS/2 window for running OS/2 programs from a command line. Familiar commands like **dir** or **copy** work from there as well. Other windows visible are: a program editor(Emacs) just above the WebExplorer window; a graph-ical display of CPU usage in the lower left(Pulse); and just above it a window with icons representing other active programs that are running, but which have their windows minimized to an icon - double clicking would restore the window to it's original size. You can create a program object and icon for your favorite DOS programs so they can be run directly from the desktop or LaunchPad if you want.
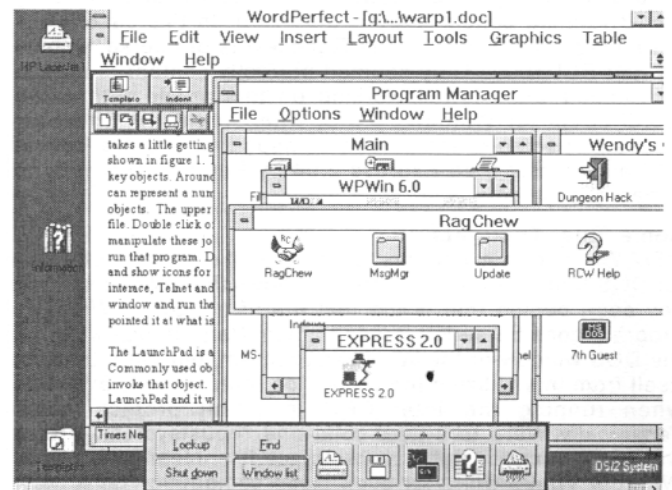
Figure 2

Want to run your favorite Windows program? You can bring up your Program Manager in an OS/2 window as seen in figure 2. You could also create a full screen image of your program manager if you wish. In addition to the Program Manager window, you can see behind it a window with WordPerfect for Windows containing this article under construction. I have run a whole host of Windows and DOS programs under Warp including Microsoft Office, CorelDraw 5, The Electronic Workbench, FrameMaker, ProComm Plus etc. There are a number of
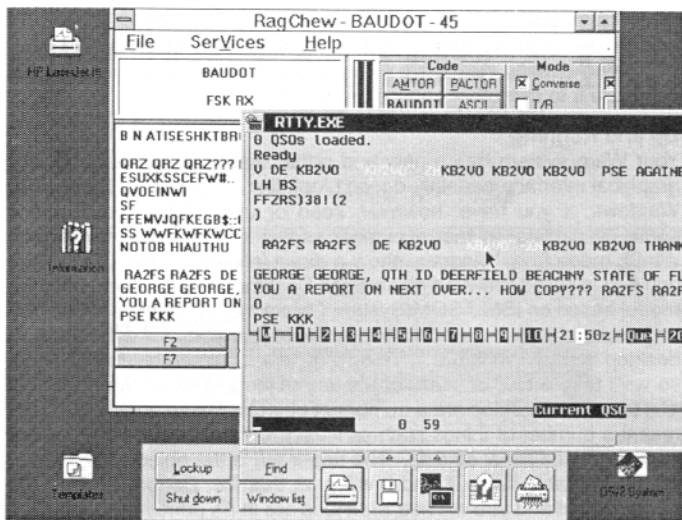
Figure 3

"knobs and levers" that you can use with Warp to optimize the performance of Windows and DOS applications. For some programs you need to adjust these settings to accommodate some of the rather uncivilized liberties programmers have taken.But it should be noted that I have not had to make any changes to the standard setting for any of the programs mentioned above, nor for any of our favorite Ham programs discussed below.

On the Air
And now for the heart of the matter, how does Warp standup on the air. To be honest, I was rather amazed at the results. For starters, I fired up my old standby Acuterm 0.460 by N8BA with my PK-900 and had no problems. I then used the Warp WebExplorer to visit the IDRS homepage and from there download the latest updates. Next I tried Ray's WF1B RTTY Contest package in it's latest incarnation 2.20d as well as several previous versions all of which ran just fine including 2.20d running both in Pk-900 host mode as well as running with a PCI-4000. I haven't had much time to get on the air and an embarrassed to admit it but I hadn't gotten around trying my PCI-4000 (bought would believe at Dayton 94!) until working on this article. Warp added no complications to bringing it up. Next I tried Ragchew 1.02 by Jim KE5HE with no problems. Figure 3 shows both Ragchew and RTTY by WF1B running concurrently under Warp. In this case RTTY is running my PK-900, while Rgachew is of course running off the PCI-4000. They seemed perfectly content to continue running while I was working on this article with either WordPerfect for Windows 6.0 or with CorelDraw 5 running massaging some of the screen bitmaps that you are looking at! I also briefly tried Express 2.04 by Peter TY1PS with no apparent problems.

Some Final Thoughts
OS/2 Warp certainly seems to live up to it's promise of a better DOS than DOS and a better Windows than Windows. One key point behind that is the fact that if a DOS or Windows program goes berserk it doesn't crash Warp. It may wipe out the DOS window or the Windows program, but Warp isolates itself from this utilizing the protection features only available when running the Intel CPU in 32-bit protect mode. Technically Warp is a very solid and robustsystem. How it well it will succeed in the marketplace is unclear at this time. Whether Win95 will offer even close competition on a technical basis with Warp is not clear. On the other hand the volumes of hype and the marketing savvy of Microsoft may simply nullify any basic technical arguments. The hearts and minds of the PC desktop market seem to be swayed more by hype, glitz, feature count over real function, and vaporware than by logic and reason.

In the next article we will look at "32 bit" architecture and what it means to the PC world.

Working SAREX

With back-to-back SAREX missions in July, I can't help but think about how exciting the prospect is to directly communicate with some of the astronauts as the circle the Earth! We can't all be so jaded so that making an Earth-space contact is no big deal, can we? Most of us reading this have the means necessary to communicate, either with packet or FM voice. All it takes is a little know how.

Bruce Paige, KK5DO, recently posted a 'how to' on the AMSAT Internet discussion list, and granted me permission to pass along his techniques and experiences. Incidentally, Bruce presents the EZSATS segment on 'This Week In Amateur Radio.' Here's how Bruce has successfully worked the shuttle:

> I have devised a method of successfully making a packet connect on the Shuttle and having it disconnect so that you will appear on the QSL list rather than the QRZ list. It is really quite simple. I have done it on every mission over the past couple of years.

> Today I made my contact and to make things a bit tougher, my elevation rotor died and it is at Yaesu being repaired so I only have azimuth control. I made the contact the last 3 minutes of the pass as I did not hear the packet very will on AOS.

> The trick is to use a modem program on your computer connected to your TNC. I have found that some of the commercial programs for packet have delays in them and you really need to respond fast. I use Procomm Plus (DOS version).

> Here is what I do. I set my Kantronics Data Engine up as follows:
> FRACK 2
> MONMODE ALL
> MONTYPE ALL
> MONITOR ON

> this allows me to see all packets being sent.

> Next, start your connect process. Here is where the trick comes in. As soon as the robot says 'Connected' and gives you your connect number, you must immediately hit the disconnect command. Mine is Control-C to get access to the TNC and then 'D'. As soon as I saw the connect message, I hit the disconnect keys.

> There you have it. It worked twice in a row as you can see by the log below. Now, it took me less than 2 minutes to make the connection and get into the QSL list and I don't have to worry about working the Packet for the rest of the mission. Voice is another story.

> Here is the first attempt to connect to the shuttle and it took only 20 seconds to connect and disconnect. You can also see that when I got the connect message, it took me only 4 seconds to get the disconnect message sent. I do all my tracking manually, no computer control.

> cmd:c w5rrr-1

> KK5DO>W5RRR-1 [15/JUL/95 14:03:46 UTC]: <<C>>:
> W5RRR-1>KK5DO [15/JUL/95 14:03:47 UTC]: <UA>:
> *** CONNECTED TO W5RRR-1

> W5RRR-1>WD4AHZ [15/JUL/95 14:03:48 UTC]: <I00>:{F0}

#145-is your STS-70 SAREX QSO number.
W5RRR-1>WD4AHZ [15/JUL/95 14:03:48 UTC]: <UA>:

W5RRR-1>KK5DO   [15/JUL/95   14:03:49   UTC]:
<l0cmd:0>:{F0}
[KW5RRR-1>KK5DO [15/JUL/95   14:03:49   UTC]:
<l0cmd:0>:{F0}

#146-is your STS-70 SAREX QSO number.
cmd:d

KK5DO>W5RRR-1 [15/JUL/95 14:03:50 UTC]: <RR1>:
KK5DO>W5RRR-1 [15/JUL/95 14:03:51 UTC]: <D>:
KK5DO>W5RRR-1 [15/JUL/95 14:03:53 UTC]: <D>:
KK5DO>W5RRR-1 [15/JUL/95 14:03:56 UTC]: <D>:
KK5DO>W5RRR-1 [15/JUL/95 14:03:59 UTC]: <D>:
W5RRR-1>WD4AHZ [15/JUL/95   14:04:00   UTC]:
<l00>:{F0}
#145-is your STS-70 SAREX QSO number.

W5RRR-1>KK5DO [15/JUL/95 14:04:00 UTC]: <D>:
*** DISCONNECTED
KK5DO>W5RRR-1 [15/JUL/95 14:04:01 UTC]: <UA>:

So there you have it. Good luck in making your contact with the Shuttle Robot. 73....bruce

Again, many thanks, Bruce, for allowing me to share your technique with Packet Power readers. I certainly hope this serves as an inspiration to others to put some spark back into their digital operating. There is more to do than log on to the local bulletin board and see what's for sale! By the way, Bruce's packet address is KK5DO@KE5IV.#SETX.USA.NOAM and his Internet address is paigecom@phoenix.net.

It doesn't take much to work the shuttle. You need to know what frequencies are being used to listen and transmit on (these vary, so check ARRL and AMSAT bulletins prior to mission launch). A garden-variety two-meter transceiver and regular packet TNC and omni directional vertical antenna are all that's needed. An orbital prediction program to know when the shuttle will be making a pass over your area will help. If you want to work voice, just keep an HT on the shuttle downlink frequency and listen for signals to break the squelch! I know of several hams who work the MIR this way; they don't worry about checking orbital predictions. You can, too!

Interesting Observation

A recent mailing from the ARRL to advertisers in QST has some slightly disturbing information. Planned purchases of TNCs and multimode controllers will be quite a bit lower over the next year when compared to purchases of the same equipment planned in 1991. Does this mean the bloom is off the rose? Is packet nearing saturation? From this lone statistic, it's not possible to come up with solid conclusions. I suspect that until there is more activity away from the handful of channels on two meters, we won't see the spectacular growth in packet that we did in throughout the 1980's. Maybe hams are getting bored with packet, especially when there are more attractive and faster means to communicate at a keyboard, such as with the Internet. It's still a healthy business, and I saw tons of TNCs being purchased at Dayton and Arlington, Texas' HamCom this year. Still, I wonder if DRSI's departure from the ham marketplace is an indicator of a softening market?

One sure thing that will perk up the packet business is the growth of 9600bps. With the advent of radios that are 'data-ready' and lower-cost 9600bps TNCs, a tremendous upgrade market looms on the horizon. As more 70cm frequencies are channelized for packet and service providers gravitate to them, I would expect to see lots of growth in the 9600bps arena.

Latest Hot Topics From the
TAPR BBS Special Interest Group

The latest raging topic on the TAPR Internet BBSSIG (bbssig@tapr.org) is basically, "are non-ham links legitimate for ham radio?" Any time two service providers (BBSs, nodes, gateways, etc.) are connected by the Internet, phone lines, wormholes, is this still ham radio? Does this do long-term harm to proving that we have a continued right to have RF spectrum

assignments? Or does this prove to the FCC and the world that we are forward thinking by integrating various technologies with amateur radio?

It certainly doesn't look like non-ham links are going away any time soon. Do they subvert the development of long-haul amateur HF and satellite communications? What do you think? Drop me a note with your feedback; I'll include the most reasoned commentary in a future Packet Power column.

Incidentally, in another thread from the BBSSIG, there has been quite a healthy discussion on the 'ideal' BBS software. One of the reasons packet may seem to be peaking may be that it doesn't seem as exciting or efficient as other digital communications. New software that may possibly be developed by TAPR would be graphical, rather than text based. This would be accomplished by placing much of the functionality in a user's computer (such as when using CompuServe's, Prodigy's or AOL's custom terminal software). If you're a packet BBS sysop, might as well put your two cents-worth in!

Thanks to all who have taken the time to send a note or bit of e-mail. I enjoy hearing from you and learning what you are doing in your neck of the woods! It's been mighty warm these past few weeks and lots of time has been spent in doors at the computers instead of outside whacking weeds. I'll be in Long Beach (California) over the Labor Day weekend at the big hamfest there and at the Digital Communications Conference (Arlington, Texas). Look for my WO5H cap and say howdy! With cheap air fares available, you really ought to check out the DCC if you want to get a strong dose of digital. Contact the Texas Packet Radio Society at P.O. Box 50238, Denton, Texas 76206-0238 for registration information. You can also obtain information on the World Wide Web from the TPRS home page: http://www.tapr.org./tprs.

SARTG WW RTTY '94
Contest Results

Single/Op, All Band		Single/Band 7Mhz	
1. US6H	899960	1. KI1G (Op:WF1B)	54800
2. HH2PK	896920	2. IK1HXN	30090
3. I2EOW	802160	3. SM4RGD	28520
4. UN8PYL	707850	4. UN8PLY	24920
5. SM5FUG	677150	5. OK2BXW	22785
6. N2DL	619760	6. OM3TZW	27350
7. AB5KD	565800	7. SP4CHY	21080
8. UN5PR	493200	8. I2WEG	29550
9. NO2T	460425	9. DJ2YE	15680
10. I2HEO	428915	10. KI4MI	13320
11. VE3XO	418770	11. LA6VIA	3500
12. IV3FSG	364425	12. S53X	2120
13. SP4CHY	301350	13. SM4RLD	1265
14. G3OZF	351745		
15. SV2BFN	343440	Single/Band 14Mhz	
16. J28JJ	331200	1. SM0HTO	629535
17. EA6/IK2RZP	301350	2. WF1B (Op:KI1G)	301230
18. LA7AJ	238680	3. UA4LCQ	262080
19. IK0HBN	238000	4. JA7YAA	215280
20. AA7UN	233695	5. OH2LU	185000
21. G5LP	217920	6. WF5E	170415
22. EA5FEL	209000	7. 4X6UO	169290
23. SM4MY	206360	8. IV3FSG	167835
24. NA2M	203715	9. JA1BIH	164010
25. KE7GH	195050	11. JA1FTU	149480
27. LZ1KBB	186615	12. SM4AAY	146700
28. DK3GI	182450	13. IN3XUG	134540
29. IV3ZDO	176000	14. IK2HKT	118140
30. JH7QXJ	174300	15. YU1NR	115275
26. DL9MBZ	52140		

Multi/Single		Single/Band 21Mhz	
1. F8XT	1811375	1. LU8EKC	23925.
2. PI4COM	693720	2. UN5PR	13320
3. GW5NF	654060	3. JG2VUQ	4590
4. DL0GK	603720		
5. OM9SNP	598500		
6. OK1KSL	370720		
7. VK6GOM	48175		

HAL P38 vs AEA PK-232

A Review

by Glenn Vinson, W6OTC

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HAL Communications Corp. has long had a reputation for producing superior, but expensive, HF modems and related gear, designed primarily for the commercial market. In the amateur radio market, the best selling HF modems (AEA, Kantronics, MFJ) have been those selling in the $250 to $350 price range, well below that of any HAL modem. HAL's new P38 HF modem, introduced this year at Dayton with a list price of $395, adds a significant new choice to the modems priced for the amateur radio market.

The P38 is a descendent of HAL's PCI-4000, the HF modem originally introduced in 1991 at a price of $1,000 to implement HAL's CLOVER protocol. The PCI-4000, which is based on the Motorola DSP56001 and related chips, was later configured in the /M version for multi-mode applications and its "street" price eventually dropped to about $700, still well above the mainstream of amateur radio HF modems. Finally, in 1994, HAL decided to attack the price issue by redesigning the modem using the less expensive, but quite effective, Texas Instruments DSP chip, the TMS320C25-50 combined with a Motorola controller. The result is the P38 board and a new version of the HAL software. A fuller account of this design effort, with a detailed comparison of the features and specifications of the P38 versus the PCI-4000/M is available on the HAL BBS at 217-367-5547 (and on the IDRA WWW Page-ed).

I have used the PK-232, with its various ROM updates, since 1989. In A/B/C tests set up by my friend Steve Stark, KE6FV, the PK-232 seemed to perform better than the competing Kantronics and MFJ products on FSK RTTY, particularly when used with a receiver's 250 Hz filter (Packet, AMTOR and PACTOR were generally ignored for these tests). Nevertheless, the PK-232's own wide filtering, a feature of its multi-mode capabilities, are simply not optimized for RTTY FSK. Others, such as NI6T, have described modifications to the PK-232, including narrowing the front-end filter bandwidth, increasing the Q of the discriminator resonator and lowering the post-detection lowpass filter frequency, all of which clearly sharpen its RTTY performance; but the unit cannot then be used in the PACTOR mode.

Hoping to find better overall performance than that of the PK-232 but staying within amateur radio prices, earlier this year I asked several serious digital mode users for their recommendations about multimode HF data modems. Based on their responses, I decided to try the PCI-4000/M and to compare its performance with my newest, but unmodified, PK-232 (with firmware dated 1 Dec 1993). For this purpose, I set up an A/B switch between the two HF modems with input from the same audio source, an IC-781. I later used this same switch, with appropriate cabling, to compare the performance of the P38 to the PK-232. The results of both tests were substantially similar on RTTY and the -TOR modes, and strongly favored the two HAL modems.

Installation

The P38 is a full-length board that installs in an IBM PC or compatible having a minimum of 640K RAM. As shipped from the factory, the I/O base address is set to 360H which will not ordinarily interfere with any standard hardware interrupt. I simply plugged board into a free slot and had no problems in a computer having a sound board, IDE controller, SVHS board and using three com ports and lots of TSRs. Indeed, since the PCI-4000/M is set to a different default base address than the P38 I had no problems having both boards installed and running at the same time. Should conflicts arise, the P38 I/O base address may be changed to any one of 20 addresses via a dip switch on the board itself.

The HAL operating software is DOS-based and downloaded to the RAM on the board upon initiation of the board by the host computer. Accordingly, upgrades or changes in the DSP or Motorola 68000 code require no hardware ROM changes. In fact, HAL states that a new revision of the P38 software is due to be released at the time of this writing.

The board has four external connections: three RCA jacks for audio-in/out (the out is for AFSK to run Clover) and PTT, and a mini-stereo jack for FSK output.

Operation

The P38 may be run either from the supplied HAL software or from third-party software, such as "RTTY" by WF1B and "Express" by TY1PS. The supplied HAL software, while very user friendly and intuitive, appears to be optimized for CLOVER and the -TOR modes but works seamlessly with RTTY. One feature I particularly like is what amounts to digital mode push-to-talk: just start typing and, depending on the breakpoints (letter, word, line) you have defined, the transmitter keys at the end of the first breakpoint and unkeys when you hit carriage return (C/R) and stop typing for a user-selectable period of time (e.g. 2 seconds). While the HAL software is innovative and very versatile in the -TOR modes, it is not well suited for RTTY DXing or contesting, requiring several keystrokes, rather than just one, to send preprogrammed messages from the buffers. Also there is no mouse support or automated call capture. Again, either "RTTY" or "Express" provides these features if you desire them. In any event, the HAL hardware is the principal focus of this comparison; software will be examined in more detail in a later article.

Performance

In straightforward A/B comparisons, the P38 clearly outperformed the PK-232, in the sense that the P38 can print signals that are just noise to the PK-232. That result was clear and was demonstrated repeatedly to me and to others who used this equipment at my station. For copying weak DX, the P38 improved copy here significantly. One morning, for example, around 1500z I heard a weak signal at about 14,081 Khz but could not print any of the tones with the PK-232. The signal was so weak that the only way I could be sure I had it tuned properly was to watch the 'scope. But when I switched to the P38, without moving the dial, I could print SM5FUG in a QSO with a JA. I had similar experiences in the -TOR modes (and of course CLOVER which is not available except with HAL modems), where initial signal capture and print was much quicker with the P38 than the PK-232.

What about external DSP units, such as the Timewave DSP 9+? Can they, at a price of about $200, sufficiently and sharply narrow the bandwidth of received signals to permit ordinary HF modems like the PK-232 to perform substantially like the P38 (except on CLOVER which is proprietary to HAL)? I think the answer is sometimes yes, but this answer is subjective, not measured by any scientific instruments other than my eyes and ears. I made the following comparisons to examine this question: I used an A/B switch from my antenna to feed either (i) a new ICOM IC-775DSP receiver with a PK-232 connected to my laptop computer, or (ii) my IC-781 with the P38 in my home 486 computer; or (iii) to switch between audio from the IC-781 going directly to the P38 or (iv) through the DSP 9+ to the P38. In these tests, the IC-775DSP/PK-232 sometimes printed signals that were only noise to the IC-781/P38, but I saw no significant difference between the P38 with or without the addition of the DSP 9+. Since the 775 was on short-term loan from Icom, I did not have the opportunity to pair it with the P38 before writing this article. However, in almost 30 days of testing prior to my receiving the P38, the IC-775DSP outperformed the IC-781 on all modes, and I expect to find it extremely effective with the P38.

Certainly, adding a narrow filter in front of the P38 may sometimes help its detection of marginal signals in some instances. The "may" and "sometimes" in the last sentence depend on several variables including insertion losses created by adding more filters to the signal path, as well as external factors, particularly the actual frequency shift of the transmitted signal, a variable that is not always as precise as we would wish, especially with older multi-mode controllers. Typically, signals generated by a HAL HF modem are sufficiently precise in their shift that they may be copied with very narrow filtering.

Tuning

Having reported so many good performance features of the P38, let me mention one subject that has been a problem for some users in the RTTY mode. This modem is an internal board: thus, the modem's status is not visible via external lights and, more importantly, there is no external hardware tuning indicator. In principle, tuning is done via software tuning bars displayed at the top of the computer display. While this display works very well with CLOVER and the -TOR modes, I found it not so useful on RTTY. Indeed, by coincidence, while testing the P38 I received via e-mail a plea for help from a good friend (and experienced RTTYer) in Italy who had bought the P38 at Dayton but who could not figure out how to tune a RTTY signal with the HAL software. My advice: feed the audio in parallel to an external modem such as the PK-232 or the KAM and use that modem's tuning indicator for guidance, together with its X/Y output for an oscilloscope. For those of you who say you tune by ear, remember that the P38 will print signals that you can barely hear and some that may not be audible.

Auto-Mode Detect?

One feature of the Windows version of the PcPakratt software for the PK-232 is auto-detect and switching to AMTOR if PACTOR has been selected but an AMTOR signal heard. This switching ability is a nice feature for some users, particularly those who like to monitor a specific frequency, and is also quite handy for BBS operators who want to enable contacts in either mode for their users. Although this feature is not supported in the HAL software itself, "Express" supports CLOVER detect and changeover from FSK for the P38. "Express" also supports the simultaneous use of two P38s (or PCI-4000/Ms, or a mixture), set to different base addresses. With the two boards connected in parallel to your radio, CLOVER code loaded into one board, and FSK in the second, you can link and reply instantly to any call in any mode.

Conclusion

I like the P38 as well as the PCI-4000/M and I now use both of these HF modems, still seeking some particular characteristic that will make me prefer one to the other in normal amateur use. My PK-232s (sometimes with the NI6T modifications) perform adequately on DXpeditions where internal boards cannot be installed in laptops. Unfortunately, according to HAL, no PCMCIA version of the P38 is in the works. While I was surprised at the results I found by combining the IC-775DSP with the PK-232, clearly more comparisons need to be made (using, for example, the newest version of the P38 software processing the 775's audio). I hope to be able to make that comparison soon, and will report here whatever I find.

TG9VT Memorial Plaque, for North America went to Steve Tobe, operating CJ3XO with Robbie VY2SS close behind. The North America Low Power Digital Journal Plaque went to Jody, VP5JM always a regular in RTTY Contests. South America goes to another regular Pasquale, YV5KAJ, operating YW5RY on low power yet. S56A, Marijan beats out fellow countryman S50A for European Honors and Peter, ZL3GQ also on low power takes the Oceania Plaque. In Asia, UN8PYL will have the N5JJ memorial plaque on his wall.. Africa went to Dave A22MN with a score making 724 QSO's followed by Peter TY1PS, with 582Q's who had Murphy visiting, Peter states that things were going well until the watchman at his apartment told him his antenna was ON FIRE. Alex. UN7PCZ operating UN8PYL places first in Asia. High score in the United States High Power Plaque goes to Neal AE6E, operating K4JPD and Low Power United States is won by Don, AA5AU.

Single Band

With no Activity on 28 or a legitimate entry (12 Hours required for award) I moved the Plaque Sponsor to another Band for this year. On 21 MHz Ron , KP2N takes top honors, 14 MHz goes to Zelimir, 9A2DQ, 7.0 MHz is Hermann DJ2BW and 3.5 MHz is won by 9A1A.

Multi-Operator Class

Well the news here of course is another group of East Coasters decided to challenge the gang at W3LPL for the Multi- Multi Plaque. After the dust had cleared and the stories of the one that got away had cleared, the crew at K1NG bested the crew of W3LPL by just over 200,000 points. I am sure there is a challenge brewing for the 95 contest, with Dayton being where the bet is paid off. In the Single Transmitter Class the group from Station RK9CWA turned in an impressive 2,5M + points or the second highest score in the contest to win the AEA Plaque and the Low Power HAL Plaque goes to Club Station Z30M.

Summary

Once again thanks to Gail and John at CQ for their help, you the operators for participating. September 23-24, 1995, our EIGHTH contest. See you there. Once again I would like to share some of your comments with all of us. " Got into the contest by accident, was checking my new software...9K2ZZ". I like the no rest rule...AA5AU." " 32 New Countries...DL7VOG." "I like the 48 rule...KB4GID." " Bring back the rest periods...KK4DK." " Missed the new rule, operated 27 hours, Oh well...VY2SS." " see you nest year, maybe from Mt. Athos...SV1BDO." and "Finally getting the hang of this thing...WA6SDM."

73, Roy, KT1N

Results of the 1994 CQ/DJ WW RTTY DX Contest

As with any contests that has rule changes, ours this year was no exception, some of you were not aware of the NEW rule in 1994, the 48 hour rule, and only operated 30 hours. I apologize for the the confusion that this may have caused and I do not anticipate any other changes in the near future. I also am sorry for the lateness of these results this year and to help FIX that problem I am pleased to announce that Ron Stailey, AB5KD has joined me as CO-Director of the contest. Ron is an active RTTYer and Contester, will help with the scoring and be in charge of Plaque Sponsors, both current and additional Plaques. Thanks Ron for your help. Another problem has been obtaining High Quality printing of Certificates. Jerry Ash, N1DGC and Jim Crump, W1EWN of The Natick, MA High School Computer Club have taken on the responsibility of helping me Print High Quality certificates in a resonable amount of time so that we may get them to in you faster then in the past. Thanks to all of you for your help.

Single Operator Class

Patrick, HH2PK decided to add the amplifier and move up to taking Top Honors in the world in the High Power class with a score of 1,304,485. Low power went to 9K2ZZ who turned in a score of 962,104. In the Assisted Class, once again Roland DK3GI took top honors with a score of 1,186,185, well ahead of the field. The

Worked All Europe 1994 RTTY DX Contest Results

Continental Winners

S/Op Category			M/Op Category		SWL Category		
Europe	S56A	309756	RU1A	399546	ONL383	92730	
Asia	UN8PYL	108336	RK9CXM		22968	UA9154800	468
N.A.	K2TW	166105	AB5TF	60			
S.A.	PW2A	30336					
Oceania	5W1AM	11492					

	Europe/WW S/O		Non-Europe S/O		U.S.A. S/O		SWL Categor	
1.	S56A	309756	K2TW	166105	K2TW	166105	ONL383	92730
2.	K2TW	166105	UN8PYL	108336	AB5KD	99160	DE0GMH	31400
3.	EM0F	129195	AB5KD	99160	KB4GID	38080	BERTINI	15624
4.	IK2BUF	124230	6Y5X	56353	W5TZN	24440	LUDWIG	12848
5.	UN8PYL	108336	VE7SAY	43964	W6/G0AZT	11100	DF7JC	6660
6.	AB5KD	99160	KB4GID	38080	NA2M	4028	F-10095	6528
7.	S57W	96250	PW2A	30336			DL-Holger	4600
8.	IV3FSG	87580	W5TZN	24440			SP4-208	2244
9.	6Y5X	56353	JA3DLE/1	14062			UA-154800	468
10.	F6AOE	48334	JE2UFF	13800				

On many occasions, newcomers to RTTY have been intimidated at the idea of venturing into a new mode. Hours are spent at home learning how to tune in a RTTY signal, figuring out what conversational formats are used, operating protocols, etc. etc. Sooner or later the mystery vanishes and they are ready to embark upon a voyage into an unknown sea. (Pardon the metaphor!).

On one notable dxpedition, several years ago, the novice RTTY operator had difficulty in getting on the air because of lack of training and practice at home. Such shortcomings included an inability to hook up the equipment as well as how to operate it. This caused innumerable RTTYers, starving for the new rare one, to suffer a high level of frustration. I don't think it helped the operator's blood pressure either. That happening was short of total disaster, as some contacts were eventually made. No records were broken.

Now, along comes a similar situation. but with a much different ending. The operator knew, at the start of his trip, that he was initially ignorant of both equipment hookup, as well as how to operate it. To make the story more interesting, he did not have a manual with him. Let us hear the story directly from Peter Casier, ON6TT, (see photo) as he forged his way, with humor, into RTTY-land as 9Q5TT. (Peter has written extensively on his trip to Zaire for other ham publications, but this DJ DX News exclusive was written by him specifically from the RTTY point of view.)

"I have been on a number of DXpeditions and trips to exotic places. I always admired my fellow ops while they were, for hours in a row, with the hard diddling sound in their headsets, fighting the pileups in RTTY. Never would I have thought to become like them. (My wife thinks I get crazier as I get older.)

"In my life as a ham, before my 9Q trip, I only made about 10 RTTY contacts. By accident, actually, as I happened to try out a PK-232 on loan. I found it booted in Baudot...Heck, I did not even own a RTTY modem myself. I gathered it might be kinda nice to run some easy, relaxed RTTY contacts from 9Q, where I was stationed working for UNHCR beginning this year. Luckily, John, ON4UN, was willing to lend me his PK-232.

"After the station was set up, in a hotel near Lake Kivu, in Zaire, it took a while before I figured out how to get all the connections to the radio correct. Even then, I had no clue as to how to key the rig, stop a transmission, etc. I cursed the moment I decided to leave the heavy manual home, as I already had too much luggage anyway. What does one do? Well, you call CQ in SSB, and every contact you ask the guy "do you have a PK-232 manual?" The third contact I struck lucky, and the guy explained what control characters to use.

"Fine, 9Q5TT went on the air. NOT! I did not even know where to start. What frequency? USB or LSB? How is a QSO done?

"So I listened around, answered a few CQs, and made a few QSOs. I noticed that whenever I answered someone's CQ, a whole crowd would soon pop up calling me. Every time I moved to a new frequency, the crowd followed me. "Mmmmm, would 9Q be needed in RTTY?", I asked myself. "Well, let's see." I managed to find a clear spot somewhere, and called CQ. Whammmm! There was the whole crowd again, calling and calling. I could still manage the pileup, though I had no clue how many times to give the other's call. How short could I make a QSO without being seen as rude? Was it 599 or 59 etc.? So I started imitating a CW QSO:

"-DE 9Q5TT QRZ? -ajahck#$$% DE XX9XX @%*($@#%^ -XX9XX XX9XX DE 9Q5TT 599 599 BE -9Q5TT DE XX9XX 599 599 -XX9XX DE 9Q5TT TU QRZ?

"That went reasonably well, until the pileup got so big that I could not handle it anymore. People were calling over each other and even were calling over me. I had no clue whether 'RTTY-dudes' were used to working split. So I found a new RX frequency and went split.

"It took a long long time before people realized what I meant by "UP 7". Some of them consistently kept on calling on my frequency. After some long overs, where I left little doubt that I was not listening on my TX frequency, I found the pileup not only 7 khz up, but spread over a vast 10

khz wide window. That is not what I wanted. Mmmmm! Lets try again: "7 UP ONLY 7 UP ONLY". OK, there we went, running fine and systematically ignoring the guys not on '7 UP'.

"After half an hour, the next challenge came: now that there was not a lot of noise on my TX frequency, some people, who I could not copy very well (and vice-versa, probably), started calling CQ on my TX frequency. The reason was probably because my pileup had spread itself 20 khz wide by now, even though I was only listening 7 UP, and thus, my TX frequency must have been the only free spot on the whole RTTY window.

"Luckily, some of my audience were helpful enough to chase the intruder away, not always using good language. It was kinda funny to see one guy calling the other one names, in RTTY hihi.

"Well, slowly but steadily, we were increasing our QSO speed, to 2 or 3 per minute. It became clear to me that 9Q, was indeed wanted on RTTY! Apart from the modem, due to the heat, hanging once in a while, I found myself handicapped working with a simple terminal emulator, without even a macro or function key facility. I was typing like crazy trying to keep up the pace. And logging everyone on paper.

"After a few weeks, the pileups got thinner and thinner. I had covered Europe, JA and US, on 20m only. With 800 RTTY QSOs in the log, there was nobody coming back to me anymore. So I gathered: there were no more active RTTY DXers left (how the heck would I know? hi). Would it be useful to run RTTY on other bands? I asked around and found out there was nothing like a 5BDXCC for digital modes. So I gathered: "this is it". 9Q should have tumbled down from the 'RTTY Wanted List'.

"And it seems I did well. And even better: I liked it! More: I loved it! Coming back home, AEA helped me with a new PK900, and Ray, WF1B gave me a copy of his RTTY contest software (hey watch my speed now!) Now there is no excuse anymore for not running RTTY from my next hot spot.

"Except, that I keep on forgetting: "Is RTTY done in LSB or USB? Hi." 73 Peter ON6TT/9Q5TT peter.casier@box.eunet.be"

Comment: As this is being written Peter is true, to his word. He is fending off the RTTY pileups as D3T, from his assignment as a telecommunications consultant for the Red Cross in Angola. (He commenced operations as D2TT.) He reported that his newly acquired PK-900, and WF1B RTTY software work very well. Peter is slated to be a member of the November 1995 Heard Island DXpedition. He has promised to provide the DJ with a story on 'RTTY From Heard Island', upon his return.

One further comment from your columnist. While Peter found it "funny" to be amused by those who tried to keep his TX frequency clear, "not always using good language", the reader should not interpret his comment as condoning that practice. Having spoken to Peter personally on more than one occasion, and from his experience on other major DXpeditions, I know that was not his intent.

DX DOINGS
(Signals are 45.5 Baud RTTY unless noted.)

Note that the DX Doings below include activity as reported from worldwide sources. Therefore, some stations may not be seen, in your particular part of the world, at the hours indicated. To make best use of the data given, couple it with your knowledge of propagation paths to your QTH. For help in this regard, see the monthly propagation charts in QST, and listen to the hourly propagation forecasts at 18 minutes past each hour on WWV. Good luck!

ANTARCTICA(?), HF0 - A station signing HF0PMC has been active on 20 meters between 1745Z and 1815Z. QSL manager has been given as SP2PI. Because of the HF0 prefix, I am assuming this is Antarctica, but would like confirmation of that.

ARUBA, P4 - Jay, WS7I, and Betsy, WV7Y, will operate P40JT during the CQ/DJ WW RTTY DX Contest, 23-24 September. Look for them also a few days before and after the contest. QSL to WV7Y.

BOSNIA-HERZEGOVINA, T9 - Look for T94NF on 20 meters around 1530Z. QSL via N2AUK.

CANARY I, EA8 - Propagation allowing, there is almost round the clock activity, on 20 meters, from any of the following: EA8IN (1730Z), EA8AW (0000-0100Z), EA8NX (1530Z), EA8BHS (2130Z),EA8MQ (1430Z). QSL routes are needed for all.

COLOMBIA, HK - HK4CZE is active on 20 meters either around 1700Z or 0030Z. QSL route is needed.

CUBA, CO - CO2JE and CO2KG, continue to provide most of the RTTY action out of Cuba between 1200Z and 1230Z, and also around 2230Z. Until new reliable QSL routes are available for any Cuban station, your best bet is to QSL via the Bureau.

DJIBOUTI, J2 - After a long absence, Jean, J28JJ has again been active on RTTY on 20 meters around 1430Z. QSL via F6HGO.

GREECE, SV - SV8CS is very active on 20 meters between 1200Z and 1500Z, and between 2030Z and 2230Z. QSL via CBA. A QSL route for SV2DGH, who is active around the same time, is needed.

HEARD ISLAND, VK0 - As of late August, all communications gear, tools, survival gear, and day to day camp supplies were scheduled to be shipped to Australia by sea container. The schedule still remains for a 1 November departure, by the team, from Freemantle, West Australia, with an expected arrival at Heard Island of 12 November. Setting up will be as fast as weather permits. Departure from the island is planned for 1 December.

Equipment includes six HF transceivers, six or seven monoband Yagis for 15, 20, and 40 meters, as well as verticals for 40, 80, and 160 meters. A separate satellite station will be manned by PA3DUU.

If you are of a mind to make any suggestions to the team prior to their departure, you can send an e-mail to Ralph, K0IR addressed to rfedor@cloudnet.com . He may not be able to answer, but has promised to read them all.

If you have not already done so, you can send your much needed contribution to The Heard Island Expedition, P.O. Box 563, Waite Park, MN 56387. Europeans can send their contributions to Peter Casier, ON6TT, Oude Heerban 30, B-9230 Melle, Belgium. If you are sending a QSL to Peter, via ON5TT, for any of his recent African operations e.g. 9Q5TT, D2TT, or D3T, you can include a contribution with a note marked 'For Heard'.

HONG KONG, VS6 - Look for VS6AK around 1400Z. QSL route is needed.

MADAGASCAR, 5R - A reminder that Shun, JF1MGI will be on RTTY from here during the third week of September as 5R8EU. He will be emphasizing RTTY and Pactor. QSL to his home CBA.

MALI, TZ - TZ6FIC now operates 20 meters around 2100Z. QSL to FF6KEQ/F6KEQ.

MAURITANIA, 5T - 5T5E has been active on 20 meters around 1900Z. QSL route is needed.

REUNION IS. - FR5DX has been on Pactor on 14073 khz around 1430Z. Try QSL via CBA.

SAN ANDRES & PROVIDENCIA, HK0 - HK0DPA has been active on 20 meters around 0200Z and also around 2130Z. QSL route is needed.

SAN MARINO, T7 - T77WI is on 20 meters between 2030Z and 2315Z. QSL route is needed.

SRI LANKA, 4S - 4S7/JA4FM was active on 20 meters between 1200Z and 1400Z. He was scheduled to leave at the end of August. If you worked him, QSL via JA1FHK.

TAIWAN, BV - BV7WB is a new call seen on RTTY on 20 meters around 1515Z. QSL route is needed.

THAILAND, HS - HS0AC may be found on Pactor around 1615Z on 14070 khz. QSL to G0CMM.

TURKS & CAICOS Is, VP5 - Four members of the Contestgroup Oude Maas PI4COM will be active from Providenciales Island from 7-26 September on all bands, SSB, CW, and RTTY. PA3ERC, PA3EWP, PA3BBP and PA3FQA will sign VP5/owncall before and after the CQ/DJ WW RTTY DX Contest on 23-24 September. During the contest, they will sign VP5C. All QSLs go to PA3ERC, R.J. Snieder, Van Leeuwenstraat 137, 2273-VS, Voorburg, Netherlands.

WESTERN SAHARA, S0 - After a long absence, S0RASD has shown on 20 meters between 1800Z and 2100Z. QSL via EA2JG. If you were lucky to work S01M earlier this summer, QSL to EA7EL.

ZIMBABWE, Z3 - If you work Z21HD on 20 meters around 0600Z, you should QSL to: Ken Fernandez, 33 Vincent Ave., Belvedere-Harare, Zimbabwe.

MISCELLANIA

We have, in the past, often ridiculed stateside stations that made blind calls to rare DX stations. It always seemed a lesson in futility. Now along comes, Don, AA5AU, a true blue RTTY DXer who publicly thanked Randy, WX5L, who called 3W5FM in the blind, and brought him up on RTTY for those who wanted to work him. Don says "Calling a station that you want to work, when you think conditions are correct, has yielded many new ones for me and others. It seems especially successful on RTTY. If a DX station is tuning RTTY, and does not hear any signals, it seems he is more likely to go to SSB or CW. If we provide these stations with 'beacons' by calling them, it has proved that we can work more rare ones, than not, on our mode."

With North Korea, P5, now added to the DXCC Countries list by the ARRL, everyone, except a handful that worked P5/OH2AM, is set back one country from their final goal. A new operation has been promised for October. I do hope they will include RTTY in the next operation. Martti, OH2BH, and his compatriots are to be congratulated for this achievement. Martti has a good feeling for the needs of RTTY DXers. Excerpts from a printout in my scrapbook provide the bookmark of Martti's own first QSO on RTTY from XF4L in April 1989. I was in QSO with, I think, Eddie, W6/G0AZT when following exhange ensued: DE MK&L/OH2BH XF4L/OH2BH PSE JULES HOW ARE YOU DOING DE MARTTI AR W2JGR DE XF4L AR KN KN KN

XF4L/OH2BH..HELLO MARTTI AND I AM DOING JUST GREAT. YOU ARE RST 599 AND SINCE WHEN HAVE YOU BEEN OPERATING A KEYBOARD. HOW LONG HAS THE RTTY OPERATION BEEN UP? XF4L/OH2BH DE W2JGR KN

RYRYRYRYRYRY W2JGR XF4L XF4L...HELLO JULES GUD TO HEAR U....PEDITION IS JUST GETTING (breaking qrm from those who should know better) REGARDS FR

QRX PSE

OLE GANG. YOU ARE THE RTTY QSO NO 1....JUST GETTING THIS STATION OPERATIONAL....BTU W2JGR DE XF4L AND UR RKT IS 5(qrm) GET THE GROUP JULES

XF4L DE W2JGR R R R MARTTI. FB AND VERY HAPPY FOR THIS HONOR. THERE IS ALSO ON FREQUENCY (calls deleted to protect privacy!) AND IF THEY WILL STOP COMING ON SO I CAN GET MY REPORT. PSE FELLOWS QRX WHILE I GET MY REPORT. XF4L DE W2JGR KN

RYRYRYRYRYRYRYRY W2JGR DE XF4L OK JULES U ARE RST 599 599...BYE NOW AR W2JGR DE XF4L.

At that point, it seemed that every RTTYer in creation burst forth on the frequency, but no one connected. Later, when Martti visited me, and sat at my keyboard at my Long Island home, he told me that the RTTY operation at that point went QRT for a couple of hours!!!

If you should work Martti on any mode, please make it a point to remind him of the importance of putting P5 on RTTY.

Tapani, OH2LU, contest winning RTTYer from Finland sent an inquiry regarding T5KJ, an operator from Sweden, who was operational on digital modes in May 1993. Tapani asked if anyone has ever received a QSL from him on any mode, or if his current whereabouts, address, or call are known. You can send information to Tapani via this column, or direct on the Internet to juhola@ibm.net
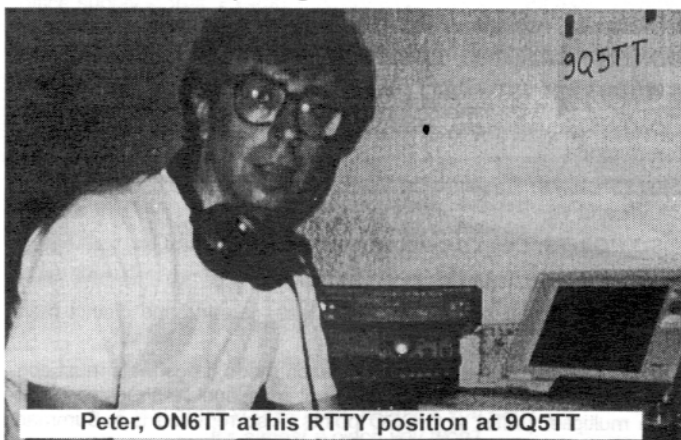
Peter, ON6TT at his RTTY position at 9Q5TT

RTTY Contests - Coming Events

Date:	Contest:	
SEP 3	DARC CORONA 10M Digi	(German)
SEP 23-24	CQ/DJ WW RTTY	(USA)
OCT 21-22	JARTS WW RTTY	(Japan)
NOV 5	DARC CORONA 10M Digi	(German)
NOV 11-12	WAE WW RTTY	(German)

— — REMINDERS: — —

BARTG Amtor/Pactor Contest (July 8-9, '95) log entries deadline is Sept 10.
Mail entry to:

> JOHN BARBER G4SKA
> P.O.BOX 8
> TIVERTON, DEVON
> EX16 5YU, ENGLAND

DARC HF RTTY Contest, Part 2 (July 15-16, '95) log entries deadline is Sept 1.
Mail entry to:

> Werner Ludwig, DF5BX
> P.O. Box 12 70
> D—49110 Georgsmarienhutte
> GERMANY

SARTG WW RTTY Contest (19-20 August, '95) log entries deadline is October 10.
Mail entry to:

> Bo Ohlsson, SM4CMG
> Skulsta 1258
> S-710 41 FELLINGSBRO
> Sweden

— — COMING UP: — —

— DARC CORONA 10M Digital Contest —
September 3, 1995
Sponsored by Deutscher Amateur-Radio-Club e.V. (DARC)
(Ref: DF5BX)

NOTE: This contest occurs 4 times a year on the first Sunday of March, July, September, and November.

CONTEST PERIOD: Sunday, from 1100Z to 1700Z (6 hours)

MODES: RTTY, Amtor, Pactor, and Clover

BANDS: 10M ONLY

CLASSES: 1 - Single op   2 - SWL

CONTEST CALL: "CQ CORONA TEST"

EXCHANGE: RST + QSO number, starting with 001.

CONTACTS: Additional QSOs are allowed with same station on different mode.

MULTIPLIERS: Each DXCC/WAE country, and each call district in JA,VE,and W.

QSO POINTS: Count 1 point for each completed QSO.

FINAL SCORE: Total QSOs x total multipliers.

AWARDS: To top stations in each class, country, and district mentioned above.

LOGS: Use separate logsheets for each mode. Logsheets must contain: Date, Mode, Time UTC, Callsign, message sent/received, first-time multiplier prefix, and QSO points. Also required is a Summary sheet with a list of claimed multipliers. Comments are very much appreciated.

DEADLINES: All logs must be postmarked within 4 weeks of the Contest. Mail to:

> Werner LUDWIG, DF5BX
> P.O. Box 12 70
> D—49110 Georgsmarienhutte
> GERMANY

WAE country list as of 1 MAR 94, (72 countries):

1A0	C3	ER	GJ	HB0	LA	OJ0	R1/fjl	SV	TF
3A	CT	ES	GM	HV	LX	OK	R1/mvi	SV5	TK
4J1	CU	EU	GM/sh	I	LY	OM	RA/eu	SV9	UR
4U/ITU	DL	F	GU	IS	LZ	ON	RA2	SY	YL
4U/VIC	EA	G	GW	IT	OE	OY	S5	T7	YO
9A	EA6	GD	HA	JW/bear	OH	OZ	SM	T9	YU
9H	EI	GI	HB	JW/mayen	OH0	PA	SP	TA1	Z3
									ZA
									ZB

COMMENTS: The following major changes were made in February '95:
• Multi-op class deleted.
• Exchange is now RST + QSO nr. (name and state deleted)
• Mode change for additional QSO now allowed immediately after first mode QSO.
• USA states do NOT count as mults - only call districts.
• VK districts no longer count as mults.

This is a 6-hour all-digital (no Packet) WW 10M contest. It occurs on Sundays, 4 times a year. Count multipliers for each country worked on DXCC/WAE country list, and for each JA, VE, and W call areas. This means that your FIRST JA, VE, and W QSO in the contest will also count for a DXCC/WAE country mult.

— CQ/DJ WW RTTY Contest —
September 23-24, 1995
Sponsored by CQ Magazine, co-sponsored by The IDRA Digital Journal (Ref: July CQ Mag.)

CONTEST PERIOD: Starts at 0000 UTC Saturday, and ends at 2400 UTC Sunday, a total of 48 hours. No rest periods are required.

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

CLASSES: There is 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.

ENTRY CATEGORIES: Single Ops may enter as (a) All Band High Power or Low Power; (b) Single Band; or (c) Single Op Assisted All Band. Multi-Ops may enter as (a) Multi-Op Single Transmitter, High Power or Low Power; or Multi-Op Multi-Transmitter, All Band.

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

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.

MULTIPLIERS: 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.** Count 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.

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 Mag. or Roy Gould KT1N, Box DX, Stow MA 01775, USA.

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. An extension may be given if requested.
Mail logs to:

> ROY GOULD, KT1N
> CQ/DJ WW RTTY 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. This contest has low power/high power classes, which brings lots of activity. With 48 states, 13 VE areas to go after on EACH band, look for lots of activity on 80 and 40M for all those easy multipliers. During September, 20M is still the best, but 15 and 10M will be quite unreliable. To keep track of all those mults on each band, along with possible dupes, I strongly recommend that you go the contesting software route, rather than manual logging. I've been using **RTTY by WF1B** for over 3 years and it's a real pleasure to use. It makes the computer keep you on your toes by beeping at you when a dupe or a new mult appears on the screen. It's really captivating.

— Preparing for Contests - To-Do List —

Assuming all RFI/TVI episodes have been conquered, here's a routine that will get you ready and into the swing of the next contest. It's a **"Contest - To Do List."** Starting at least 2 weeks before a contest, do the 10 To-Do's below...

To-Do #1: Inform your wife at least 2 weeks in advance that you are planning to enter Contest "X" on weekend "Y". (She might ask, "Y"? Best answer is, "Well, because..." She needs to be forewarned... I mean, ready, too. My wife says, " Be sure you mark it on your wife's calendar." Don't forget, she's your "co-op"...

To-Do #2: Read contest rules and set your software for Contest "X" exchange message. If you're not using contesting software, then prepare logsheets and mult sheets for each band.

To-Do #3: Try your rig with TNC on all bands, including the linear to make sure you don't have any RF getting into the TNC. (It happens!) While you're doing this put bright-colored self-adhesive darts on dials and band switches to show correct settings. This truly helps to change bands FAST. (See To-Do #9:)

To-Do #4: Check out your rotary beam. Can it turn a full rotation? Is the direction indicator pointing correctly? A simple check is to point the beam east, according to the indicator, then go outside and look at how the boom lines up. (If you're not sure which way east is, ask your neighbor.) Do the same for west. For north, check it at night when the North Star is out. (You know - find the big dipper, the two end stars line up with the North Star.) Stand next to your tower and see how the boom lines up with old Polaris. It's important that you check this out because when you get stuck in a pileup there may be a gnawing feeling that maybe the beam is not pointing where it should be. Gotta blame something, don't you? Well... don't let it be the beam indicator!

To-Do #5: Check WWV each day at 18 minutes after the hour for latest propagation forecasts, as well as the A and K absorption indexes. You might make a list of of this data to help you decide when to switch to what band during the contest.

To-Do #6: Get on the air! Check each band each day, chase some DX or have a few ragchews. If anything is going to blow up, make it happen *before* the contest!

To-Do #7: If Contest "X" is a DX-type contest, are there any DXpeditions active? Look in your DX newsletter, CQ or QST and make a note to yourself. A new mult!

To-Do #8: Each evening pretend you are in the contest. Turn on the gear, except the transceiver and linear, and make believe you're really in the contest with your contest software (or actually manual log). For callsigns, use last year's logs. Push yourself to go a little faster. Just for fun, try entering calls without looking at the keys. It would be a big advantage if you could. So you make mistakes... at least you are doing it during a practice session - not during the actual contest. Practice makes you more than just pretty good.

To-Do #9: If you keep pressing the wrong Function Key during practice sessions, try labeling them with bright-colored self-adhesive labels. I've mentioned these labels before and I can't emphasize enough just how it helps. Especially during panic time in a huge pileup. Briefly, they come in many colors and are available from most office supply stores. Example: Avery 8125-OG self-adhesive removeable labels are 1/2 x 3/4 Orange Glow. Cut them in half and use regular (black 12 pt Helvetica) rub-on letters and numbers on the labels. Much better than a pen.

To-Do #10: Reset your computer clock. Rarely do they keep good time. Since you're checking WWV each day, you may as well reset your computer clock, too. I find it less confusing to set it to local time than to UTC. But it will depend on your contesting software. It may require UTC.

((73)) See you in the pileups,

Rich, N6GG

P.S.

> *...THINK...*
> *If you think you are beaten, you are.*
> *If you think you dare not, you don't.*
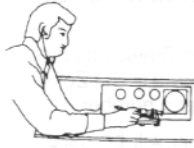> *If you know you can win, but think you can't...*
> *It's almost a cinch you won't.*

Coherent CW·
Another Digital Mode!
by Peter Lumb, G3IRM
2 Briarwood Ave • Bury St. Edmunds, Suffolk • UK IP33 3QF

CCW - 35 Khz up

It is the 23rd June and I am making a start on this column somewhat early as I want to be able to record my first "new age" CCW contact while it is still fresh in my mind. For the past few weeks I have been calling CQ CCW on 7020 and have been heard by PA0OCD and DJ7HS. Ernst's report from Germany was only RST 229 on the first of the month but it was a start. Both stations had apparently called me but I did not hear anything. There is always an unknown carrier on that frequency which led me to suggest a change to 7035 in accordance with my new proposal of 35 Khz up from the bottom of each band. I first tried this frequency yesterday evening and it proved to be nearly as bad as the old one. There was a message forwarding station almost on the same frequency and I wondered if I would cause any interference. However, I have never considered these stations to be operating within my standards of amateur radio so I was not too worried. Why should some stations be allowed to monopolize certain frequencies for hours on end just passing messages for other people? That to me is not amateur radio. There are getting to be too many of them anyway and if we are not careful they will be taking over the whole of the amateur bands - end of complaint!

I called CQ as usual at 1900 G.M.T. and received a reply from Ernst. He had obviously synchronized on to my dot string and was within 2 Hz of my calling frequency. The contact lasted half-an-hour (and could have lasted much longer) with almost perfect copy to the screen. I have one small problem in that the side tone of my TS450 is about 780 Hz instead of the ideal 800 Hz. If the side tone is 800 Hz then the code sent is automatically decoded to the screen from the side tone in exactly the same way as code received. As it is now I can only decode outgoing code with the bandwidth set to 100 Hz. Narrower bandwidths just produce garbage. This is, of course, unimportant but it is something I intend to put right in the near future. Ernst was using 10 Hz bandwidth and I reduced mine to the same figure. Although decoding with the wider bandwidth was very good it was even better when the bandwidth was reduced and this gave almost perfect decoding despite the interference. I was listening to the code straight from the receiver and could read it by ear when there were gaps in the transmissions from the message forwarding station but the screen decode produced almost perfect copy with just a few incorrect letters now and again. It was fascinating to watch the display producing letters which I could not even hear under the bursts of interference. Whole words appeared which I could not hear in the headphones! Reports both ways were RST 479. What fascinated me even more was something I had not thought about before. Most CW decoders I have used including some of the best on the market invariably produce the letters E and T mixed up in the message caused by noise and interference especially during pauses. Not one single E or T appeared incorrectly during the whole contact. Although this was, I suppose, to be expected when you think about it, it came as quite a surprise to me.

Peter Eaton WB9FLW has been collecting copies of newsletters, articles and other documentation relating to CCW in the hope that he will be able to make them available in the form of a CCW compendium. He now has over 35 articles on the mode. When completed the compendium will be made available to others who may be interested. I thought I had a reasonable collection of articles but this figure far exceeds the number of articles I have. I would like to wish Peter all the best in his efforts and look forward to seeing the results. Such a comprehensive collection of articles will be a welcome addition to the available literature relating to CCW. Over the years I have had many requests for information; everything in one book would be wonderful. I assume Peter has all the well known articles but if you have anything which may

help please get in touch with Peter Eaton WB9FLW at 35 Norspur Road, Glen Carbon, IL 62034. In addition he has contacted all those operators who were active in the early days - perhaps they will decide to give the mode another try as we have made quite a few advances since the nineteen seventies.

Interest in CCW seems to moving over to the States judging from the letters I am receiving. Apart from the group I mentioned a couple of months ago (from AK0B) Cliff W6HDO tells me that he, WB6RIJ and WD4PLI have formed a group. I have also had my first enquiry from New Zealand and am trying to get some response from Japan. When I first started writing my Newsletter some years ago all interest was from the U.K. and from Germany. One or two stations got on the air using the Petit filter and I worked DL1EBE, DF3CT and SM6FPC. There were plenty of enquiries but the vast majority came to nothing. I think the interest was there but the thought of stabilizing everything and building the filter was too much. Things continued in very much the same way for a long time until Bill de Carle produced his COHERENT program. This stirred things up a bit and I believe a fair number of interface boards and programs were sold. But still there does not seem to be much activity though I understand that there is a great deal of interest among low band operators for which Bill has added BPSK. Of course, as there is no LOWFER activity over here I hear very little about it. Ernst's PCW again seems to have caused some interest and I have sent out a fair number of copies of the shareware version of the program which is available in the States on the Association's bulletin board. If you cannot get hold of a copy by any other means let me know. Arrangements are in hand for copies to be available from PDSL and Venus libraries in the U.K. though the program is not yet listed. The appearance of the program on the Association's bulletin board has again caused interest and this is probably the reason I am getting more letters from the States than anywhere else. Surely all this must result in an increase in activity.

Last summer I wrote an article called "CCW and DSP" for a British magazine and had it rejected as "too technical" which was something of a surprise to me. I then submitted it to the R.S.G.B. for their magazine RadCom. This time the editor accepted it and I have now received the proofs. You will be able to judge for yourselves whether it is technical or not if you are able to read the coming August issue. Needless to say I have been trying to emphasize the advantages of the computer approach by describing COHERENT. PCW appeared long after the article was first written but I have sent an addendum in the hope that they will be able to add this to the article.

Ernst DJ7HS has sent me the first draft of the manual for PCW. As at 26th June he has 5 registered copies of the program in Germany, 2 in America and 1 each in England and Austria - not many but it is still early days. One question that has been asked by several correspondents is regarding the error message "No external clock" which sometimes appears when the program is started. The external clock is the clock on the sigma-delta board. The message can be removed by pressing <ESC>. The correct procedure is to switch the board on before starting the program so that the clock is already there and no error message will appear.

Finally, can I again ask everyone who is able to make contacts using CCW to let me know when and where they will operate so details can be included in this column. You don't have to call every week - just try to put in an appearance at the times and frequencies you suggest whenever possible. There may be someone looking out for you. For a start here are two schedules: G3IRM - Tuesdays at 1900z on 10135 - Thursdays at 1900z on 7035 - Saturdays and Sundays at 1900z on 14035. W6HDO - Thursdays at 0500z on 7035 and at 1830z on 14035. W6HDO or WB6RIJ on Saturdays and Sundays at 1900z on 14035. Letters I have received have strongly supported the 35 up suggestion and although 7035 is not very good over here the other bands appear to be reasonably quiet.

Digital Satellites

The New Frontier: Packet with the Microsats

By David Medley KI6QE/VK2IMJ • 1020 West Oleta Drive • Tucson, AZ 85704
CIS 74072,1261 / Internet: dmedley@indirect.com
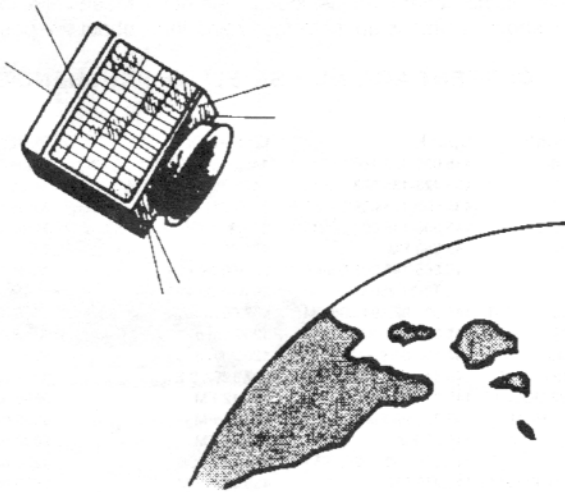
Over the past 10 years or so a group of dedicated Hams throughout the world worked quietly, developing amateur satellite communications. In spite of formidable obstacles the venture has been remarkably successful and a modest handful of avid experimenters throughout the world have enjoyed this new medium. It seems that most of us have dismissed this communications mode as either being too technically difficult, too costly or just a gimmick with no real practical use. Certainly most of this was true during the system development, but now none of it is really true. Today, with HF communications at a low ebb and more and more traffic passing via the INTERNET, amateur radio can sometimes be pretty frustrating. Satellite communications has a minimum of these frustrations, presents something of a challenge and provides a whole lot of enjoyment and a sense of accomplishment. This series of articles will try to explain what is out there in such a way that the average Ham can not only understand it but then utilize the satellites as well.

Amateur Satellites operate on the high end of the HF spectrum (10 and 15 meters); and on the VHF, UHF and SHF bands. The HF satellites may be worked with simple equipment in analog mode (CW and voice), while in the higher bands the digital modes are becoming predominant. Present day satellites proved themselves to be remarkably reliable and a great deal of our long haul BBS traffic is now passes via satellite. A new era dawns with the expected launch of a new satellite in mid-1996 which will provide many exciting services with much easier access.

Many of us have had problems understanding the new microsat technologies and putting the hardware together to assure success. The writer, with no special direct experience in satellite technology, achieved success years ago, through dogged determination and the old ham approach of trying something until you find out what works. Another approach is to ask an expert, but sometimes these are difficult to find. Fortunately there are journals and magazines such as the "Digital Journal" which provide a great deal of information. There are also books available from the ARRL and AMSAT which provide a lot of basic data. "The Satellite Experimenter's Handbook" by Martin Davidoff (ARRL) is a must for any serious potential satellite user.

There are several modes for satellite operation. The simplest is where the satellite merely acts as an analog repeater, but with one big difference. The operation is full duplex with frequency conversion. This means the satellite can receive and transmit simultaneously on different bands. For example, the popular RS (Russian) satellites receive on 15 meters and transmit on 10 meters and can be used for most analog type services (CW SSB). (FM is not allowed on most of the satellites because it is very power hungry and the power budgets of today's satellites have to be closely controlled).

This analog mode is also used on the VHF/UHF bands in a few cases but here the operation is predominantly digital. These modes come in three basic flavors; regular 1200 baud packet, Manchester encoded 1200 baud packet and 9600 baud packet. The SHF modes are more experimental and much development may be expected here in the future, including very high speed data.

Before we get further into this subject let us make the point that we are talking mainly digital now, and a computer is a "must". It does not have to be elaborate. Whatever you are presently using for packet will probably be adequate. To demonstrate, let us start by looking at one of the most basic satellites in more detail and see what results might be expected. The satellite to be considered is known as DOVE or DO-17.

The acronym DOVE means Digital Orbiting Voice Encoder. Launched on Jan 20, 1990 as part of a multi-satellite payload on an Ariane rocket from the European Space Agency facility at Korou, French Guiana. It was intended to serve the Amateur Radio Community and was largely financed by Dr. Junior de Castro, a prominent Brazilian Amateur. Dr. de Castro's vision was to provide an orbiting vehicle which could be used by schools throughout the world to exchange short voice messages and to promote International goodwill and understanding. Unfortunately DOVE suffered a number of set backs from equipment failures, but due to superhuman efforts by the control team it is still active and does provide a good starting point for our discussion.

Its main output is in the middle of the 2 meter band at 145.825 Mhz. The output consists of normal FM modulation that can be received by any 2 meter FM rig or scanner that has a good outside antenna such as quarter wave vertical. So called gain antennas, vertically polarized, are not recommended as the low angle of radiation will decrease the time you can observe the satellite. A circularly polarized antenna is to be preferred and you will find several ideas in the ARRL Satellite Experimenters Handbook. In some cases, when conditions are especially favorable, DOVE can be heard on a handheld. The output comprises speech and digital data, the latter being in the standard AX-25 or packet format which can be received using a normal TNC and computer set up.

DOVE is considered a LEO (Low Earth Orbit) satellite. This means that it orbits around the earth at an altitude of about 800 Km. Its coverage at any one time is small but being at such a low altitude the signal is strong thus requiring a less expensive antenna setup at the ground station. At most points on the earth DOVE will make 4-6 passes in a 24 hour period. Another feature of this orbit is that it is "Sun Synchronous" which means that its passes should be at the same time each day around midday and midnight. In practice, due to the fact that the orbits are not exact, these times will vary from time to time.

To determine the exact time and where to look at your location you will need a tracking program for your computer. This software is readily available from several sources but you might try AMSAT. From this organization you can select from several excellent programs which will run under DOS or Windows if you are into that. For example QUIKTRAK or INSTANTRACK are both excellent DOS based programs and WiSP is a very sophisticated and advanced package for Windows. If you already have Windows in your machine this is the way to go.

The digital data coming down from DOVE is telemetry and indicates the general health of the satellite. Decoding software for this telemetry is also readily available from AMSAT. If you have access to INTERNET or The World Wide Web you can download these programs from the AMSAT server.

To give you a feel for what this means here is a recent sample of the telemetry from DOVE.

DOVE-1>TIME-1   <UI>:PHT: uptime   is
403/05:54:01.   Time   is   Tue   Jul   18
20:00:30 1995

SWITCH>SWITCH <DM>
DOVE-1>TLM <UI>:00:57 01:57 02:87 03:35 04:59 05:58 06:6B 07:52
08:70 09:70 0A:A0
0B:FF 0C:E8 0D:DC 0E:D6 0F:26 10:E5 11:A7
12:00 13:E6 14:9D 15:B4 16:5F 17:60 18:64 19:63
1A:5B 1B:00 1C:69 1D:7E 1E:DB 1F:64 20:D5

DOVE-1>TLM <UI>:21:D4 22:7E 23:11 24:0E 25:24 26:00 27:00 28:00
29:00 2A:00 2B:51
2C:00 2D:3C 2E:40 2F:A4 30:D5 31:A6 32:00 33:01 34:B0 35:AA
36:A9 37:AC 38:89

DOVE-1>STATUS <UI>: 80 00 00 8B 4C 18 CC 02
00 90 00 00 0A 0F 3C 05 0F 31 010B 52
DOVE-1>LSTAT   <UI>:I P:0x25B2 o:0 l:3837
f:6778, d:0 st:0

Using a decode program by KD2BD, available from AMSAT, the above
becomes much more meaningful. Here is what it really means.

DOVE-1/OSCAR-17 Decoded Telemetry:

[00] Rx E/F Audio (W)	2.14	V(p-p)	
[01] Rx E/F Audio (N)	2.14	V(p-p)	
[02] Mixer Bias V	1.38	Volts	
[03] Osc. Bias V	0.54	Volts	
[04] Rx A Audio (W)	2.19	V(p-p)	
[05] Rx A Audio (N)	2.16	V(p-p)	
[06] Rx A DISC	0.50	KHz	
[07] Rx A S Meter	82.00	Counts	
[08] Rx E/F DISC	-1.48	KHz	
[09] Rx E/F S Meter	112.00	Counts	
[10] +5 Volt Bus	4.88	Volts	
[11] +5V Rx Current	25.50	mA	
[12] +2.5V VREF	2.51	Volts	
[13] +8.5V Bus	8.60	Volts	
[14] IR Detector	214.00	Counts	
[15] LO Monitor I	1.41	mA	
[16] +10V Bus	11.62	Volts	
[17] GaAs FET Bias I	4.34	mA	
[18] Ground REF	0.00	Volts	
[19] +Z Array V	23.53	Volts	
[20] Rx Temp	6.05	Deg. C	
[21] +X (RX) Temp	-7.8	Deg. C	
[22] Battery 1 V	1.47	Volts	
[23] Battery 2 V	1.46	Volts	
[24] Battery 3 V	1.45	Volts	
[25] Battery 4 V	1.44	Volts	
[26] Battery 5 V	1.49	Volts	
[27] Battery 6 V	1.84	Volts	
[28] Battery 7 V	1.46	Volts	
[29] Battery 8 V	1.36	Volts	
[30] Array Voltage	8.56	Volts	
[31] +5V Bus	5.05	Volts	
[32] +8.5V Bus	8.95	Volts	
[33] +10V Bus	12.08	Volts	
[34] BCR Set Point	137.27	Counts	
[35] BCR Load Curr	31.56	mA	
[36] 8.5V Bus Curr	17.39	mA	
[37] +5V Bus Curr	160.18	mA	
[38] -X Array Curr	-10.75	mA	
[39] +X Array Curr	-13.49	mA	
[40] -Y Array Curr	-11.96	mA	
[41] +Y Array Curr	-11.41	mA	
[42] -Z Array Curr	-16.53	mA	
[43] +Z Array Curr	173.31	mA	
[44] Ext Power Curr	-20.00	mA	
[45] BCR Input Curr	128.98	mA	
[46] BCR Output Curr	203.56	mA	
[47] Bat 1 Temp	1.81	Deg. C	
[48] Bat 2 Temp	-27.84	Deg. C	
[49] Baseplate Temp	0.	Deg. C	
[50] FM TX#1 RF Out	0.03	Watts	
[51] FM TX#2 RF Out	-0.00	Watts	
[52] PSK TX HPA Temp	-5.45	Deg. C	
[53] +Y Array Temp	-1.82	Deg. C	
[54] RC PSK HPA Temp	-1.21	Deg. C	
[55] RC PSK BP Temp	-3.03	Deg. C	
[56] +Z Array Temp	18.15	Deg. C	

In future articles in the Digital Journal it is intended go further into the world of amateur satellites, one step at a time. Next month we will look at the "Easysats" (RS series satellites) which will allow us actually to communicate rather than just look at telemetry. Meanwhile, look at the table showing what is up there today and think about the possiblities.

CURRENT AMATEUR SATELLITE FREQUENCIES

Satellite Callsign	Uplink	Downlink	Type
AO-10	435.030-435.180 LSB/CW	145.975-145.825 USB/CW	Mode B Analog
AO-13	435.423-435.573 LSB/CW	145.975-145.825 USB/CW	Mode B Analog
AO-13	435.603-435.639 LSB/CW	2400.711-2400.749 USB/CW	Mode S Analog
FO-20	145.900-146.000 LSB/CW	435.900-435.800 LSB/CW	Mode J Analog
AO-27	145.850 FM	436.800 FM	See note
RS-10	145.865-145.905 USB/CW	29.360-29.400	Mode A Analog
RS-12	21.210-21.250 USB/CW	29.410-29.400	Mode K Analog
AO-16 PACSAT	145.90, .92, .94, .96 FM	437.0513 SSB	1200 baud PSK
DO-17	145.825 FM	1200 baud	AFSK/Voice
WO-18	437.104 SSB	1200 baud	PSK /Image
LO-19 LUSAT	145.84, .86, .88, .90 FM	437.1258 S B	1200 baud PSK
UO-22 UOSAT5	145.9, .975 FM	435.12 FM	9600 baud FSK
KO-23 HL01	145.85, .90 FM	436.50 FM	9600 baud FSK
KO-25 HL02	145.87 FM	436.50 FM	9600 baud FSK
IO-26 ITMSAT	145.875, .90, .925, .95 FM	438.822 SSB	1200 baud PSK
POSAT POSAT1	145.975 FM	435.2777 FM	9600 baud FSK

1) Frequencies shown are without Doppler compensation.
For typical digital satellite pass the original signal will be about 8Khz higher than what is shown.

2) WO-18 Webersat transmits experimental and image data and can be captured in KISS mode via PB or TLMDC.

3) Except for FO-20 the digital sats use a program suite containing PBIPG/PFHADD/PHS or WISP. The broadcast callsign (in PB.CFG) is the satellite's callsign with an SSID of -11. The connected mode callsign (in PG.CFG) is the satellite's callsign with an SSID of -12.

4) When in mode JD, FO-20 can be worked with any packet program. Connect to 8JIJBS. FO-20 currently alternates between modes JA and JD on a weekly basis. Check ANS bulletins for schedule.

5) AO-10 is no longer controllable but the transponder works when the satellite is in sunlight

6) For AO-10 and AO-13, transmit LSB, receive USB. As transmitted frequency is increased the received frequency will decrease (inverting transponder).

This type of information is published regularly by AMSAT and you will also find similar data on the packet bulletin boards. Next time you check in to your local BBS try the "LS SAT" or "LS AMSAT" commands. These satellites will all be discussed in detail with enough information for you to join in this new era of amateur radio.

If this discussion has piqued your imagination you might consider joining AMSAT. This organization has done a remarkable job for amateur radio and the AMSAT journal (published quarterly) is worth the fee alone. Much of this money goes towards building and launching new satellites. If you are interested contact: •
        AMSAT-NA
        850 Sligo Avenue
        Silver Spring MD 20910-4703
        Telephone 301 589 6062

References:
• The Satellite Experimenters Handbook by Martin Davidoff (ARRL)
• The Radio Amateurs Handbook (ARRL)

(Note: next month, Dave moves on to slightly more complicated satellite operations and will continue to do so until you are capable of becoming a full-fledged satellite operator. It's an exciting alternative to the propagation 'blahs' we must suffer at this point in the solar cycle! The Digital Journal thanks Dave for his insight and the effort required for this series—Ed.)
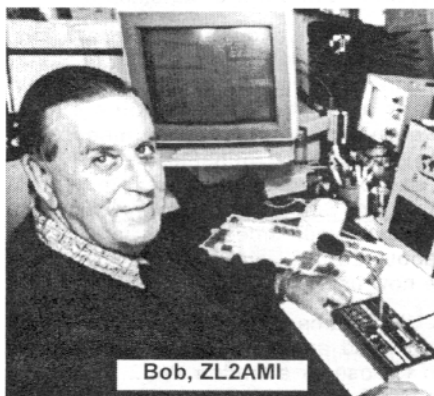
The Contest Chair

Hints, Tips & Inspiration for Better Scores

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Bob, ZL2AMI

Tapani, OH2LU

Hello Contesters and DXers. I just received a letter from Bob ZL2AMI. The IDRA is getting some International Press, in The Western News of Western Australia. From the looks of the picture, Bob told them all about the WPX contest. Bob won the Oceania L.P. Plaque in our WW WPX contest last February. Congrats Bob on your first contest plaque.

Bob also says during contests to check down around 7025khz in the ZL's RTTY band. In future contests he would try to stay down there and work split with stations higher in frequency if necessary. It's not necessary to split for us in the U.S.

Last month I told you about the RTTY Contest Reflector, sponsored by Ray WF1B. If you haven't subscribed your sure missing out on a lot of very interesting topics like using two radios in contests or CQ/DJ WW RTTY contest—No Off Times is it good or bad. The biggest response involves the features we would like to see in the next version of RTTY by WF1B. Some are leaning in the direction of networking, others want a Windows program, several want more than just Kenwood under radio control. I personally would like to see WAEDC contest added with QRC exchange. These are just a few of the topics.

The bottom line? Ray has a list of new feature requests that would keep a staff of forty busy for a whole year. Bear in mind, this is a one man operation!

Some of you may have heard that Roy KT1N has asked me to assist him as co-director of CQ/DJWW RTTY Contest. I am looking forward to assisting Roy in many ways. Not only will I help check logs, he has assigned the plaque awards program to me. This should free up some time from his busy schedule. To start with, we will try to turn out all awards, results and plaques in as speedy of time frame as possible. Having NOT to wait a whole year for results will become priority #1.

There have been several requests made for more plaques because of the size of this contest. Absolutely right! Roy has given advance approval on this issue. All we need is more sponsors for the plaques. I would like to hear some suggestions from you about what you would like to have for I'm sure you have ideas about what kind of plaque program the largest contest in the world should have.

This month we will visit with Tapani Juhola OH2LU. We've all heard this call sign many times and accepted many mults from him. He is employed with IBM in Finland and has been licensed since 1953. He considers himself an old timer. He is also on the (CAC) Contest Advisory Committee of the IDRA. His daughter Tytti is licensed OH2LXZ (currently inactive, living elsewhere). His son Eero never got licensed and also lives elsewhere. He also has a very understanding XYL Kerttu, who still lives with him. (Well, that's one out of three, not bad these days.. hi) He also has another hobby that takes over contesting from time to time. Marathon racing: 8 completed, one of them was the N.Y. Marathon in 1989.

Tapani has always been interested in contesting, previously SSB and CW. But now he is almost exclusively in digital contests, RTTY,

AMTOR and most recently PACTOR. In other words, if a contest is scheduled and there isn't any major difficulty in the immediate family, he will be in the contest giving it his best shot.

Tapani's station is a Drake TR-7 with an L-7 Amplifier, nothing fancy or with any special bells and whistles, just good solid gear that serves the purpose for which it was designed. No other HF radios. His computers are 386 variety, IBM PS/2 desktops or Notebooks.

TNC's and Software: the TNC is a KAM V7.OE. If he's going to work just a few contacts in a contest he uses the HostMaster II+ program. If he expects to go all out and work hundreds of contacts he uses a local contest program produced by Jukka OH2GI another IBM club member.

Towers and Antennas: the tower is 40 feet with a 4-elm yagi on 20m, 15m and a 3-elm yagi on 10m. For 40 and 80m, bands are covered with crossed Inverted Vees just below the 20m yagi.

Contests- Tapani usually does single/op, all band, or occasionally a single band, from his own station. He does contribute to their Club efforts at OH2AG form time to time.

I asked Tapani to list his favorite contests: He says it is difficult to rate contests but CQ/DJWW RTTY would certainly be rated highly due to it's broad participation. The ARRL Roundup is a great contest, but recently has been plagued by poor mid-winter conditions and the difficulty of attracting Stateside/Canadian participants to DX, due to their local pile-ups.

His favorite contests are based more or less on feelings rather than factual data. His top three favorites are BARTG RTTY (his first RTTY contest in March of '87, a week after his first RTTY contact). BARTG is the biggest contest in Europe with lots of activity both in Europe and from DX stations. He feels his third place WW in '93 behind two Caribbean stations was his best contest achievement.

ANARTS RTTY produced his only WW victory in 1991. Point calculation is attractive. He feels participation could be higher, but low sun-spot activity inspires new techniques in multiplier hunting and that is the only means of developing reasonable scores.

WAEDC RTTY has as the most challenging features in it's QTC traffic. The one having the best software to smoothly handle the feature has a good starting point. Tapani also operated at club station OH2AG, where they have placed some nice 2nd and 3rd place results in WAEDC. Tapani classifies the three above contests as classics in digital contesting.

Contest Record:

Roundup	WPX	BARTG	EA
8th S/O HP '95	5th Europe '95	3rd S/O '93	4th S/O '94
At OH2AG-2nd M/O HP '94		7th S/O '92	
At OH2AG-1st M/O HP '93			
3rd S/O HP '92	ANARTS	SARTG	JARTS
5th S/O HP '91	3rd S/O '93	5th 14Mhz '94	7th S/O '93
5th S/O HP '90	3rd S/O '92	11th 14Mhz '93	13th S/O '92
6th S/O HP '89	1st S/O '91	4th 14Mhz '92	

CQWW	VOLTA
5th Europe S/O '93	At OH2AG-3rd M/S '93
At OH2AG-3rd Europe M/S '92	
6th Europe S/O '90	

Windows 95
Part II - A Brief Look At The Final Beta Version

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Now, back to Win95. Keep in mind that all of these comments are made <u>before</u> the final version was released on August 24th. Surely some if not most of the strange phenomena, unexplained quirks, silly omissions or commissions and real bugs will eliminated by then. Time will tell. In any event, let's return to the beta product and count some of its many blessings and a few of its sins.

By the time this issue of the Digital Journal reaches your mailbox, you may have already ordered and installed Win95. But most likely not. August 24th, will probably arrived without any signs of seismic activity, riots in CompUSA or Computer City stores, protest parades, jammed phone lines replete with thousands trying to get their order in for immediate shipment. Oh, there was an earthquake of some magnitude in media hype, a Wall Street rally in mid-July because Win95 was going to make its target date, an outpouring of catalogs offering a 'reserved' copy of the operating system for $89.98 and a big promise of 'HAVE IT ON YOUR DOORSTEP AUGUST 24— GUARANTEED,' as well as twenty combination offers of Win95 and hardware or software products that no doubt are celebrating the program's arrival. Whatever you or your friends decided, suffice it to say the software blahs' of the past year are over. The upgrade promotion blizzard of 'Win95 Compatible' began during the fourth week of August.

My advice at this point; after sixty days of tinkering with Win95 (pre-release 2.0) and Win NT3.51 (final release); after fifty nine days of varying degrees of frustration, anger, despair and elation; after discovering some terrific 32 bit shareware that I do not now wish to give up; after, finally, achieving a stable and friendly desktop that works the way I want it to work— well, my advice is both a conditional yes and a conditional no. Yes, get Win95 because it is a better product but no, don't get it right away. Yes, by all means migrate to Win NT, but not on the computer you use for radio communications and not unless you are able to handle a less than friendly operating system. A perfect straddle . . . or a lousy maybe! But it makes sense for there is no easy answer.

Win95. In general, unless you purchase a new machine with Win95 installed, I urge you to employ a ninety day cooling-off or observational period. This allows for the big Win95 bugs to get identified and publicized. And it also is enough time for solutions to be developed and posted on various BBSs. Most of the compatible software upgrades will be available and reviewed by the end of that period. Please note that the cooling-off period ends in time for Christmas! Some cautious soles may wish to wait until the Win95 1.1 upgrade comes out in 1996 (and it will), but there is nothing visible in this beta version to mandate such action. Therefore, if you do buy a new machine now, and it does have Win95 installed, worry not. Live with or detour around a few bugs until the first upgrade comes to you gratis.

WinNT. Even though this article is about Win95 I am compelled to comment briefly on NT as well for I have been working with both systems. As of late August, there is no driver for certain communication devices (HAL cards, for example) and there are installation problems with certain SCSI devices. (I have yet to solve the problem with the SlimSCSI on my Toshiba 4850CT). But if you run a basic, well equipped 486/XX desktop PC, and it is not used for your radio activities, and if you are reasonably (or perhaps even unreasonably) experienced, I recommend NT. This is a superb operating system and is far more Windows-like than Win95. The move from Win3.1 is almost transparent. NT's stability compares favorably with the Rock of Gibraltar. However, please note that familiar pieces of software like 16-bit Netscape and Trumpet (as well as Mosaic, etc.), two vital elements of many Internet links, fail to work in NT. This short term problem will be resolved shortly for there is already a beta version of Netscape available. That is enough for now, but we will look more closely at this system in a future issue of the Digital Journal. In the meantime, read part one of N2QCA's treatise on 32-bit processing in this issue. Read and learn, for Steve says you are already in the 32-bit world.

Requirements. Please ignore the industry's standard misleading statement '*works on 386/XX with 4 Megs of RAM.*' There is not enough time in the day to run this system on anything less than eight Megs and I strongly urge you not to try it unless you have twelve—and better yet 16 megs on a 486/33 or higher! Few if any of the benefits of Win95 are worthwhile if you must sit around waiting for program to start, a file to open. Life is too short. Sorry, but unless you have the patience of Job, don't waste your time. By the way, 32-bit applications demand about 25-50% more memory than the 16-bit products you are now using.

The second hurdle is disk space. Depending on how you install Win95, you might need an additional 50-65 Megs of space, at least until to choose to abandon Win3.1. And, of course, the upgraded programs demand more space than the old one. Be sure you have lots of disk room available.

Installation. Remember, if you have a CD-ROM, forget the floppies! The only decision you need to make is whether to install it over Win3.1 or 'Clean'—that is in a separate directory. I plunged and installed it over the older sibling and have occasionally regretted this rashness. I normally work with all software that way (I'm easily conned), although I have learned to leave an escape route open in case of a disaster, and also have a second computer! I think it is a personality thing. The cautious will make the duplicate installation, the daring will (after a solid backup of the entire disk) move promptly to the brave new world. Take your pick! Please note, however, that a 'Clean' installation (Win95 in a separate directory) means that every one of your programs will have to be reinstalled before they will work under the new system. Copying all your DLL's and INI files will not suffice!

Whichever you choose, enjoy the installation process! It is time consuming, even with a CD-ROM, but there is good reason for the delay. Win95 parses every aspect of your hardware, system and software and then, in the finest Plug-and-Play tradition, welds them into a workable unit. This facet of the product may be its most impressive attribute. There are scattered reports of installation difficulties but if there is any one aspect of the new system that will most often work, regardless of the complexity of your PC, this is it. Microsoft poured a fortune into 'Installation', testing untold thousands of hardware/software combinations. Satisfaction is critical to their future plans. Worry only a little bit about this part of the undertaking, unless you have a highly unique or rare video driver, a no-name tape backup or a flea market hard drive. Sadly, if you do have one of those computers that won't cooperate at all with the most accommodating installation process ever contrived, the downside scenario is a bit chilling. While MS may have hired all of the support specialists in the entire world, the chances of getting connected with a knowledgeable one on any of their 800 numbers is no better than my luck in the Florida lottery. The best insurance is to have access to a Win95 guru through a computer club or through your radio connections. Or be a hero, contribute your old computer (and problem) to your cousin or favorite charity, then buy a new one with Win95 pre-installed.

It is also appropriate and reassuring to say that, as you add new hardware, the process is equally thorough. Just go to the Control Panel, click 'Add New Hardware' and you are off and running. The days of agonizing over IRQ's and address space appear to be gone forever. Three cheers for Win95!

Features you'll like. First, to repeat, there are no more

resource limitations! Yes, Virginia, there is a Santa Claus. I have purposely overloaded the desk top with open programs and to date have never run into a resource shortage alarm, the resulting slowdown, a lockup or any other symptom so familiar in Win3.1. This freedom to operate whatever we wish, without any apparent concern for system boundaries, this world-without-limits is a fundamental advance in PC technology. Bravo!

a serial or parallel connection and voila!, you have a network. Note that both computers apparently need Win95 because the program must be executed at both ends of the link.

The remaining 'benefits' are arguable. Don't fall for the Internet connectivity claims. As with NT, your favorite Internet Winsock and Browser will not work, not until you download a 32-bit version. And, good luck on your efforts to build your own TCP/IP stack. Their own On-line service responds to a click of the mouse, of course. Networking may be easy, but not too important to most of us. Long file names? Maybe we can change our habits sooner or later. Microsoft Exchange is a nice dream, I guess; MSN (network) is in the hands of the Justice department; Drag'n-Drop is okay but not convincing. The new utilities are marginal at best and who cares whether your CD starts to play as soon as you put in a disk. It is no more inspiring than the heavenly Microsoft music forthcoming when you put in the installation disk! If you switch CD's several times a day, it may have some charm. Overall, the PC World list doesn't include any feature that is
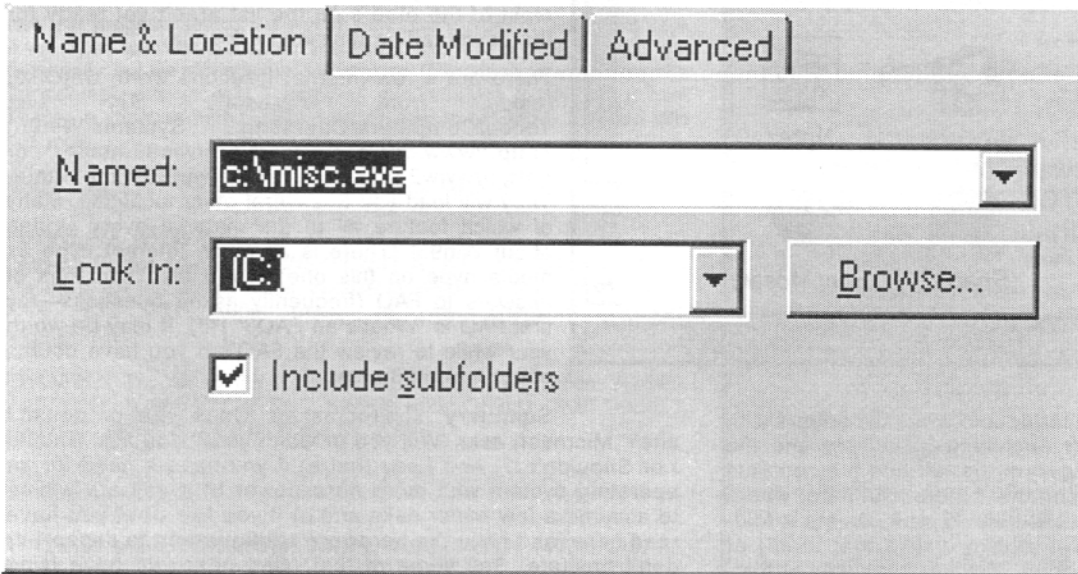
Figure 1

A major magazine (August PC World) recently listed '35 Top Features' of Win95.' I used that as a guide to confirm my own list of goodies (aside from the installation and resource miracles mentioned above) in this new operating system. Their list outnumbers mine about 5-to-1! Again though, this is based on limited use of a beta product and the boundaries may change with the final version. But for now, here's my list. First, *Find*. See Figue 1. Mentioned before, this is a wonderful search mechanism. Click Start, type in the file name and zap!, your hard disk will cough up even that long lost file you thought was trashed when you changed from DOS to Win3.1! Simple. Powerful. Second, '*Close:Min/Max*,' the buttons on the upper right corner of ALL windows under this system. Uniformity arrives and it is a most useful habit. *Properties*, an option available with the click of the right mouse button when the pointer is on any file or folder. But the Properties screen available from any setup function within Control

really lousy, but there are damned few homeruns either! But that is as it should be in an evolutionary product. As Andrew Schulman said in "Unauthorized Windows 95," 'Win95 is really Windows 4.0 and DOS 7.0!'
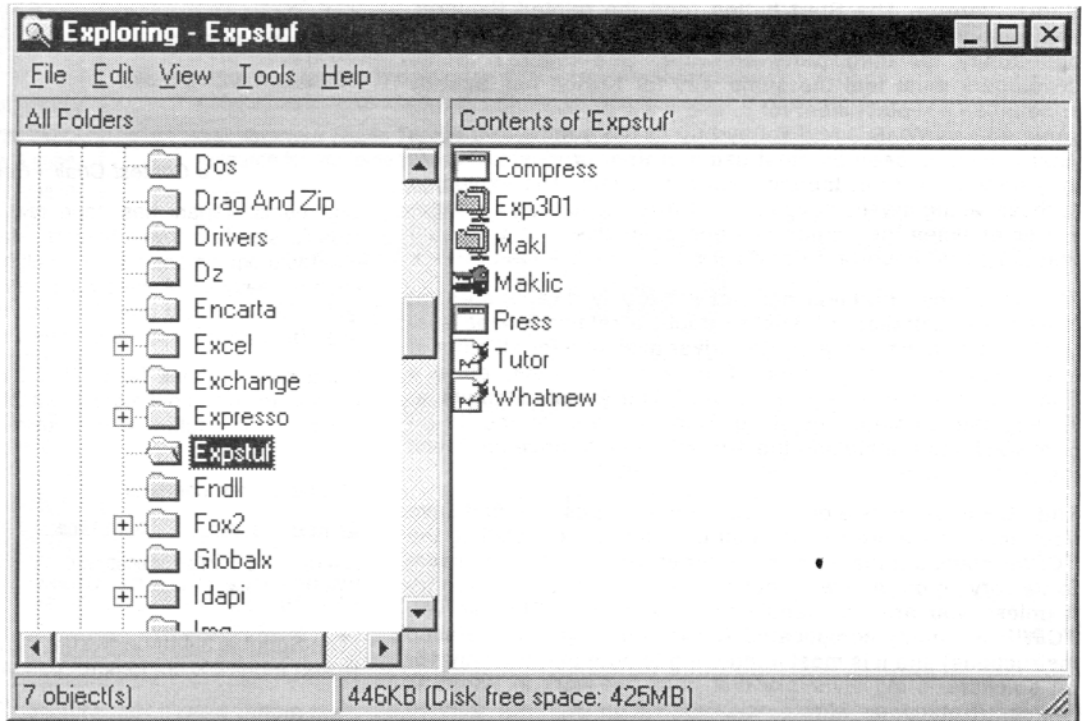
Figure 2

Panel is of far more importance. In a word, phenomenal. Complete with easy to follow multi-page property selections, this is a valuable asset when it comes to problem solving. *Briefcase*, a utility to synchronize files between your main PC and a laptop. Sounds very worthwhile. *Direct Cable*, a network without a network. Hook up any two computers with

I was about to add the Explorer to the list and was ready to condemn it as merely another Microsoft file managment failure. Then I took another look and explored Explorer in greater depth. See Figure 2. There is more merit here than first meets the eye. Explorer is readily available. Click the Start button (always available on the desktop) with the right mouse button

Programs Almanc32 Daily Excel

Explorer Fddlls Imposter Notez

Wincim Progman Snap32 Spry Mosaic

1 object(s) selected   319 bytes

Figure 3

Shareware. Despite the huge base of trial users out there (estimated at over 300,000), there is but a small library of 32-bit shareware available to date. But even within the short list, there are some gems. 'Almanac,' which comes in both 16 and 32-bit, is a gem of a PIM. 'Note' is an unusually talented sticky-note program. 'Diary' is another fine addition to the desktop. 'Winzip32' seems okay, but my old zip utilities seem to work fine. Most of the others on the list aren't yet ready for the downloading time and expense.

There are a few Internet locations worth watching (aside from Microsoft). Try (via Yahoo/Computers/Operating Systems/Win95) <http://www.cris.com/~randybrg/win95.html> or <http://www2.pcix.com/~snipe/win95home.html>. They will lead you to several other locations, many of which feature all of the material every written about Win95! (There is as much Internet hype as media hype on this one). You'll also find tons of answers to FAQ (frequently asked questions—my first FAQ is "What's an FAQ?" Hi!). It may be worth your while to review the FAQ's if you have doubts about making the switch.

and select Explorer. The familiar double window appears with the basic file tree on the left (including all drives) and the detail on the right. Click a folder on the left and the contents display on the right. You've seen that before. But here, where it counts, drag-and-drop works extremely well. Delete a folder? Drag it to the Recycle Bin (ooh, I dislike that term!) or select Shift + Delete and it is gone. Move or copy files or folders to another directory or another drive, copy to the clipboard or floppy. The right mouse button assumes a major role here as well. The 'properties' line there shows everything there is to know about the file in question. Other options include Delete and Rename. If the Win3.1 FileMan is about a '3' on a ten point scale, Explorer probably ranks a '7.'

Shortcomings. The Start button (and the related Explorer, My Computer, directory) has its advantages, but it is another opportunity for third party software. See Figure3. Some developers must feel the same way for Norton has already announced a replacement for it, and it will be available on the same day as Win95. And I may buy it! MS seems to have a 'Start' vision unseen by most users of their products. But we may grow used to it, though I am not certain. The exploding and cascading menus save mouse clicks, to be true, but there are times when the screen fills and overpowers us with stuff that is neither important nor desired . . . nor actionable!

The print driver problem has not yet totally disappeared, at least in my installation. It is no doubt a relative of the system's desire to have the printer driver available for all parts of the hardware configuration. But what the devil does a SlimSCSI want with a print driver? The latest attempts at solving the problem (installing 32-bit drivers for the 16-bit SlimSCSI and reinstalling the printer) seem to have improved the performance.

The TCP/IP setup is a gem. Avoid it if at all possible and save your time. There are reams of surefire guides to installing the TCP/IP stack out there on the Internet. Several experts seem to be carving out a new career for themselves. Don't even try it unless you are on friendly terms with your SLIP server. TCP/IP is unduly complicated (up to four pages of detailed instructions) and it is most interesting to note that the only 16-bit software in my inventory that does not work in Win95 is Trumpet/Netscape. Surely this aberration will not survive September.

The unwanted icons on the screen are not much of a nuisance for none stay on top. There should be an obvious way of getting rid of them but they cannot be removed! If you don't have a network installed why do you need a Network icon on the screen all of the time? Beats me.

Summary. Clairol asked 'Does she or doesn't she?' Microsoft asks 'Will you or won't you?' You ask 'Should I or Shouldn't I?' And I say that a) if you have a need for an operating system with more horsepower b) if you are willing to assume a few minor risks and c) if you like what you have read here (and have the hardware configuration to support it) don't hesitate. Sell some of that used gear you have lying around the shack, jump into the old wagon and get to the door of the computer store before daybreak, step up to the head of the line and get the first copy sold in your neighborhood. Drive home and get ready for the new look. But, please! Before you open the package, at least before you read the manual, and most certainly before you put the CD-ROM in the slot, you must absolutely, positively back up your entire hard disk. Remember . . . true, unmitigated disasters happen only to the unprepared!

73 de Jim N2HOS sk.

Comments: Tapani has done real well over the years amongst today's standard tower heights, stacked antennas, big amplifiers and radio equipment. I don't recall having to ask for a single repeat even in heavy QRM. He always has a nice 599+ signal into my station in Texas. It just goes to show, you can be competitive with an average station in todays so called high-tech contests..

I would like to thank Tapani for his help in preparing this column. I will also try to find out more about OH2GI's S/W, maybe do a review of his S/W in a future article. Jukka OH2GI was out of town at this date.

The next three contests:

Contest	Dates	Start Time	End Time	Operating Time
JARTS	Oct 21-22	0000 UTC Sat	2400 UTC Sun	No off times
WAEDC	Nov 11-12	1200 UTC Sat	2400 UTC Sun	30 of 36 hrs.
SPRINTS	Dec 9-10	2100 UTC Sat	0100 UTC Sun	No off times

(The Sprint is a 4 hr contest, a Blow and Go, it's lots of fun, hope to see more DX stations on this year.)

Next month we will visit with Bob Canning G0ARF in England.

Until next time, 73's

de Ron AB5KD

"Remember"
        Big antennas high inthe sky work better
                than little ones close to the ground....

It seems that many foreign QSL Managers, recipients of 'green stamps', have run into problems with what Mats, SM7PKK, calls BAD DOLLARS. These are dollar bills that are ripped up, written on, have pieces missing, are dirty, old and wrinkled, or fake. The currency is in such bad shape that European banks will not accept them. The best dollars in the world come from Japan..they are always brand new and never even folded once! Bob, KK6EK, of 3Y0PI fame has stated that you can iron U. S. paper currency (even in stacks of 25) of any denomination so that it looks almost new. He suggests setting the iron on permanent press or cotton. He says it will make wrinkles disappear like magic. We haven't checked this out personally, but we recently met a European QSL Manager who brought a considerable amount of U.S. currency, thus received, to the USA to help finance a vacation here. That's another way to get those wrinkled bills cashed!!!

Some wag asked if KK6EK does shirts, also! So much for the DX world.

HAVE DX NEWS?

Leave a Pactor message at W5KSI.#NOLA.LA.USA.NOAM mbx (1), or via any of the following: Packet: W2JGR @ WB0GDB.#MSP.MN.USA.NA FAX: 612 377 3600 (mark for my attention) Internet: w2jgr@millcomm.com USPS to my CBA.

THANKS - Thanks to the following for all your information: AA5AU, AA6TY, I5FLN, IK5PWJ, JF1MGI, KK6EK, K0IR, OH2LU, ON6TT/9Q5TT, PA3ERC, SM7PKK, W5KSI, WB2CJL, ZS5S,

See you all next month. For now, bye bye from Minnesota, PAX....
73 de Jules W2JGR

1. W5KSI scans 7069, 7071, 7075.5, 7076, 14068, 14070, 14073.5, 14074, 14079, 21074, 21075, and 21079 khz.

The International Scene

A regular look at the odds & ends from around the digital globe

received from various sources

VK/VK/VK/

Gordon VK2AGE is now on CompuServe (100231,3264) but finds that in Australia it is too expensive for use during prime time. When is prime time? All 120 hours of Monday-Friday! So, look for him only on the weekends. Think what ham radio would be like if we were subject to the same rules, regulations and tariffs (and bureaucracy) as the telecom industry! Gordon used last weekend well, however, and sent along a couple of interesting tidbits. The first relates to that comment complaint heard 'round the world—HF packet.

"Upon reading Fred's (DK4ZC) article on the spectrum analysis of digital signals I was reminded of an event which occurred here about one year ago. I was having some trouble with switching transients (key clicks) when my system was in Amtor mode. I was fortunate enough to be have the use of an HP Spectrum Analyzer for a few days. While I had the use of the instrument I took the opportunity to have a look at some of the signals around the bands. Most of them were pretty much as Fred indicated in his article. However there were some signals which were away out of kilter. They were the 1200 baud PSK signals mostly on 20 and 15 meters. Now I don't know if PSK is used much on HF in the USA but there are a few HF BBS using it here in VK. Most of them had a substantial noise floor which occupied up to 10khz of bandspace. Not one was less than 7khz wide!

I have here a G4RUH 1200bd PSK modem which I used for satellite work. I wired it up to the TS430S and fired it all up so that I could observe some PSK at close quarters. I wish now that I had photographed the scope patterns for the record. While the rig was adjusted for power output which was below the threshold of the ALC the signal was reasonably clean (but still not within spec), but the moment the ALC came into action the display blossomed out into a signal riddled with switching transients. It seemed that the ALC circuitry of the TS430 is unable to handle the PSK switching resulting in the generation of these transients. I suspect many other rigs exhibit the same result."

Gordon goes on to say that he will be at the SEANET convention in November. And we can only admire his choice of meeting sites! The 23rd annual meeting will take place on November 17-19 at the Samui Orchard Resort, Samui Island, Thailand. If you would like information, contact Tony Waltham HS0/G4UAV at Internet <tonyw@nwg.nectec.or.th> or Thida D HS1ASC at <dthida@mozart.inet.ac.th>. Or drop Gordon a note at his new address: G.A.DOWSE, 12 BYRON ST. LENNOX HD., N.S.W..2478 AUSTRALIA. (The station is still at the old address so any mail sent there will be OK).

Gordon ordered Express 3.0 by the way, so there should soon be a Clover signal out of VK-land. Get your sketch pads ready and call him (and everybody else) on 14065.5 LSB.

TY/TY/TY/

Peter TY1PS experiments with the new operating systems as well. He sent along some comments about Win95, conclusions reached after several weeks of examination. There is no clamor for the new OS in Benin! But then they may be able to get through to Microsoft more easily than we can in the US, after August 24th, that is.

"Win95's real strength is probably in the integration of hardware into the system. This sure will pay off when setting up something like a FAX card. Win95 also delivers printer drivers to all peripherals. This is important and good. Remember what a hassle it was under DOS to configure your printer for all the different programs? That improved under 3.0, but now the same will become true for all other peripherals; modems, ports, disks, soundcards etc. Nice, also makes it a lot easier for applications. I don't have to care about the hardware, only talk to the driver with a common interface. However, I find myself at the 'C' prompt searching for files or copying stuff . . .

but then I didn't manage Win 3.1 file manager either. How to place icons on the desktop is still a puzzle to me. They become 'short-cuts' and I don't quite get the concept. Also sometimes new items appear on my screen like magic . . . but I don't want them there. (And they aren't easy to erase!) Sometimes I have to roll down endless subsubsubmenus to find something. Sometimes I get little windows that I have to scroll around to find what I am looking for. Maybe there is some sense behind all that but I can't make it out yet."
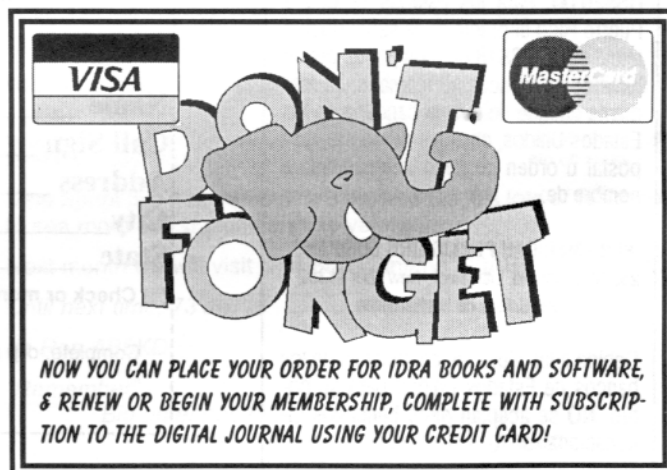
To which, we can only say 'amen.' Apparently the French version, the one Peter has used on a trial basis, has all of the funny little quirks noticed by the beta users in the US. Join in the fun.

Peter G3IRM E-mails—"I'm currently using a pentium machine with at least 8MB and, just running Windows, WordPerfect V6 and Vista-eXceed. Even so, I did not have enough free memory for a windowed FTP session. This Web work I'm doing tends to see me doing lots of FTP stuff. Did you know that, under Unix, the emacs editor can be set automatically to initiate an FTP session if I reference a remote site? Marvellous stuff, this connectivity. (My italics—ed.) Take me back only a few years to when I had to get bit files from Holland over to a mainframe. I'd link a local PC to the Holland machine then, so it seemed, grab as much of the file as would fit into spare memory in the PC, temporarily disconnect from Holland and connect to the mainframe into which I would then download the memoryfull of data. I'd then drop the connection to the mainframe, reconnect to Holland, get another chunk of the bit file, put it across to the mainframe and so on. Gosh - FTP makes that all seem like Ice Age stuff." Ian, remember, is the one who felt the Internet was a relative of the black plague, a threat to humanity and ham radio, as recently as three months ago. Now he is busily putting up Web Pages right and left and has joined the battalions that sing the praises of Internet. Ah, progress. And, no Ian, I don't know much of anything about Unix. I have trouble enough with Win95! In the meantime, good luck in your final year at the university (computer science major, of course).

Briefly. Several new foreign stations joined IDRA during the month of July. This month we welcome: VK6GM, VK4SP, GM3YCG, VP8WA, VE3BYI, I0JBL, LU3DSU, 7Z1AB and A47RS. Welcome one and all. Please note that the listing is not alphabetical! The stations are listed in the order the membership requests arrived.

Cliff W6HDO sends a note confirming that he is calling Europe on CCW on 14035 at 1900Z during the weekends. No luck yet, but a note from a CW listener almost anywhere would be greatly appreciated. At 12 words per minute he shouldn't be too difficult to copy.

Overheard on a US/G3 Pactor contact: "I don't like doing on the radio what I can do hollerin' out the window." Well, I guess that takes care of packet, or was he referring to 20 meters during this part of the solar cycle?

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Jay Says . . .

Comments & Perspective from around the Digital Frontier

By Jay Townsend, WS7I • P.O. Box 644 • Spokane, WA 99210-0644
Internet: jayt@comtch.iea.com

Nothing endures but change, they say, but I'm back. This time as a roving commentator for the Digital Journal. That means that I should get plenty of mail. So fire up the typewriter or your favorite program and drop me a note. I can be found on 14.065.5 CLOVER or chasing a little DX on RTTY or Pactor.

I have been playing around or doing ERAT (extensive research and testing) of RagChew, CLOVER, the P38, and Express for the last few months. This month I want to comment a bit about the Express 3.0 now 3.01 update. It arrived on a couple of disks to me via Federal Express from Jim, N2HOS.

Well, let me tell ya'. First, you don't install it on your office machine! It just locks up tighter than a $100 bill if you don't have either a P38 or a PCI-4000 card installed in the computer. I would even go so far as to tell you that testing it with the PCC program first would be a good idea. Of course the directions tell you this, but . . . I couldn't wait. Are pigs flying....I just never seem to learn some lessons. Well I guess that's why they put the reset switch on the front of the computer. Read the factory manual (RTFM)! But when I got home the program installed on the old trusty 386 computer easily enough. The manual is found in the file readme.txt on Disk #1 of the Express 3.0 disk set. (Note: also Whatnew.wri and Tutor.wri—both in Win3.1 Write format—ed).

I did find a few little problems with the program. Some were bugs and some were little things that I did or hadn't done. First, the video. Express really likes 256 color VGA. So I had to break down and install the driver again. Seems that I had in one of my encounters with the unknown not gone to full 256 color on the last installation of Win 3.11. Probably when playing with a beta copy of Windows95. By the way, buy it! You heard it from me first—it will take over the PC world in the next year or so! And what the heck, the frustration of a computer is nothing compared to a new set of operating instructions. (Let me see, here is what doesn't work under Win95 that I know about: Adobe Illustrator, Borland C++ 3.0, Borland Dbase, McAfee's virus scan, Xtree Gold 4.0 has problems, most Norton stuff is shaky. Yep this oughta keep me busy for 3 years at work).

Well I am rambling. Back to Express 3.0. It is fantastic! I have two complaints about the program. First, I don't have a scanned in picture so I can't exchange one when I link with another Express 3.0 operator. Second is that I spend too much time calling CQ now on Clover! Peter, TY1PS, our winner in Dayton of a special award for 1994 software of the year quickly fixed the minor little things and along came version 3.01which will be the shipping version.

Installation was simple and it even kept my radio control setup from Express 2.0. I also tried a fresh run at it just to see what a new user might experience. No problems at all. You fire up Express by double clicking the Express Icon. The defaults are just fine for most of the settings. I did adjust the transmit key up-and-down times a bit. I might suggest disabling the Mailbox function for a while. Select your radio type ONLY if you are planning on using RADIO control and have it properly interfaced. It seemed to work just fine and dandy on my weird comport setting of COM4 and IRQ 2.

There seems to be some differences of opinion on use of the CW ID in CLOVER. If you read Jim, N2HOS, he indicates to leave if off. I say TURN it ON! As I sit and monitor on 14.065.5 I can quickly tell who you are when I get the CW ID and turn the yagi. I just look up the call and see where I should point the antenna. It really helps to get the link going to have the antenna in the right direction. Heck, since Jim is using attic antennas these days he probably turns it off so that no one will know who that weak signal belongs too!! In fact just last night I worked VK4DOE after I had finished an interesting session with KR6E.

The use of the right mouse button stumped me for a while. You real-ly have to pay attention to the screen and look for all the neat hypertext comments. As this isn't really a primer on how to use Express, but just my little impressions of loading up the software and getting it going, I think that I will continue in more depth at a later date.

Express 3.0 and CLOVER are here! With the growing (by leaps and bounds I might add) use of the P38 the 14.065.5 frequency is getting pretty busy. Next to populate will be 14.066.5 of course and I am also playing some on 7.065.5 in the evenings. Not a lot of action here yet.....but put out a CQ once in a while.

Since I am the roving reporter I need to touch on RagChew for a moment which I have been using extensively on the HAL Communications P38 since Dayton. Jim Jennings, KE5HE, has written a nice piece of software I think. It has quickly become my favorite for chasing DX and casual listening on the digital bands in the last few months. I am still using a pretty early version of the software so there might even have been some improvements since 2.04 which is the one that I have. I was one of the Beta testers of RagChew and it has a bunch of features that I really like. Frankly, on RTTY the size of the screen is just right and I find that Jim's implementation of tuning bars is the best of the "current" crop. This included RTTY by WF1B which by the way as an update and the current version is 2.20e which does have bars that work!

We are looking for the promised update by HAL Communications and as I type this I have just finished speaking with Bill Henry and there should be available just about when this comes out an update for the PCI-4000 board which vastly improves that product's FSK ability. It will be available on the BBS and on the internet FTP site. Work continues on improving the P38 board and updates will be forthcoming. The lessons learned on one DSP processor are being implemented in the other. So once again we gain from the entire DSP process and it has already been shown that having two DSP products, one using the high end Motorola and the other the TI DSP chips, permits some nice engineering advances.

For those who I have encountered recently on the air and for others that might want to know: Ray Petit has a broken down radio. When I spoke to him at a recent Pacific Northwest hamfest he was eagerly awaiting the return of his radio so that he could once again be active on 40 meter CLOVER. For those looking for CLOVER signals you might note that many of the BBS operators both RLI and Winlink are now found in the AUTOMATIC portion of the band. WA7SJN is on 7.103.5 LSB. Unfortunately I can't get in to him as well these days with my fixed direction yagi.

Betsy and I are off to Aruba for CQ/DJWW RTTY in September and I expect that I'll have a bunch to say about the contest and about the P40V antenna farm in an upcoming issue. Next month we will look at my latest addition to the shack the newest EPROM from Kantronics and an overview of the Kantronics 9612 NC. I am real impressed so far with their latest software addition.

I need to get some mail rolling in here and get some ideas also on Dayton 1996. The dates have changed the weather will probably be even better and the IDRA has a lot of stuff beginning to be planned. Don't forget that I am one of your Directors and will of course represent you! Drop me a note about your concerns, your desires, and even your gripes.

You can pick your friends, and you can pick your software but you can't pick your friend's radio. All attempts to get Hal, WA7EGA to modernize his shack have gone to no avail. Please drop him a note at <halb@iea.com> with your suggestions for a new digital radio. Rumor has it that his 751 bit the dust and was last seen in a heap of smoke going to Jim, WB7AVD's ranch for a major overhaul.

When you get this you should be gearing up for the gala DX contest of the year. CQ/DJWW RTTY co-sponsored by CQ and the Digital Journal and a fun 48 hour event for all. Look for P40JT on the bands and there will be a lot of other juicy DX in the contest as well this year. You might consider lining up for one of the many plaques that need sponsoring. Check with Ron, AB5KD.

73 de Jay WS7I

The Last Word
from the Editor

Jim Mortensen, N2HOS • PO Box 596 • Somers, NY 10589
CompuServe ID: 71573,1077

Gen and I went to church today. It's a special kind of place endowed with a remarkable pastor, an outstanding choir, organ and an organist who, during the week, flies about the world concertizing. She and her husband are both rather famous. First class! And, it's well organized, has a lot of impact in the area and runs a school, a retirement complex and will soon build another. Imagine my surprise this morning when the the bulletin directed us to page 3 in the hymnal while the organist played the hymn on page 2. I have no idea who goofed, and didn't ask, but found it reassuring to know that yes, everybody makes mistakes! To prove it, the Digital Journal pulled a major goof last month, but ours was on page 4.!. **Steve N2QCA** completed an excellent article about OS/2 WARP and our plan called for the entire article to appear in the August issue. Things happen, and they did and we were inundated with last minute demands, particularly the CQ/DJ WW RTTY results. Somehow, in the rush, the opening page of Steve's article was orphaned on page four. It stopped, ended even before the prelude was over, right there on page four at the 'continued on ??' comment. Both Tom and I would like to blame it on the printer or the organist, but can't quite dump the responsibility anywhere. Drat! In any event, herewith a complete rerun of Steve's fine article. Next month he begins the two part series on 32-bit technology and what it means to each of us. Fortunately, Steve has a sense of humor, and uttered something about the Digital Journal's Virtual pages in his phone call after he had received the magazine. Oh, we are lucky to have guys like Steve work for us.

We are also lucky to have folks like KI6QE around. Dave (see photo) is a young man as you can tell from his picture, a mere six years older than me, but has had a long lifetime of experience. He was born in London then travelled to Australia with his parents and remained there until 1963 when he and his own family emigrated to Texas. A graduate of the University of Melbourne (Aust) with an MS degree in 1942. He served with the Royal Australian Navy 1942-46 as a Radar specialist. Then until 1963 he was with the Australian FAA rising to the position of Director of Engineering by 1955. In Texas he was with The Collins Radio Co, later Rockwell International where he became Director of Marketing for Latin America before his retirement in 1980. Today he lives in Tucson AZ and spends his time with Amateur Radio, Antique Radio collecting and Computer Hacking. And, let me add, he is very good at each one of his activities.

Dave begins an extended series of articles in this issue, all devoted to satellite digital activity. If you have wondered about 'sats,' or wondered whether you should or could do anything about this different technology, now is the time!

This series is intended to make an expert out of you by the time the new-era satellite is launched in 1996. So, join in now and thank Dave for a worthy beginning.

The definitive thesis on RTTY tuning begins this month and will run for at least another two months. Written by Bill Henry of HAL Communications, this is a masterwork flowing from a comprehensive technical and practical background. Save it now, or buy it as a book later! Bill is a young man (by his own admission) but his ham license dates back to the very early days of RTTY. Who else could look at and define the tuning problem from the original teletype machines to the P38? No one, and Bill pulls it off with an enviable style and accompanies the text with easy-to-understand graphics. Our very special thanks to him for this excellent coverage of an important subject. And watch for further developments. This is not your ordinary run-of-the-mill series. There may be treasure there—at least for the daring amon us!!

Gene KB7IP writes "Thanks for publishing 14065.5 (LSB) as the place to look for Clover contacts. I made my first within an hour of reading it. Put it on the front page! People need to know where to start looking." Gene's Internet address is <genew@transport.com>. There is action there, even when working with my fabled antenna. I called CQ and Don WQ4W responded right away. It turns out he monitors the frequency with some regularity. Then, W6IWR in Tucson. I called again, some days later, and linked with DJ1IJ (Europe is paying attention on this QRG, too). Hans runs an antenna about 360 dB better than mine so we held the link on 20 meters for several minutes despite the terrible QSB. Now this is serious DX from this QTH! Hans let me know that he has now 20 confirmed countries on Clover and claims the longest Clover link under these wonderful band conditions— DJ1IJ to VK4DAE. Is that a record? It must be reasonably close to the longest possible link either short or long path. Any argument?

Express 3.0 is up and running. The early-birds (mostly those who have a writing assignment for the Digital Journal) have had the new version for a while and have been giving the software a good workout. See Jay's article in this issue for the first part of his report. Al W2TKU shipped the first batch of orders about the 25th of July, so you will soon be hearing reports about 3.0 on the air. Bug reports have been few and to date, none seem at all fatal. An immediate update to 3.01 was made a few days after the first shipment and is now the standard shipping version. It fixes a few minor problems and adds a significant tutorial.Users should visit the Web Page or the BBS from time to time in order to stay abreast of developments. Express 3.0 is one heck of a lot of fun!

Jay WS7I commentates on all of the above in his new monthly column. We welcome him back with open arms. Jay is as much an asset to the IDRA as he is to the hobby and we look forward to his wide ranging comments. There are no limits as to subject matter, so feel free to write or E-mail on any subject!

Express 4.0 is also up and running. What? Another version already? No, sorry. But Peter is not satisfied with the 'look' of the main screen of version 3.0 and wants to improve it. Not now, but perhaps some time in 1996. So, he took a brand new approach to redesign. Over last weekend he mocked up a new look and sent it over for distribution on the BBS and Internet. Look for it, download the zip file and play with the interface. No Clover card is necessary. Just follow directions and see what this great software might look like next year . . . then let Peter know via CIS how you like or dis-

like the format. It's as simple as that.

Glenn W6OTC, who has nothing to do these days (except to get ready for a brief excursion to VK9, and earn a living) so he took a piece of scarce time to do a most interesting comparison of the new HAL P38 and the PK-232. Don't miss this analysis! Thanks to Glenn for a fine contribution. Unfortunately, to make room for this late breaking article, we need to delay part two of his Dxpedition story. It appears next month. Then, in November we will be updated on the trek to VK9.

Thoughts while awaiting a workable signal on TAITAITHITV (that's the antenna-in-the-attic in the house-in-the-valley) bend toward the philosophical. Since there is little else to do but spin the dial slowly across the digital portion of the 20 meter band, it is difficult not to listen and appraise the results, the quality and quantity of the throughput of the QSO's in RTTY, AMTOR, PACTOR and Clover. (No 20 meter packet, thank you). A pleasant pastime, this eavesdropping, but also frustrating. Why? One obvious conclusion stands out above all others. We use but a minor fraction of the potential of whatever mode we are using! In truth, there is far more 'idle' than 'data' occupying the band. I can't prove this, but I have a sneaky feeling that much of our digital exchange travels at a significantly lower speed than the 13 WPM CW we copied to get our license! In general, only the buffered brag sheets, automated contest or DX exchanges travel at a reasonable speed. Their presence dramatizes the comparison! Before you protest, listen several hours, then let me know what you think.

Typing speeds seem largely to blame. Why? Some might be handicapped and we give them our infinite patience. A QSO at any speed is the rule. But for the rest of us, there are excellent freeware typing programs available that will double or triple any beginner's (12-80 years of age) speed with a few days practice. Despite that, over the years I have read more apologies for the turtle-paced keyboard exchange than I have brag sheets. But it is more than mere speed. Some may not understand the type-ahead buffer, or may not know how to use it, for there is no hardware limitation. Even the oldest C-64 can move along at a good clip if the fingers are willing. Perhaps, with some, it is simply a beginner's case of jitters. That, too, is easy to forgive for we know they will improve with time.

What worries me about this listening session is that the typing speed, or lack thereof, isn't as important as the fact that we don't seem to have much to say. In other words, mere speed gains won't improve things at all. Boring brag sheets are all too often the principal part of the QSO. We read what is on the screen, discover what kind of PL-259's were used to connect the antenna to the overly described TS450, how many elements are on the two meter yagi and exactly how many feet of what kind of used coax was used to hook it up . . . stuff worse than most corporate annual reports. Where are those great full-screen responses of yore, full-screen answers to simple questions, typed live at what seemed close to the speed of the mode? Mistakes and typos sprinkled themselves over the screen like a brief rain shower, but none of those little details interfered with the quality of its content nor the perfect understanding achieved through good, solid communication. Strange that it's disappeared. Strange that in the so-called age of information, when some complain of being overwhelmed by data, swamped by the Vesuvius we call the Internet, there seems to be so little first rate information in the 20 meter digital space these days. Maybe I am listening at the wrong time, or in the wrong mode, or can't find the good ones. Maybe some people find it interesting. Or maybe I am a little bit right.
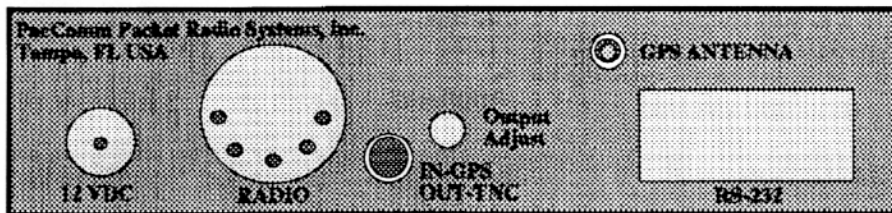
73 de Jim N2HOS sk