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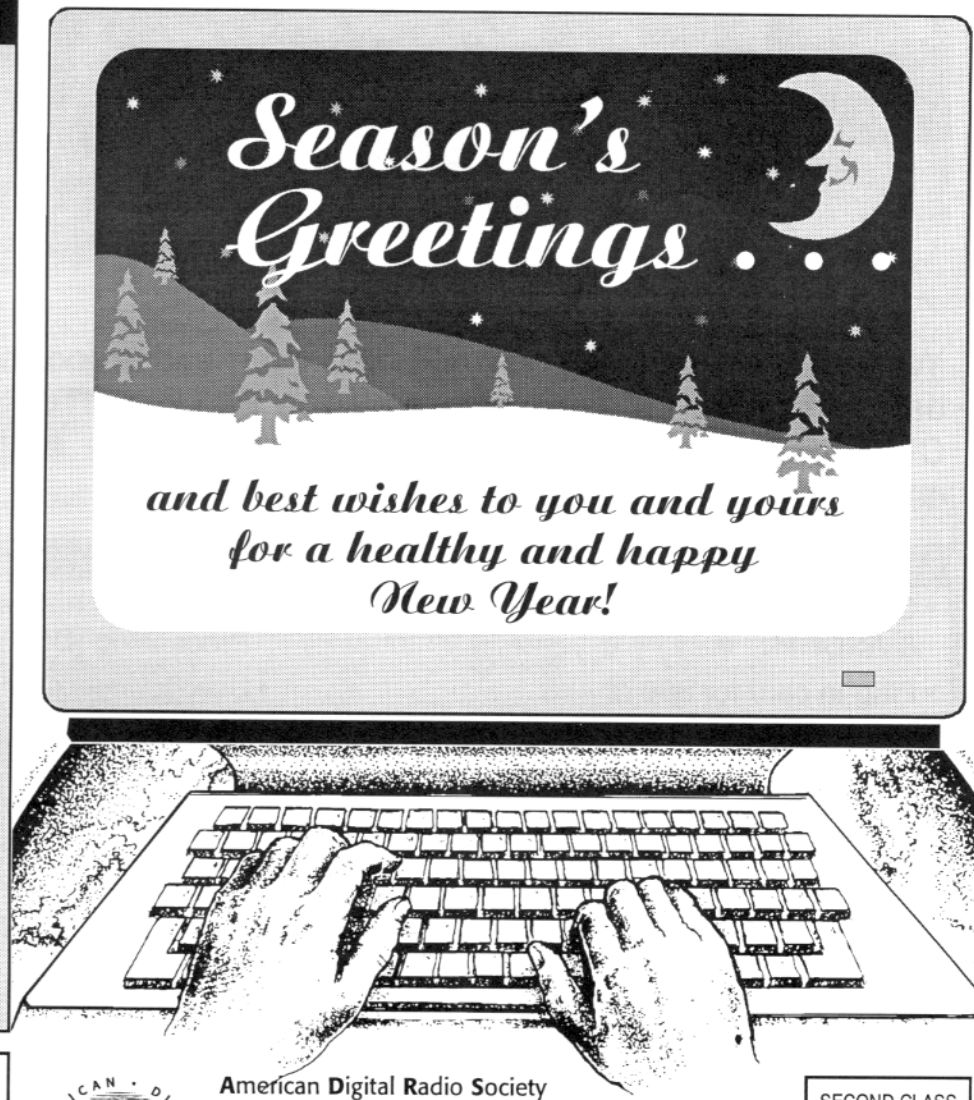

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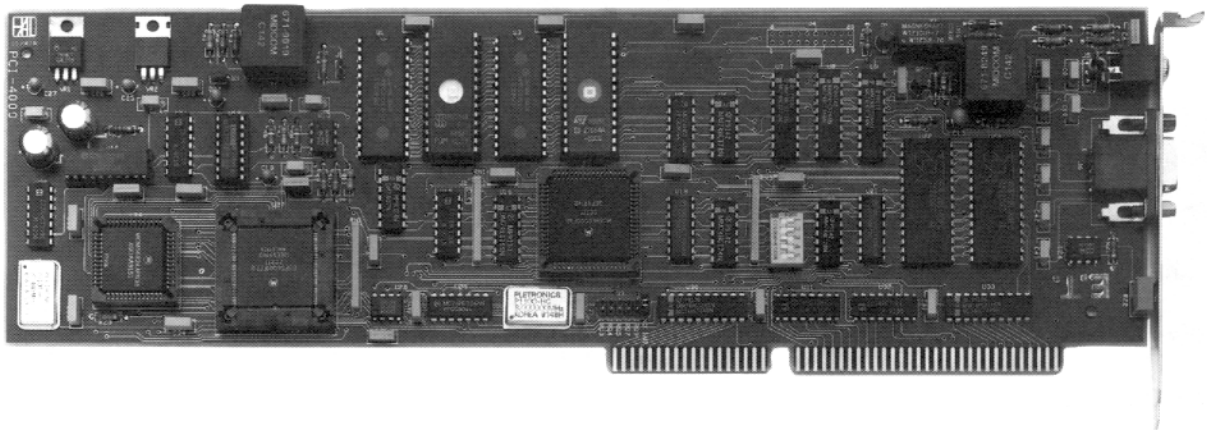

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Hits & Misses

by Dale Sinner, W6IWO

MAXIMIZING THE POTENTIAL

As I prepared to write my column this month, I was looking for a lead-in for my topic. QST arrived about this time and contained an editorial by Dave Sumner, K1ZZ, about Ham radio diversity (recommended reading) and that gave me the lead-in I needed. Dave expounded on one phase of our multi-faceted hobby which was somewhat parallel with what I planned to write about. Our phase of the hobby also has great diversity. Consequently, I chose maximizing the potential of our phase of this great hobby as my main topic this month.

Most all of us own a multi-mode controller. While deciding which TNC to purchase, certainly we were looking for the most bang for our buck. With this in mind, it was easy to decide on a multi-mode unit. Price and features convinced us. However, what was our original intent? Was it to buy a unit for Packet operation only, or maybe RTTY only. Whatever the objective, most of us use our multi-mode units on one mode most of the time. Why not expand and experiment?

In my travels over the past few years I have talked to many hams who operate the digital modes. Some are very active on only one mode while others (a very few) use all the modes available to them. There are still others who have told me they have had trouble trying some of the modes. There were various reasons given that kept them from trying another mode, such as, "afraid to try", "TNC did not work right", "could not understand the operations manual", "could not understand the command structure of the software", etc. My friends, we are Hams, and I know we can all overcome such minor obstacles.

If we don't try the other modes we will not be fulfilling our basic desires as a Ham. We are known for experimenting and tinkering to make things work or happen. Therefore we should be able to figure out how our TNC works. I challenge you to go after the other modes available in your TNC. Take a little time and work out any bugs you experience. You might have to phone a friend or maybe the factory but hang in there until you have the mode conquered. Once accomplished, the fun begins. Let's examine one mode.

Suppose you originally purchased your TNC for Packet service. Lately you have tired of this mode and want to try another. Depending on the controller you purchased, several modes will be available to you, such as RTTY, AMTOR, PACTOR, G-TOR, CW, and Clover. The simplest of these modes would be plain vanilla RTTY. So let's use it as our example.

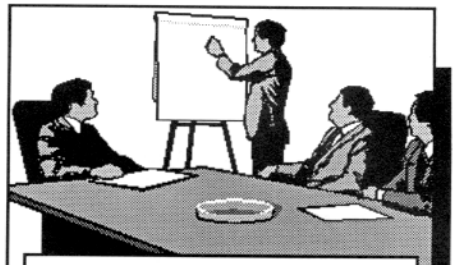
Start by reviewing the manual, then push the button that takes you to RTTY. When the screen unfolds, study it carefully. Become familiar with each part of the screen. Most programs will show you three different screens at this point. One will be the RX screen, one will be the TX screen, and one will be the type ahead screen. Once familiar with the screen, study the command structure, then give the mode a try on the air. If you connect with someone, tell them this is your first time on RTTY. You will no doubt, be welcomed and helped along as you learn this new mode. In no time, you will be enjoying RTTY. So what's there to do with RTTY? (Glad you asked.) Let's see! Just plain old fashioned rag-chewing is yours, chasing DX is yours (lots of it),and contesting (about nine contests yearly). I bet you could spend the next year playing with RTTY alone and not tire, providing you take advantage of all that is available to you with this mode.

However, I hope you don't spend a year on RTTY alone. Once you have mastered RTTY, go on to another mode. Each will become easier to use as you progress. What lies before you in the other modes will give you great enjoyment and you will have maximized the potential of your gear. You will have learned a tremendous amount in the process, and you will have helped to advance our phase of this great hobby through participation. Good luck and watch for me calling CQ in any mode. I'm having fun, why not join me.

DAYTON 95

Elsewhere in this issue (page 28) you will find the announcement of the Dayton Hamvention for 1995. If you have never been to this great event, maybe this is YOUR year. When it comes to digital types, each year our numbers grow. Getting there is easy. Once there, it's a little more difficult. You will need a room and maybe transportation to and from the Hara Arena where the Hamvention is held. In the past few years, these hurdles have been diminished, as easy arrangements have now been made available. The ADRS has secured a block of rooms at the Radisson Inn and has also made arrangements for low cost transportation arrangements to and from the arena.

(cont'd on page 28)



NEWS FROM THE BOARDROOM

ADRS Board Proposes BBS Moves On 20 Meters!

At the October 29th board meeting in Charlotte, NC, the ADRS board laid plans for creating significant changes in HF BBS scanning and usage patterns. Anticipating the FCC Rule Making procedure covering the establishment of the subbands for fully automatic BBS operation, the group first decided to urge those who operate in a fully automatic mode to move into those bands now. Secondly, it was decided to facilitate that move by asking all semi-automatic BBS operators to begin scanning a portion of those new subbands. This will assure their availability and will serve to move significant amounts of traffic and all automatic operation out of the lower portion of the digital segment.

In a far-reaching decision, it was also agreed to begin to lead a shift of all BBS activity further up the band. For example, on 20 meters, W2NRE who now scans 14066-14072 on three modes will make a fundamental change. In the new configuration he will scan 14110 on Clover and 14112 on Amtor and Pactor, both within the new automatic subbands. Then 14116 and 14118 on Clover and 14120 and 14122 on Pactor and Amtor. These latter frequencies serve semi-automatic BBS traffic exchanges. But, more importantly, these are the frequencies you will use to interrogate Warren's Winlink station as well. "I don't see any reason why any US BBS operator will oppose this move. Given a few weeks to iron out the details—to determine the needed exceptions and to arrange new schedules—the change should move forward without delay," according to Warren W2NRE President of ADRS. He added, "I will be posting my new scanning schedule as quickly as possible."

(cont'd on page 27)

The Contest Chair

by Ron Stailey, AB5KD

Hello Contesters/DXers. Merry Christmas to everyone! The first weekend of January brings one of the biggest contests of the year. . . the RTTY Roundup. I don't know of a single contester that wouldn't love to bag this one. I truly hope to see all of you during the contest. (Even if you don't work anyone but ME. hi hi :-)

This month, I want to talk about a fellow that has definitely had his share of success in RTTY contesting.

Robby Robertson, VY2SS, of Prince Edward Island, Canada. He moved with his family to P.E.I. in the summer of 1991 from Prince George, B.C. He held the call VE7ARS before the move and has been a ham for 30 years. Still only 51 years young, like most of us, he doesn't just contest for a living. Robby works for Revenue Canada as a system administrator, in Summerside, P.E.I. about 40 miles from his QTH. Home is a large farm house on a couple of acres, with 'NO' close neighbors. (No wonder he gets away with all that contesting. How lucky can a man be!)

Robby has a lot of experience in contesting on CW, SSB and RTTY. He has used several calls over the years such as VE7ARS, VE8HF, VE3FYB, VE3AGN and VY2SS. And those calls have been used as Single/Op and a lot of Multi/Op contesting from VE7ZZZ. He even introduced RTTY contesting to that club when he was an active member.

TOWERS & ANTENNAS?

We are told Robby doesn't have anything fancy in that department. His main tower is 80 feet and provides a platform for all his HF antennas except 80 meters... an elevated vertical 63 feet with the feed point and 4 radials about 15 feet above the ground. He managed this by shooting a line over a 90 foot tree in his front yard with a 150 lb. crossbow! Then he suspended the vertical wire with a rope. On the tower, he has a dual band yagi at 80 feet for 10M and 15M, and a home built 20M yagi at 90 feet (a computer designed four element rig on a 26 foot boom). Above that is a Ringo Ranger for 2M.

He also has a cross boom at the top of the tower with a pulley and halyard which allows him to pull up wire antennas. One side is supporting a 40M inverted vee at 80 feet which he feels works very well. The tower is shunt fed for 160M. On another smaller tower (40 feet) he has stacked yagis for 2 meter weak signal and a fixed yagi for the packet cluster.

Inside, the station mainly consists of a Kenwood TS-950SD and a Heathkit SB-220 amplifier. He built an amp especially for RTTY with a pair of 4-1000A tubes (1500W output continuous key down) which weighs about 500 lbs. The amp now resides at VE7ZZZ contest club on the west coast.

Robby's likes and dislikes are easy to understand. He said he didn't know if he has a favorite contest but CQWW RTTY Contest ranks way up high. He prefers CQWW over ARRL contest, probably because of the way their multipliers work. He also likes Roundup, BARTG and SARTG for they are all a lot of fun. He opposes most rule changes in most contests as they negate previous efforts and records. However, he favors adding new categories which will increase participation such as limited entries (12 or 24 hour) and low power categories. He thinks these will allow many ops to compete and send in a log rather than just dabble in contests, that this can be nothing but good for contesting as a whole.

In the last couple of years Robby has made quite a showing in RTTY mode. Using call VY2SS:

'92 CQ/RJWW RTTY Contest:
S/O All Band- 1st N.A. 2nd W.W.
Scoring: 1,034.351 points.

'93 CQ/RJWW RTTY Contest:
20M Single/Band- 1st World Wide
Scoring: 374,550 points. (Setting a new World record in Single/Band Category)

(cont'd on page 30)

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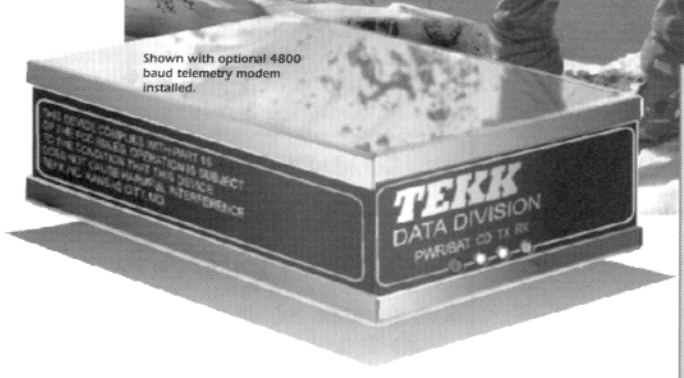

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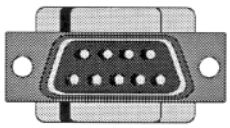
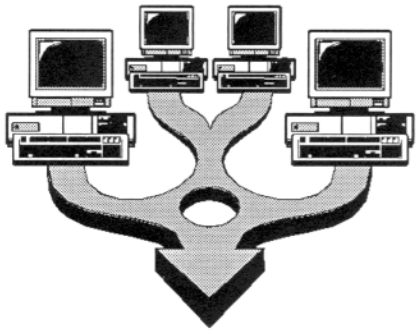


Computer Networking

Taking a look at your connection to the LAN and more!

by Paul Richter, W4ZB



USE A LAN IN YOUR DIGITAL MODE HAM STATION

A local area network, or LAN for short, maximizes your computer resources and manages the needs of your ham station in an efficient and cost effective manner. In this article (to be presented in several parts) we will explore: (1) the motivations and considerations for setting up a computer LAN in the ham shack; (2) the suitable LAN technologies which are available today and which are likely to remain viable into the future; and (3) how to actually set up a computer LAN for a digital mode ham station.

By way of preview, we will discuss the many compelling reasons pointing to the use of a ham shack LAN as the best way to increase station capabilities at the lowest cost. We will also show that the additional hardware and networking software needed is neither expensive nor difficult to install. You will not need to become a computer or networking "guru" to get everything working effectively together!

But, you say, *"A LAN network? Doesn't my radio/computer operation already provide enough anguish and mystery? Why do we want to even consider adding more complexity? After all, don't most businesses that use LANs hire outside consultants to design them, set them up and then train in-house specialists to maintain them?"* Good questions all, and there are no perfect answers. However, although typical hamshack computer needs can easily push computer capabilities right to the edge of current technology in some respects, the requirements for LAN operations are relatively benign. In fact, the basic requirements for hamshack LANs lack many of the complexities commonly associated with corporate and business computer LAN environments. This is good news. It means that relatively simple, low cost and easy to implement LAN solutions may provide great benefits to your shack's operation.

The computer LANs that many of us have come into contact with are often shrouded in mystery for those of us on the "outside", and the LAN "gurus" or administrators provide very limited information.1 But by the time we get through, we expect to convince you that the setting up of a computer LAN in the hamshack is not much more difficult than installing new special purpose plug-in cards and new application software on several computers . . . and not much mystery at all.

COMPUTER USAGE AND NEEDS IN DIGITAL MODE HAM STATIONS

Digital mode ham stations today now have one, and often several computers automating various aspects of station operation. At minimum, one computer controls an AX-25 TNC connected to a VHF or UHF packet radio transceiver. For stations which operate on HF, a computer is needed to operate one or more multimode TNC or plug-in controllers for the HF digital modes. In more complicated station arrangements, a computer may also control operation of the transceiver(s), power amplifier(s), antenna switching and pointing systems, tuning aids, callsign look-up programs, contest operation programs, and contact logging programs . . . while the station is actually operating on-the-air! For stations using satellites, a computer also provides orbit prediction and antenna tracking to the station during satellite passes. BBSs or MBOs need a computer to run the BBS, APLINK, WINLINK or similar software and the scanners needed to handle message and file transfers to and from VHF to HF.

In addition to these computer activities during on-the-air operation, hams also typically use their ham shack computers for other ham uses while off-the-air: to run QSL and awards tracking programs; to perform calculations for new antenna and transmission line designs; to run propagation prediction programs; to test proposed new circuit designs; to perform various engineering calculations and to prepare drawings of various types.

Many hams also spend off-the-air time attempting to optimize the configurations and setups on their ham shack computers in order to improve the ease of station operation and performance of the station. Others engage in software experimentation and development activities at different levels — from writing simple BASIC programs with a few lines of source code to developing complex Windows applications. Most hams also use modems to access landline BBSs, on-line service providers such as CompuServe or Internet as well as direct links with other hams. In addition to all of these ham related activities, our computers also receive plenty of use for word processing, to run spreadsheet and financial management programs, and for game playing at home. The question is, why not do these other things, or have the capability of doing so while also operating the station on-the-air?

The foregoing discussion emphasizes several points which are particularly pertinent: (1) ham shack application programs used during on-the-air station in moderately sophisticated digital mode stations require several interfaces to connect the computer system to the equipment in the station being controlled by the computer system; (2) in even moderately sophisticated digital mode stations, the computer system must provide multi-tasking facilities to run a number of different ham shack applications either simultaneously or concurrently, or in a manner which allows very rapid switching between different applications, during on-the-air station operation; and (3) despite the demands of the above, it would be desirable to run those application programs normally used only while the station is off-the-air, while the station is, in fact, on-the-air. We will see that the use of a peer-to-peer Ethernet LAN in the hamshack not only makes it possible, but less expensive and more effective as well.

Before proceeding further with this discussion, it is important to understand with some detail the design limitations in the PCs as used today in the hamshack, limitations which can be overcome or avoided by a LAN arrangement.

MOTHERBOARD SLOT, PORT AND IRQ LINE LIMITATIONS IN PCs

Virtually everyone who has set up a PC to operate a digital mode ham station has either had to learn about computer motherboard slots for accessory cards, computer ports, and IRQ lines, or had to find some knowledgeable ham to explain and assist with the hardware and software issues involved. Fortunately, many hams understand these subjects well and can help the inexperienced and the uninformed initially. But once something is working, there is usually an overwhelming urge to make it work better and then to move on to add yet more new features. Hams who wish to pursue and extend computer control of their equipment are compelled to learn basic information about these subjects in bits and pieces.2 Ultimately, the reasons why there are limitations on what can be accomplished with a single computer become very clear.

Motherboard slot limitations. A fundamental fact is that all PCs have but a relatively small (usually only four or five) number of unused, potentially available

motherboard slots for accessory plug-in cards. This depends upon the size of the motherboard and the form of the housing. The plug-in cards may include general port devices or special ham plug-in accessories. Once all available motherboard slots are filled, no more plug-in accessories can be used.

Most current ham plug-in type accessories have been standardized for and require ISA type motherboard slots. ISA slots come in two flavors, the so-called 8-bit slots and 16-bit slots. Remember, if a 16-bit slot is needed, an 8-bit slot will not do even though an 8-bit accessory card will perform its function when placed in a 16-bit ISA slot. Special hardware is available to provide an extended number of additional outboard ISA slots. While this step is appropriate in special industrial applications it is far too expensive to be practical for ham use.

Newer computers (e.g. Pentium processor based machines) usually have fewer ISA slots than do the older AT machines because Pentiums now usually include multiple PCI type motherboard slots. The new PCI slots offer significant speed and architectural improvements over the older ISA slots, but are incompatible with the older ISA plug-in cards which presently are the standard for ham accessories. Some older 80386 and 80486 computers also include other types of slots: EISA and VESA slots which are also incompatible with the standard ISA slot cards.

Port Limitations. There are three basic types of bi-directional ports which we need to consider in this discussion: asynchronous serial ("COM") ports; direct memory access ("DMA") ports; and parallel ("LPT") ports. Each of these bi-directional port types may be utilized with appropriate hardware and software to provide both input to and output from the computer. (We do not consider "gameports" which may only be used for "input" while requiring the same basic resources as a more capable bi-directional port type.) Each port device may be conceptualized as existing at a particular address in the computer's memory space, requiring exclusive control of a narrow range of memory addresses for proper operation. The port device may be implemented on special plug-in accessory cards which receive and send, for example, analog signals only and/or special digital control signals, to operate external devices in the hamshack. Port devices may also be implemented on plug-in cards which include standard interface connectors (e.g. RS-232 connectors) to permit connection of the computer to external devices through such ports. Each port device connects the digital mode ham station equipment or other external hardware devices to the computer for control by application software.

IRQ Line Limitations. In most instances, each bi-directional port device must have a hardware interrupt or IRQ line dedicated to it when the port is in use. The AT computer architecture supports 16 hardware IRQ lines (the original PC and XT designs supported only 8 IRQs), but many of those IRQ lines control essential hardware devices associated with the basic operations of the computer itself (e.g. for the AT—the timer, keyboard, IRQ Controller cascade, floppy drive(s), clock, math coprocessor, hard drive(s), etc.) and are not even potentially available for other uses. The problem here, like the limited number of motherboard slots problem, is that a given computer has only a limited number of hardware IRQ lines potentially available for assignment to a "new" port. Once all IRQ lines have been assigned, no more "new" ports may be added.

Plug-in port or hardware devices using 8-bit ISA cards can only access available IRQ lines from within the lower 8 hardware IRQ lines; those using 16-bit ISA cards can potentially access any of the 16 hardware IRQ lines. On older plug-in cards, the hardware IRQ lines are usually set by default or by relocatable jumper connectors. The more modern plug-in cards sometimes include a combination of relocatable jumpers on the card and an ability to select and store the desired IRQ line designator automatically. Some now utilize software control during initial installation. Generally, selection of an available IRQ line by software during installation is preferable because the software tests for, and hopefully avoids all potential IRQ line assignment conflicts. Modern Ethernet NIC cards often permit software selection of IRQ lines, making it easy to successfully install network interface cards.

Hardware workarounds exist which can successfully avoid certain limitations on the number of potentially available IRQ lines in certain circumstances. Numerous hardware vendors, for example, sell multiport cards which provide multiple (e.g. 4, 8, 16 or more) serial COM ports which all share a single IRQ line on the multiport card. This approach can work quite well with application software which recognizes that a single IRQ line is being shared among multiple COM ports. Unfortunately, most software of interest to hams does not support IRQ line sharing on these multiport cards.

Software solutions might avoid the IRQ limitations or the need for dedicated IRQ lines in certain circumstances. Potential software workarounds use software "polling" techniques, for important event recognition rather than "interrupt" notification of such events. Although software "polling" approaches are usually inefficient users of CPU resources, "polling" is suitable in limited circumstances with special hardware devices. Examples of such special devices include those with large hardware buffers (e.g. HAL PCI-3000 RTTY/AMTOR board and PCI-4000 CLOVER board) or with "output only" DMA ports which change logical state only when an output word is written (e.g. as digital switches might be used to switch an array of transmission line relays for antenna selection).

The addresses and IRQ assignments for COM1, COM2, LPT1 and LPT2 are standardized, but those addresses may be changed by special drivers or special software modification. Similarly, the addresses for COM3 and COM4 are specified under a standard for which those COM ports are also to use the same IRQ lines used by COM1 and COM2. That standard does not allow simultaneous use of COM3 and COM4 with COM1 and COM2 with conventional software without IRQ line assignment remapping. A different IRQ line is then assigned to each different COM port to be used. In a typical set up, some number of COM ports and at least one LPT port is used.

This discussion shows that a single computer following the AT architecture is unlikely to have enough available motherboard slots or IRQ lines to perform all of the functions needed in a digital mode ham station of moderate complexity. Consider, for example, an AT type computer with a math coprocessor (uses 1 IRQ line) with 7 total ISA slots available initially which are used as follows: (1) card for IDE hard disk controller/floppy disk controller/one LPT port and two COM ports (one motherboard slot and five IRQ lines used up); (2) VGA controller card (one slot used); (3) buss mouse card (one slot and one IRQ line used); (4) internal modem card (one slot and one IRQ line used); (5) sound card (one slot and one IRQ line used); (6) CD ROM adapter card (one slot and one IRQ line used); and (7) AX-25 TNC card (one slot and one IRQ line used). With this arrangement, all available slots are filled, and all IRQ lines are assigned. What about the CAT controller for the transceiver? What about the controller card for the antenna switching relays? What about the antenna rotor controller? And so on. Another approach is needed. Enter the ham shack LAN!

If the resources of the ham shack computer(s) are to be used to their maximum potential for station operation, it is important for the user to know (and keep documented) just what port addresses and IRQ lines are used by the plug-in cards and various accessories in each computer in its current configuration. This is important to prevent conflicts when new plug-in cards are installed or swapped for existing cards. The installation into a computer slot of an Ethernet Network Interface Card ("NIC"), for example, requires the assignment to the Ethernet NIC card of a non-conflicting DMA port address and an (otherwise) unassigned IRQ line.

A number of readily available utilities can detect and inform the user of the status of IRQ line assignments in a computer. MSD.EXE by Microsoft is part of the MSDOS 6+ package and

can provide this information if used properly. FINDIRQ.COM, published by PC Magazine as freeware (available for downloading from Ziffnet through CompuServe) also does an excellent job. You may wish to try out these information utilities for a better understanding of your computer system configuration even if you are not now interested in setting up a hamshack LAN.

The careful user of these IRQ seeking utilities must note that the utilities may not always reliably detect actual IRQ assignments or "free" IRQs. This problem occurs because of the manner in which the utilities work when subtle interactions take place between software drivers and applications programs for each different hardware device to which an IRQ line is assigned. Make certain that each hardware device to which an IRQ line is believed to be assigned has been exercised by the corresponding software before running these utilities. Otherwise the utilities may be unable to detect the software remapping of the pertinent interrupt vectors when the utilities are run.

The problems posed by motherboard slot, port and IRQ limitations associated with using just a single computer in the hamshack are overcome or avoided if multiple computers are used as in a peer-to-peer Ethernet LAN. The more computers on the LAN, the more open motherboard slots are available and the more ports with more unassigned IRQs. Networking of computers in the hamshack alleviates multi-tasking problems, another subject for discussion before moving on to the details of LAN implementation.

MULTI-TASKING SOFTWARE PROBLEMS

Even assuming there are somehow enough motherboard slots, ports and IRQ lines available in a single computer to allow everything desired to be done, how can that single computer operate all of the needed software at the same time for on-the-air operation of the digital mode ham station? This multi-tasking requirement in a modern digital mode ham station reflects the major change in the technologies which have occurred over the past few years.

Ten years ago, most of us who were around back then were happy to have any reasonable hamshack computer at all. But the groundwork for computer power in the hamshack as we know it today was already in place. Twenty years ago there were no hamshack computers at all but medium scale integrated digital circuitry had strongly impacted digital mode ham operations. Thirty years ago, the only computers around existed in large rooms in big companies, university centers and in government installations. Flip-flops were still made from discrete components and some machines using advanced plug-in cards had as many as six separate flip-flops on each card. RTTY machines were big, clunky electromechanical devices designed in the 1920's. And just about everyone on HF RTTY used 850 Hz shift FSK which they decoded with a terminal unit using vacuum tubes and polar relays.

Moving forward to today again, we note that computing power has increased immensely as the costs have declined for hamshack operations. But everyone wants the new and improved application programs for improved station operation. We all want more and more, but much of what we want has to run at the same time. This poses problems because not all computers are capable of running multi-tasking software, and those that can tend to be much more expensive than those that cannot.

There are operating system solutions. Desqview provides a well recognized, stable multi-tasking environment. Windows 3.1 has worked reasonably well, although there is much room for improvement. An enhanced version known as Windows 95 will soon be released. Windows NT was carefully designed for multi-tasking and has enormous promise, but requires hardware platforms which are relatively expensive at present. OS/2 has its very strong supporters for multi-tasking operations, but the OS/2 operating system is not being widely supported by software developers.

Despite the availability of these different multi-tasking systems, even with an unlimited budget, one must still struggle to fit it in and make everything operate together in a stable and predictable manner. Generally, with the present state of software, it is easier to set up a stable multi-tasking operation when only a limited number of applications need to run at the same time on a given computer.

A peer-to-peer Ethernet LAN readily permits the hamshack computing needs to be distributed among the various computers on the LAN. This eases the requirements for multi-tasking on any particular computer on the LAN and allows older computers (e.g. 286s and XTs) to be productively employed within their respective computing capabilities. Hamshack LAN operation actually allows older computers to be returned to productive uses in the hamshack! Let's sum up.

WHY SHOULD A HAMSHACK LAN BE CONSIDERED NOW?

1. Separate computers in your hamshack can be usefully connected together through a LAN for improved station operation;

2. Older model computers (e.g. 286s) can be connected to the LAN and returned to productive uses in the ham shack;

3. Ethernet network interface adapter cards for LAN operation are now widely available at low cost;

4. Highly capable, peer-to-peer networking software is now available at low cost;

5. Peer-to-peer networking software has become easy to configure and maintain;

6. A LAN arrangement overcomes or avoids being limited by the relatively small number of ISA "slots" available in a single computer for special accessory plug-in boards useful for ham station operation;

7. A LAN provides a way easily to provide additional serial, parallel and DMA ports needed for ham shack use without being limited by the number of available hardware IRQ lines in a single computer;

8. A LAN permits distribution of the computing and multi-tasking burdens among all of the computers on the LAN, making it easier to run multiple applications using relatively inexpensive hardware.

9. A LAN allows all resources on all of the computers on the LAN to be combined and shared.

10. A LAN facilitates software implementation of complex functions for ham station operations with relatively simple custom programming.

11. A LAN simplifies the setting up of multiple operating positions in a station as well as its remote control from a distant location.

TO BE CONTINUED

In the next installment of this article, we consider the various LAN components and technologies which are available today, and focus on those which are most likely to continue to be viable in the future. We then identify the essential elements needed to set up a hamshack LAN; the design choices and trade-offs involved; discuss features of commercial LANs which are not pertinent to the hamshack LAN environment; and consider what other hams have already done in setting up LANs.

In the final installment, we show how to actually set up and implement a peer-to-peer Ethernet LAN in a digital mode ham station, using the Windows-for-Workgroups networking software, with computers running Windows and DOS applications. There will be specific implementation notes and details, and some examples of advanced features which can be easily implemented in your shack. ❑

Digital Signal Mixer for WinLink

A solution to combining signals from multiple TNCs

by Hans A. Kessler, N8PGR

BACKGROUND

As WinLink begins to emerge as a viable and commonly accepted Digital Mailbox application, providing for multiple, concurrent digital operating modes, there is a vacuum left behind in how all these various devices are electrically attached and connected. WinLink operates under the Microsoft® Windows™ operating system that allows for many concurrent applications, limited only by the CPU's resources and speed. This allows WinLink to theoretically drive an unlimited number of TNC devices. With the emergence of CLOVER and PACTOR, in addition to the established AMTOR as HF modulation methods we are now faced with a dilemma: how are we going to provide for more than one modulation method within the same station, and how are we going to hook all these different devices to the radio? One solution would be to have a separate radio for each TNC, but I doubt that many Sysops can either afford that luxury or want to be bothered with all the technical issues involved when operating multiple radios concurrently from one installation. A more practical solution is to share the radio amongst different TNCs. This allows us to operate multiple modulation methods (one per TNC) while running one computer, one scanner and one radio. Of course, only one channel can be active at any one time but that should be the least of the worries for most Sysops.

This paper offers the technical solution on how to combine signals from multiple TNCs to one HF radio and one computer as well as splitting the audio signal from a single HF radio to multiple TNCs.

Packet nodes operating on UHF or VHF are not addressed in this paper as they usually have separate transceivers, one for each frequency and TNC. Those applications do not normally provide for scanning either, therefore not presenting the kind of problems we're faced with on the HF side.

This paper discusses my approach and solution to this sharing problem. As I finished my device and had it running for a while I found out that others have also worked on this same subject. It is not my intention to sell this as the one and only solution, rather as one of many different ways of solving this problem. Advanced Electronics Applications (AEA) came up with a solution (thanks to Ralph W3GL) and Bob W4NPX also came up with a black box addressing these same issues. I am sure others have done similar things and I apologize to those for not mentioning their name, I just don't know about you as I write this.

PROBLEM STATEMENT

The purpose of the design discussed here is to:

- Merge or combine two (2) digital FSK signals from different sources and make them available in a unified form to any HF radio capable of accepting FSK type signals.
- Split the analog output from an HF radio and make the signals available to more than one TNC.
- Provide for a scan stop signal to the computer, e.g. a software scanner such as TY1PS.

This design assumes that the signals of two (2) AEA PK-232 TNCs (my installation) are to be merged. The design can also be modified to process three (3) sources. The input is not limited to PK-232 devices. Any Amtor, Pactor or other digital unit qualifies as a source as long as their signals are of digital nature.

THEORY OF OPERATION

The issue of mixing FSK signals is mandated by the fact that one cannot simply "OR" two or more FSK signals from different TNCs. It is further complicated by the fact that Pactor is constantly switching its phase, remaining in a digitally uncontrolled state after a connect. If that were not the case one could "OR" the two signals with two diodes which I have done while I was building my mixer. Using this method you cannot let the system run unattended because the Pactor channel may pull down the AMTOR FSK signal if PACTOR happens to come to rest in the wrong state.

The solution to this problem is to gate the FSK signals, and allow only one of the two signals to pass on to the radio. The question is which information signal is to be used as the gate enable. The obvious, but seldom used choice is the SELCALL DETECT signal that most TNCs, including the PK-232 supply. There are two problems associated in using this signal:

- It is not easily accessible (see chapter 7: Modifications to PK-232)
- The default status for using this signal is OFF and one needs to go into the PK-232 firmware and turn it on.

A simpler solution may be the use of the PTT signal as the gate. That works well because the PTT is not raised unless information flows in the first place.

In my design I have chosen to use the SELCALL DETECT signal in combination with the PTT, signal both for gating purposes as well as to provide for a reliable scan stop signal. The primary reason I chose to consider the SELCALL DETECT signal is because its information is (or should be) present way before the first PTT pulse appears. In addition, some Amtor units (like the AMT-x series) will raise this signal at half time, as soon as they detect a portion of your SELCALL. This allows for much faster scan rates and that's what we all want, after all. The reason I also included the PTT signal into the stop logic is twofold:

- The system will work in case the SEL CALL DETECT is not available from our TNC
- You can stop the scanner on the fly from within WinLink, using the T/R button. I use this method often to tune up or test the SWR of my antennas.

No special logic is required to merge the PTT signals. I simply use 2 diodes to "OR" the information.

DIGITAL SECTION (detailed design)

In the design of this Mixer I opted for logical building blocks to minimize the amount of parts used and to make the construction of this device relatively easy. The first version I built, using CMOS chips, turned out to be sensitive to RF and I revamped the design using TTL devices instead. This design uses a total of four (4) chips. The three digital chips chosen allow the best usage factor; I had just enough gates to make the digital part work with 2 "AND" gates left over. The analog portion uses a dual op-amp in a single 8-pin package.

The disadvantage of working with digital building blocks is that some of the signals coming from the TNC need conversion to ensure they lay within acceptable voltage limits for the TTL ICs. This pertains in particular to the SELCALL DETECT signal coming from the PK-232 TNC. That signal is generated by a serial line driver (MC1488) with voltage levels of ±18 volt. I didn't get too fancy and used the zener diodes Z1/Z2 to clamp the voltage to acceptable limits. The positive side of the signal is clamped at 5 volt while the negative portion is cut to around -0.5 volt. We need no current limiting series resistor as the MC1488 chip has a built in 300 Ohm resistor.

The FSK signals coming from the TNC are of open collector type. That is the reason for the pull up resistors R3 and R4.

I modified the PK-232s by internally wiring

the FSK-N and SELCALL DETECT signals to the J4 connector, disconnecting the unused TX and Squelch signals. This allowed me to feed all needed signals to and from each TNC to the mixer using only one cable each (see below for more details).

The digital portion of the mixer is built with TTL blocks and performs the following tasks (refer to Figure 1 below):

1. The PTT and SELCALL DETECT signals from both TNCs are "OR"ed in A1 and A2 to serve as an enable gate for the FSK signal. Gates E1 and E2 are responsible to allow only the properly gated FSK to pass through. The two channels then merge in gate A4. This logic is based on the assumption that only one of the two TNCs is operating (transmitting) at a time. The inverters B1, B2, B3, B4 and B5 are there to place the signals in proper logical states for their use down the line. The final inverter B6 puts the FSK signal back into its original phase.

2. The combined PTT/SELCALL DETECT signals are further "OR"ed together in gate A3 to derive a clean Scan Stop indicator. Inverter B5 places the output into a high state (+5 Volts) when indicating a stop scanner status. Resume scan is indicated with ground potential (0 Volt). This signal may be wired directly to a computer serial port where the scanner software is looking for it. In the case of the TY1PS scanner it is pin 6 of the DB25 or DB9 jack.

Since I use the SELCALL DETECT signal in addition to the PTT signal, the output is now a stable signal; High=stop scan, Low=resume scan. The TY1PS scanner likes to see a pulsating signal to stop. I have found out that only the initial scan stop pulse is needed after which the scanner remains stopped. This is because TY1PS also looks at WinLink which in turn declares the channel busy or in use and the hardware input is no longer required. I tried to convince Peter that he should also consider a stable high as an external signal to hold the scanner, but did not succeed. As it works indirectly in combination with WinLink's software status, this is now a moot point.

3. The two PTT signals are "OR"ed together using two diodes and are fed to the radio as one PTT signal. The diodes are optional but I put them there in case the radio's internal logic does not have a protective diode in its line. The FT-1000 I am using does not require the diodes, but there is no harm if they are there.

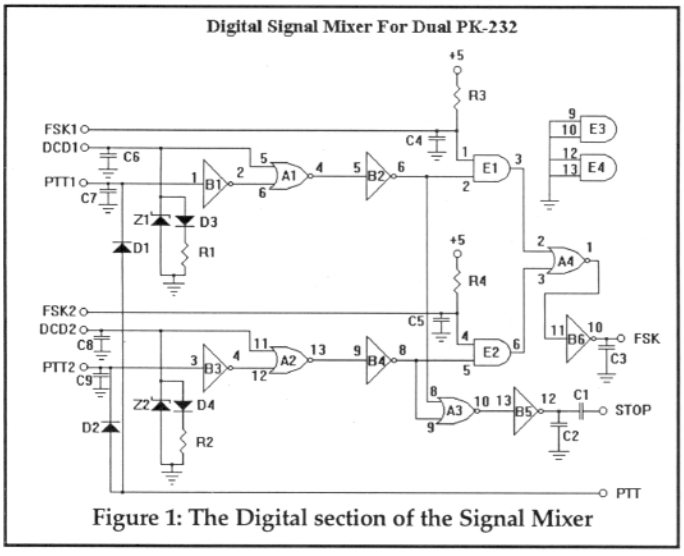


Figure 1: The Digital section of the Signal Mixer

Other explanations:

D3/R1 and D4/R2 serve to bias the SELCALL DETECT lines (DCD) in case they are not connected to a TNC. With those connections left open, gate A1 and A2 would otherwise interpret the signal levels as TRUE.

For those of you who use this design in an installation where there is no DCD signal available (other TNC brands/boards) you are advised to ground the DCD input signals as a fail save precaution.

The "AND" gates E3 and E4 are unused. Their input pins must be grounded to ensure that gates E1 and E2 are not effected.

The capacitors C2 through C9 are RF blocking capacitors, a must in our business Their values are 0.01F each. Capacitor C1 serves to decouple this logic from the computer circuits. As we plan to wire it directly to a computer serial input port I recommend that you install this capacitor with a value of 0.1F. In addition to the 10 bypass capacitors in the schematic you should also place one each between the +VCC (5 volt) pins (pin 14) and ground on each of the 3 Ics (7402, 7404, 7408).

Voltage Connections

Power for the Digital section is derived from the power supply (see Fig. 2.)

- +VCC (5 volt) is wired to pin 14 of each chip A (7402), B(7404) and E(7408). Also, place a .01F capacitor from pin 14 to ground on each of these chips. (C10-C12)
- Ground is wired to pin 7 of each chip A, B and E

Parts list for digital section

R1, R2, R3 and R4 are 2.2K 0.25 Watt each
Z1 and Z1 are 5.1 volt Zener diodes.
D1, D2, D3 and D4 are ordinary switching diodes
The inverters B1-B6 are in one chip: a 7404 or 74LS04
The four "NOR" gates A1-A4 are in one chip: a 7402 or 74LS02
The four "AND" gates E1-E4 are in one chip: a 7408 or 74LS08
The capacitor C1 is of ceramic type with a value of 0.1F
The capacitors C2-C9 and C10-C12(not shown in schematic) are of ceramic type with a value of 0.01F

POWER SUPPLY SECTION

TTL chips need 5 volts to operate. Since the PK-232 requires a 13 Volt DC source I decided to feed this device with 13 volts as well. I used a 5 volt Voltage Regulator (7805) to provide for the 5 volts. At the same time I also derived the 3 voltage levels needed to drive the op-amp in Figure 3.

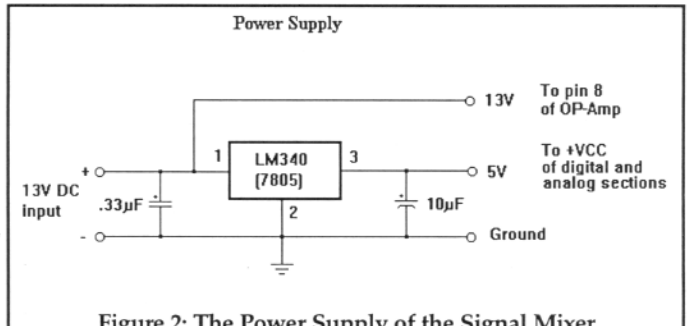


Figure 2: The Power Supply of the Signal Mixer

ANALOG SECTION (detailed design)

The radio's RX-audio signal is split and fed to a two-channel OP-AMP with 1:1 gain on each channel. This assures that each TNC receives a strong signal, not attenuated by each others input impedance. Again, one could argue to just "parallel" the two inputs but I decided to add this one little chip and four resistors to provide for clean and strong signals.

I tried the LF353 as well as the TL082 chips. I found that the TL082 is prone to oscillation, usually triggered by strong RF on one or two

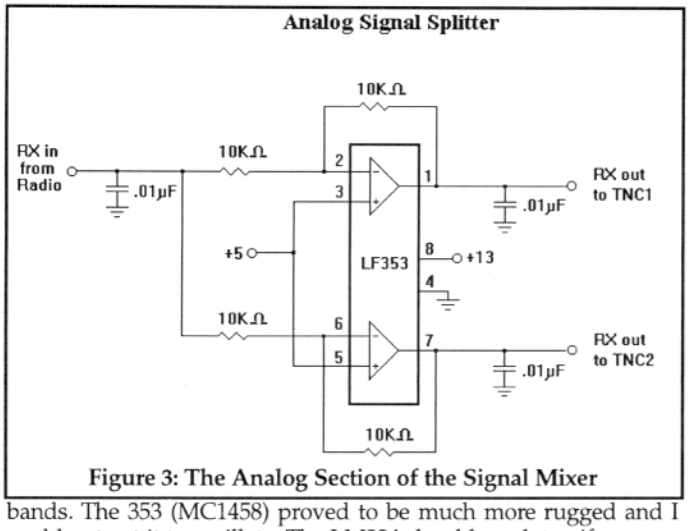


Figure 3: The Analog Section of the Signal Mixer

bands. The 353 (MC1458) proved to be much more rugged and I could not get it to oscillate. The LM324 should work too if you can find it.

The three (3) capacitors serve to filter out RF. The listed resister values provide for 1:1 gain.

Please pay attention to the three (3) voltage levels used: 0, +5, +13. I chosen them as they are readily available when reducing the primary supply voltage of 13 Volts.

MODIFICATIONS TO THE PK-232

The modifications discussed in this chapter are optional. They ease the wiring to and from the TNC and the Mixer. A total of four (4) wires are running from each PK-232 to the Signal Mixer:

- RX Audio
- FSK Signal
- SELCALL Detect
- Push To Talk (PTT)

These signals are accessible on three different connectors. In order to ease the wiring and at the same time reduce the chance to pick up any (additional) RF, I chose to bring the DCD signal from the 25 pin connector and the FSK signal from the DIN connector over to the connector J4. There I removed the unused signals for TX audio and Squelch and wired DCD and FSK in their places.

The FSK signal I pick up on pin 1 of J7 and laid a wire to pin 2 of connector J4. Looking from the back, underside of the board, pin 1 of J7 is the last pin on the left, to the right of the screw hole. Pin 2 of J4 is the second from the left. I lifted the plus side of C93 (10/25) and used that eyelet to solder one side of the wire. The other side of the wire is tacked on pin 1 of J7.

A similar approach was taken when wiring the DCD signal. Resistor R150, a 20k ohm (red, black & orange) unit connected to the base of Q6 is located (with the top side, front of the board facing you; in the right front side of the circuit board) to the left of JP2/JP3. It is the third component; two diodes then the resistor. Unsolder and lift the back lead of R150, freeing the eyelet. Solder a wire from that eyelet to the "connector" side of R26, a 100 ohm (brown, black & brown) unit located with the circuit board as above, to the left rear, three resistors behind the right side of J2, the one furthest from J2. The "connector" side is the left lead of the resistor. Do not remove either lead of R26 from the circuit board, simply "tack" solder the added wire to the left lead of the resistor!

The modifications discussed here assume that we use the J4 connector. Do make sure that the radio select switch on the front panel of the PK-232 is set to "RADIO 1": that's the non-depressed position.

HOW TO ACTIVATE THE DCD SIGNAL IN THE PK-232

The PK-232 internal firmware controls this signal. By default it is inactive. In order for us to take advantage of this valuable information you need to communicate with your PK-232 just as you would when you program your SELCALL. The command is "DCD ON". In the latest version of the Pactor firmware, starting with EPROM version 7.00, you need to first turn the EXPERT mode ON or you have no access to the DCD switch. I recommend that you turn the EXPERT MODE OFF after you are finished.

PHYSICAL CONSTRUCTION

I built this entire Mixer on a 2.75 by 3.75 inch board which I purchased from Radio Shack (Part No. 276-168A or 276-158A). It is mounted in a 2 by 3 by 6 inch metal "project box." The ICs are plugged into wire wrap sockets. All wiring is done using wire wrapping technique. Of course you might choose to elect another wiring method or even solder the project. I prefer the sockets and wire wrapping as that allows me to easily change an IC or some wiring in case something goes wrong.

The connectors feeding the signals to and from the PK-232s are two (2) 5-pin DIN connectors. The interface to and from the radio is also via a 5-pin DIN connector. The Scanner Stop signal I wired to an Audio connector.

All parts used in this project are available from Radio Shack. The only exception might be the 7402. Recently I have had problems finding it there.

CLOSING REMARKS

This Mixer has been running at my station uninterrupted since spring of 1993. I did not experience a single problem with it. However, as every installation is a little different, one will never know what special problem you might run into. RF could possibly be one of your problem sources. When that is the case, check that all your equipment is properly grounded. Do not forget the power supply! I use a 20A 13 volt power supply to drive a lot of different equipment in my shack. It took me a long time until I finally found that RF was sneaking into the Mixer via the 13 volt line.

A caution when working with shielded cables: When you use shielded audio cables to connect the TNCs to the Mixer and the Mixer to the Radio and Computer, make sure that you ground the shields of each cable only on one end (leave the other end open). If you connect both sides you might cause common mode current to flow and who knows what happens then.

I have given you everything you need to build this Mixer. It is not difficult to build and should only take you a rainy day or so. Please do not call me to build this Mixer for you. As much as I would like to help you — my time is still taken up with "revenue producing" activities all week long. You may, however, contact Ralph, W3GL, as he may build this mixer for you.

For those interested, this document was produced with Microsoft Word and the schematics were drawn with Paintbrush. My thanks to Ken W1RIL for inspiring me to use this method (see his article in the October 1993 issue of QST) and providing the symbol library used in these drawings.

Good luck and let me know how your project works out.

73's, Hans A. Kessler - N8PGR

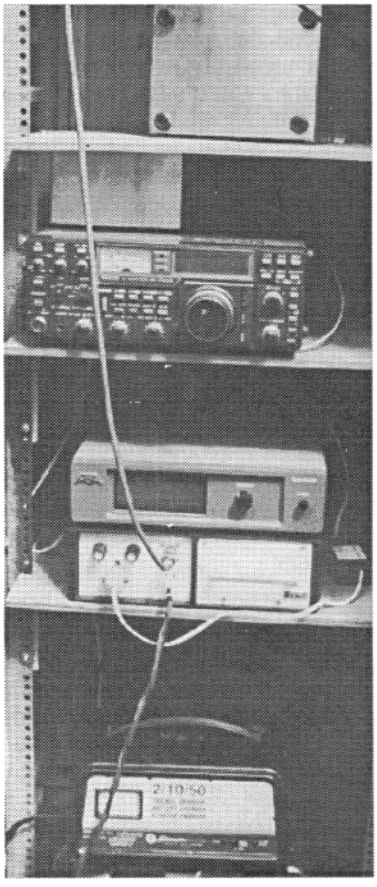
OPERATIONS

Remote Control

of a Digital Station

by J.H. Brown, W5ZIT

I spend the summers in the mountains at Ruidoso, NM in an RV park and the climate during the summer months is outstanding. But one really bad side effect is caused by a 115 KV power line that runs near the RV park where we like to stay. A 20 over 9 noise level from the line leakage prevents any HF operation from this QTH. This prompted me to install a remote system in an outdoor cabin on a 7500 ft. hill about 10 miles from the RV park. The remote station is accessed through 2 meter packet and allows HF operations in spite of the local line noise.



The remote digital station is described in the following paragraphs. Refer to the block diagrams for the equipment interconnection. Equipment in the rack shown in the photograph includes the antenna tuner on the top shelf, the HF radio with the Single Board Computer control system on the next shelf down, and the VHF radio and TNC on the bottom shelf. The battery is housed in a battery box in the bottom of the rack, with the charger sitting on top.

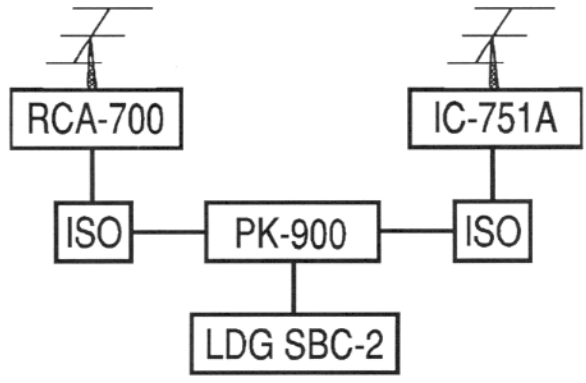
TNC

A PK-900 TNC was chosen to provide the HF/VHF interoperability because of the Gateway offered between HF Amtor/Pactor and VHF Packet. A Kantronic's KAM was also used for a while and only retired in favor of the PK-900 because of the Gateway. The KAM is better suited for remote control in several ways but offers no possibility of cross band operation on any mode except HF Packet. Also - the keyboard SSID is not available on VHF if the KAM is in any HF mode other than Packet. A Host mode interface to the KAM would offer simultaneous access but would require a computer programmed to allow operation in this mode. The PK-900, on the other hand, allows access to HF Pactor and VHF Packet in parallel with no special control program. No remote parameter changes can be made on the PK-900 however, so complete setup has to be done before it is placed in service. One change must be made to allow forwarding to/from my VHF Winlink Packet BBS and an HF Winlink Pactor BBS through the gateway. The normal gateway changeover character is a CTRL-Z which is also used to end the messages on the VHF Packet side. I changed the PTOVER to CTRL-A and forwarding through the gateway works with no intervention on the HF Pactor side, and with minimum help from the VHF Packet side.

Transformer isolation is used in the audio input and output lines on VHF and on the receiver output on HF to avoid having a ground path back through the TNC. These 600:600 ohm transformers are packaged in small plastic boxes in line with the connections from the TNC to each radio. The only ground path from the TNC to either radio is through the power supply ground return. Preventing stray DC and RF current flow through the TNC is the key to glitch free operation.

HF RADIO

The HF radio used is an Icom IC-751A using FSK. Two 500 Hz filters are used and the BFO has been aligned to give 2110 and 2310 Hz tones on a signal centered in the 500 Hz passband. The mark and space transmit frequencies were aligned to these same tone frequencies. Many HF radios do not allow this flexibility in setting up the radio with the TNC.



REMOTE DIGITAL SYSTEM

SCAN CIRCUIT

The HF radio is operated in the scan mode to allow band switching without having the transmit low pass filters in the radio switched until actual transmission occurs. The scan dwell will not stretch much beyond 3 seconds, so adjacent memory channels are programmed with the same frequency. A scan duration of 5 seconds for several 40 and 30 meter channels was used.

The scan restart is an NE555 circuit used to close a relay momentarily across the SCAN switch to start the scan 30 seconds after the last PTT operation from the TNC. These circuits along with relays for the VFO/MEMORY switch and the VFO A/VFO B switch are packaged inside the radio to avoid RFI/EMI coupling from/to the circuits. An opto isolator for each function is used to interface with the SBC control circuit.

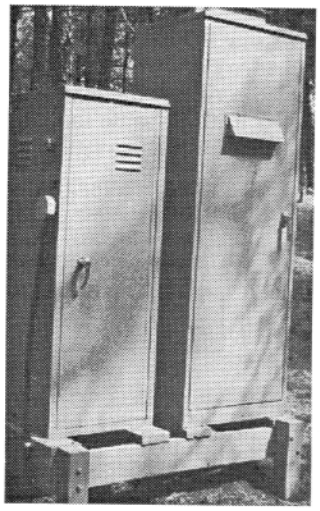
VHF RADIO

A mobile RCA-700 radio was modified to eliminate the large round connector on the interface and replace it with a panel with the volume and squelch controls and a 9 pin D connector for audio in/out and PTT. The unsquelched audio directly from the high side of the volume pot is used to feed the PK-900 and the state controller does a great job on the DCD. A keying transistor is added inside the radio to allow the PTT signal (ground) to key the radio which normally requires plus 12 VDC. These radios have a solid state T/R switch - and make excellent packet radios when available. Modification instructions for the RCA-700 radio are available from the Texas Packet Radio Society, and include the modification for 9600 baud if that is desired.

SINGLE BOARD COMPUTER CONTROL

An HC11 SBC-2 computer board from LDG Electronics was used to provide remote control of the HF radio. The TNC RS-232 port was connected to the RS-232 port on the SBC and a program was generated using bits and pieces from several of the supplied assembly source code samples. Three outputs are implemented with one to control the scan on/off, one to push the VFO/MEMORY switch, and one to push the VFO A/VFO B switch. Several additional parallel outputs are available for expansion, and there are analog inputs

available which could be programmed to measure site temperature and battery voltage. Of the 512 bytes available the control program occupies approximately 300 bytes. That is not a misprint - by the way - bytes, not kilobytes or megabytes.



There are four major functions performed in the SBC. The first is to recognize the stream switch character from the TNC and discard it.

The active stream is set to A in the PK-900 which allows the TNC to send UI frames with all the data normally seen on the terminal screen. This is provided thru an echo function implemented in the SBC. The echo feature in the TNC is disabled to prevent a loop between the two echoes and the result is the transmission of a UI frame each time a connect occurs on HF containing the HF station's callsign. This message is seen on the VHF Packet channel as *** Connected to (callsign) when the HF connect occurs. Also the *** Disconnected message is transmitted to show the HF is no longer in use. The streamcall command is enabled also and shows the connected station callsign when the stream is switched between HF and VHF. The newmode command must be set to OFF to prevent the PK-900 from returning to the cmd: mode between connects on VHF Packet.

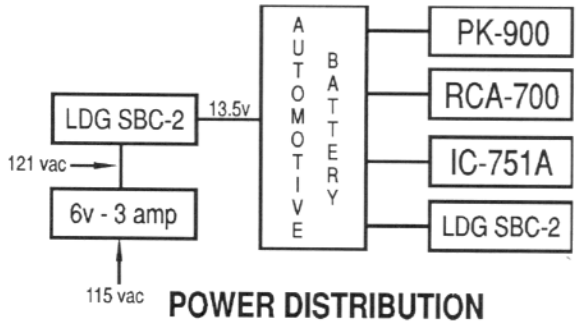
The remaining three functions control the scan restart board enable/disable, the MEMORY/VFO output and the VFO A/VFO B output. These functions are connected through opto isolators to the interface board installed in the radio.

Three characters are used to control these functions. The $ was used to place the radio in the SCAN mode, the % was used to select the VFO mode and the # was used to select VFO A/VFO B. Since the VFO switch is alternate action on the radio, the VFO is always returned to VFO A before restarting the scan. Characters that will be seen in a callsign or any other character normally sent to the terminal must not be used to control these modes.

The streamswitch character (|) is intercepted and discarded to prevent having the echo function in the SBC change streams for the UI frames to be sent.

POWER SUPPLY

A 12 VDC automotive battery is used as the remote power supply. A Schumacher SE 10-52 2/10/50 amp battery charger keeps the battery voltage at a potential of 13.5 VDC. This voltage was chosen to minimize water loss and still provide reasonable capacity. The charger is set to the 2 amp position with a 6 volt transformer output placed in series with the primary supply to adjust the normal key up battery voltage to 13.5 V. Battery operation provides a continuous DC source in a remote location that is prone to short term power outages.



POWER DISTRIBUTION

GROUND SYSTEM

Four 50 foot copper ground wires were buried 6 inches in four directions from the outdoor cabinet that houses the equipment. The wires are bolted to the cabinet and all the equipment is grounded back to the rack inside the cabinet. Thunderstorms abound all summer and the location atop a 7500 foot hill is a real hazard for nearby lightning hits. Although considerable havoc would occur with a direct hit, the ground system and grounded antennas have allowed the remote system to survive the nearby strikes with no damage.

ANTENNA SYSTEM

A double extended Zepp antenna was chosen for the 40 meter band, and a secondary resonance as two full waves on 30 meters was utilized. The two 80 foot flat top elements are center fed with 450 ohm ladder line - and the line was trimmed with the flattop in place to achieve resonance at 7050 kHz. The line serves as a quarter wave matching stub for the 30 meter band and the 30 meter resonance is at 10.2 mHz. The antenna was suspended from trees about 25 feet off the ground. Something like 4.5 dB broadside gain was achieved for the 40 meter band with this antenna - and it exhibits a 4 lobe cloverleaf pattern on 30 meters. A 1:1 balun is used at the feed point end of the 450 ohm line to provide a DC short across the feed line to protect the receiver input. The performance of this antenna with 70 watts output from the HF radio has been very impressive.

A simular antenna was designed for the two meter port and is built on a 10 foot section of 1/2 inch schedule 120 PVC pipe. Two 45 inch 5/8 wave sections are separated by an 11 turn coil wound on the PVC to provide the required 180 degree phase shift. The antenna is end fed with a quarter wave stub in J pole fashion and is made from one continuous length of Radio Shack aluminum ground wire. The completed assembly is slipped inside a 10 foot section of 1 inch PVC and is suspended from a tree at about 25 ft. Using two 5/8 wave sections negates one of the main drawbacks of a J pole in that the radiation angle is normally elevated to some extent by radiation from the matching section. This effect is greatly reduced by the gain of the antenna.

OPERATION

The remote system is activated by connecting to the MYCALL callsign on the PK-900 on VHF Packet and issuing the desired command. I take the remote system out of the scan mode using the % character - which returns the message "VFO Mode" from the SBC. I then select the VFO frequency desired using the # command with VFO A set to a 40 meter frequency and VFO B set to a 30 meter frequency. I then use another stream to connect to the Gateway callsign on the PK-900 and can then initiate an HF call. The PK-900 has a threshold setting that will not allow the TNC to key up on another station on the frequency. When in doubt the TNC can be placed in the "listen" mode for a few seconds to verify that there is no station already operating on the frequency. If a station is detected the Gateway returns a "busy" indication when a connect is attempted, and the frequency can then be monitored in the "listen" mode until the traffic clears. When the HF contact is completed, the $ command is issued on the control stream to place the system back in the scan mode and the "Scan Mode On" message is returned from the SBC. While the radio is scanning it will accept incoming HF connects to the internal PK-900 MBO and also allow access to the Gateway function which provides access to VHF Packet. The radio automatically returns to the scan mode 30 seconds after the contact is ended.

Many hours of operation through the remote system by many HF and VHF stations have shown the true utility of this system. Having a "big signal" has really been impressive since operations have usually been through a mobile antenna mounted on the RV. I would welcome any questions or comments about this system, and my home BBS is WB5NQC.NM.USA.NA.

References:

- LDG Electronics 1445 Parran Road St. Leonard MD. 20685 (410)586-2177
- Texas Packet Radio Society P. O. Box 50238 Denton, TX. 76206-0238
- Schumacher Electric Corporation Chicago, IL. 60626

RTTY CONTESTING

A look at what it takes to succeed

by Barry Kutner, W2UP

I have been asked to put together a primer on RTTY contesting. I am certainly no expert, and have limited my contesting to single-op (with and without packet). Hopefully this article will entice the non-contester into giving it a try, and provide some useful tips for the seasoned operator.

There are many reasons to operate contests. Among them are increasing one's DX totals, the thrill of the competition, and testing (and improving) your station and operating abilities.

EQUIPMENT

As digital mode ops, we are all familiar with the 100% duty cycle required. Bottom line, don't push your equipment too hard!

I strongly recommend using FSK for contesting, which should have TTL level inputs on the back of the transceiver. This allows you to use your narrow CW filters. I typically use my 500 Hz filter and do go down to 250 Hz at times. AFSK, which injects audio through the mic jack, is run in the LSB position, and with most radios, limits filter options.

Think ergonomics. If you are going to sit in your chair in front of the radio for hours, be comfortable. Make sure your keyboard and monitor are at good heights. Keep frequently used controls (xcvr tuning, rotor, etc.) well within easy reach. Make sure your chair is comfortable with respect to your arms, legs and back.

Try to automate your station as much as possible. Log with your computer (more on this later). My FT-1000 has an output for band data, as do most modern transceivers. I have taken advantage of this feature by building a controller to automatically switch antennas when I hit the bandswitch on the radio.

FREQUENCIES

During contests, RTTY operation takes place 070-100 up from the lower band edge on 40-10 meters, and it gets very crowded. The usual, gentleman's agreements about where the burst modes hang out don't apply during the big contests. There's just not enough room! On 40 meters, the Europeans hang out on 7035-7045 (the CW ragchewers love it when I work down there!) On 80 meters, stateside activity runs 3600-3625 with European activity usually 3590-3600.

SOFTWARE

For DXing and other non-contest activities, your terminal program of choice will suffice, but for contesting "RTTY by WF1B" is essential. For those of you not familiar with Ray's program, it allows one-keystroke exchanges, logging/duping, etc. As a station is tuned in and a call is copied on the screen, it is automatically duped and placed in the log queue before you touch the keyboard or mouse. Packet and rig control is not (yet) supported. Most of the major RTTY contests are supported.

OPERATING

In most RTTY contests, the majority of the ops run low power. So, If you are a medium or big gun, spend most of your time CQing. If you run low power, you probably should spend much of the time answering other station's CQs (searching and pouncing in contest lingo), but finding your own spot to CQ and attract attention is important too. Many contest QSOs are with casual ops that make just a handful of contacts, and you won't work them unless you CQ.

Keep your CQs short - something on the order of CQ CQ CONTEST de W2UP W2UP K. Too long a call, and many stations will tune right by you. If no reply, call CQ again. To reply to a CQ, the same applies - keep it short. I know my call, so there is no need to send it multiple times. If signals are good, once or twice with your call will do. For example, W2UP de W3XYZ W3XYZ K. The "de" is important because the WF1B software uses it to know a call-sign is coming, and will automatically capture it into its buffer.

Keep the exchanges short too. Just about everyone sends 599, so there is no need to repeat it. Any unique information should be sent more than once. For example, I send "59905 PAPA" in the CQWW. You may ask why I sent my zone (O5) only once - because a W2 is zone 5 and PA is zone 5. Those who know, will figure this out if they miss it (and WF1B software knows it automatically), and those who don't know will ask for a repeat if they miss it. After receiving the exchange, if it was my frequency I will send "QSL 73 de W2UP," and await another caller (hopefully). Note there is no "K" or "TNX FOR THE NICE REPORT," etc. If I replied to another CQ, my exchange is the same. There is no need to "QSL THE 59914. MY REPORT TO YOU IS..." Think about your exchange. You are trying to maximize the number of contacts in a limited time period. The less time you spend (i.e. waste) with unnecessary chatter, the better. And I have to say it once - PLEASE no RYRYRYs!

For those who are really competitive, the use of a second receiver is helpful for search and pouncing between CQs. I find the ideal time to use the second receiver (in my case the sub-receiver on the FT1000) and tune a little is just after you finish the CQ. Most replies to a CQ look like this: W2UP W2UP W2UP DE W3XYZ W3XYZ K. At 60 WPM Baudot, that gives you about 5-6 seconds to tune the other end of the band looking for stations CQing which you haven't worked yet, before you get to hear the call-sign of who answered your CQ. With judicious timing, you can eke out a few extra QSOs per hour this way.

The usual contesting rule of thumb is work the highest band that's open. Particularly during these sunspot doldrums, openings on 10 or 15 meters are likely to be short lived. Be aware of your rate. If it drops all of a sudden, either the band dropped out or you've worked everyone on the band. Switch to another band. Be familiar with the contest rules. Can you work stations in your own country? Can you work the same station on another band? Is there a point advantage for working DX or working a particular band? Do multipliers count each band or only once?

THE UPCOMING RTTY WPX

The WPX is one contest where there is little advantage in geography. Unlike the CQWW where it's usually the east coast at the top, and the ARRL RTTY Roundup where the west coast wins, the WPX contest sees top scores from all parts of the country. Multipliers consist of prefixes, and points vary based on location and band. In the WPX QSO points are doubled on 40 and 80 meters, so put in appropriate time on these bands.

FINAL COMMENTS

If you catch the contest bug, I strongly suggest subscribing to ARRL's National Contest Journal. You will learn a lot about contesting as well as get ideas for station improvements. Further, if you have access to the Internet, there is a Contest reflector mailing list, which is basically an international roundtable discussion among contesters. See if there is a contest club in your area. If so, go to a meeting. While most contest clubs concentrate on CW and SSB, there are more and more ops trying RTTY contesting all the time. Editorial comment for contest sponsors - how about including a club aggregate score to stimulate more activity?

GL in the contest de Barry, W2UP

Installing and Adjusting Your 9600 Baud Packet System

by Phil Anderson, WØXI

Amateurs have been asking for and anticipating off-the-shelf 9600 baud packet radio gear since Steve Goode presented the first 9600 modem design at the ARRL 4th Computer Networking Conference in 1985. James Miller, G3RUH, fueled this desire with his now famous 'RUH' 9600 add-on modem presented at the ARRL 7th Computer Networking Conference in 1988. Finally, ten years later, full-featured 9600 modems and radios advertised as '9600 ready' are becoming available for sale from the manufacturers. However, amateurs are finding that some combinations of modems and radios are not easily installed and adjusted; therefore, Kantronics has added features to the new KPC-9612 to aid in system adjustment.

Although built with discrete ICs and EPROMS, Miller's modem has been effective, but today's market entries are based on single-chip IC modems. Since single-chip designs are more reliable and less expensive, TNCs based on single IC modems will become the defacto standard of tomorrow. Of particular interest is the Kantronics KPC-9612, which features both 1200 and 9600 baud modems. Currently, the KPC-9612 is the only TNC available that can copy 1200 and 9600 baud packets *at the same time* (with a radio attached to each port).

With interest in 9600 baud growing, the FM radio manufacturers rushed to joined in, attaching 'data jacks' to the backs of their voice-based radios and making modifications to configure these models as '9600 ready.' They have bypassed mic and audio amplifier circuitry and have changed or modified IF filter components. Some of the resulting 'new' models are working well with both 'RUH' and the single-chip modem TNCs. Transmit-receive changeover times (TXD) remain long however, due to the slow switching speed of frequency synthesizers in these radios.

To aid in determining proper radio operation at 9600 baud, Kantronics has added a number of tuning features to its KPC-9612: transmit (TX) drive and receive (RX) equalization potentiometers, a signal quality line (output) to measure the effect of receiver equalization on the data, and a CALIBRATE command to aid in transmit and receive adjustments for data operation.

The first key to success in establishing a 9600 station is to set the audio drive of the modem such that deviation of your transmitter is 3 kHz or less (2.5 - 3 kHz is optimal). One way to accomplish this is to use another 9600 station nearby yours to digipeat your packets; adjust the drive level on your station until the other station reliably repeats your packets. If you or a friend has a second station, and it too has a KPC-9612, you can improve on this process; put both KPC-9612s in calibrate mode, yours in transmit and the other in receive, and then adjust your TX drive level until the receiving station sees a 'best' signal quality level.

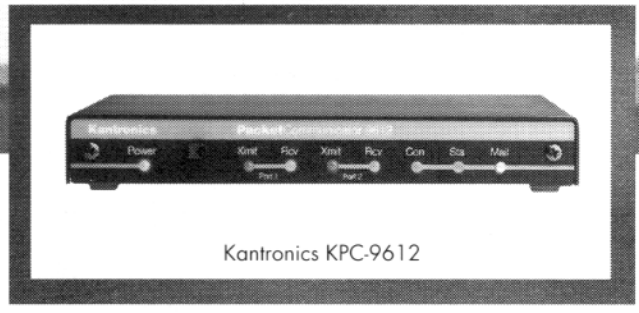
The second key to installing a 9600 station is to optimize your radio for best reception; you'll do this by adjusting the receive equalization potentiometer. Again, one way to do that is to digipeat packets through another local 9600 station and adjust the potentiometer until the signal quality line is a maximum during reception. If the other station also has a KPC-9612, then it is better to use the built-in calibrate command. Have the second station send you a constant calibrate signal and, while receiving, adjust the modem receive equalization potentiometer until the signal quality line is a maximum.

The signal quality line is a measure of how well the modem chip is receiving packets. The single-chip IC modem provides this signal line, and when it reaches a steady 3 volts, that's an indication that the modem is successfully receiving a 9600 baud signal. Some have said that one should rely on the 'eye pattern' of the incoming signal, and while this is theoretically true, you can't get inside the IC at the point where the signal is compensated for and the eye is perfect. In addition, you need a scope to look at an eye pattern, which most amateurs do not have. However, the signal quality line can be measured with a simple volt-ohm meter.

If you're not successful in digipeating packets via another station and also copying them upon reception, the problem may be with your station but it could be the digipeater as well. If the digipeater station works with 'most' 9600 stations in your neighborhood, then you could conclude, with some confidence, that your transceiver is not doing the job. You can't answer that definitively until your know for certain that your transmitter deviation is properly set and you have received 'good' signals from another station.

You will have success with the KPC-9612 or other 9600 modems with most of the current '9600-ready' radios. Those radios that are marginal will not stay that way long; each manufacturer will strive to correct the minor problems that might exist for their particular model. We also look for new models to come out that are 'data-based' rather than voice-based, or at least that will pay attention to data needs, such as a fast transmit-receive changeover.

Comparing the KPC-9612 to any other TNC of equal cost would be like comparing what you see here to a gentle breeze.



Kantronics KPC-9612

Until now, all TNCs in this price range could operate at only one baud rate at a time. Now, Kantronics has created a whirlwind with its newest TNC: the KPC-9612. This is a dual-port TNC, meaning it can send and receive messages at 9600 baud and 1200 baud *at the same time*. So what you get with the KPC-9612 is twice the power for the same price. You can also choose a 32K RAM or, for extra mailbox space, a 128K RAM. Either way, the KPC-9612 is portable and is only a wisp larger than the KPC-3, and it can run on a single 9-volt battery.

If you've been asking where you can find a small, inexpensive, dual-port TNC, look no further. The answer is blowin' in the wind.

Kantronics

For more information, contact your authorized Kantronics dealer or Kantronics at 1202 E. 23rd St., Lawrence, KS 66046-5006 913-842-7745 FAX 913-842-2021.

NEWS

The latest Digi-Doings from around the world

by Jules Freundlich, W2JGR

Note:
Jules Freundlich, W2JGR/HF0POL, from South Shetlands, will soon be QRV on RTTY.

I had hoped by this time to have been able to discuss the results of the 1994 Digital Journal Needed DXCC Countries Survey. Unfortunately, the announced cutoff date of 30 October did not allow sufficient time for an analysis to be included in this issue of the DJ. We should be able to publish the results of the survey in the January issue. Thanks to all who responded.

As noted below, under DX DOINGS, the International RTTY DX Association (IRDXA) has provided the means for South Shetlands to again appear on RTTY, after such a long absence. This one is in great demand. Making it available on RTTY is the latest accomplishment in a long string of successes by the IRDXA. This informal organization, with no constitution, no by-laws, no officers, no meetings, no nets, and no other rules, has as its sole purpose, the furtherance of RTTY operations from rare and semi- rare locations. It was organized in 1987. Since then, it has been instrumental in bringing up over two dozen wanted RTTY countries, including many first time new ones. IRDXA is funded solely by its contributors. Contributions in the form of financial help, as well as gifts of equipment, are welcome. Expenditures go for postage, freight, FAX, telephone, and other direct expenses. It does not fund DXpeditions. The air freight bill for shipping the HAL Telereader to Chile, for HF0POL, has just about left the treasury dry. Also, if you have an extra AIR-1, donate it, or lend it, to the IRDXA. Your help should be addressed to Don Simons, W6PQS, IRDXA, 1714 SW 23rd St., Loveland, CO 80537. Incidentally, anyone going on a DXpedition, using IRDXA gear, can, upon request, obtain a copy of the WF1B RTTY program, free of charge, from its author. In addition to handling most of the popular RTTY contests, for which it was originally designed, this software now has a "DXpedition Mode". Requests should be addressed to Ray Ortgiesen, WF1B, 35 Colvintown Road, Coventry, R.I. 02852.

It is always refreshing to find someone with a completely new approach that holds the promise of solving a nagging problem. With the emphasis in recent years on the development of high speed, error free, data systems, we keyboarders (read DXers, for some) have been facing increasing pressure to forgo the joys of the simple social aspects of our beloved RTTY mode. Most of us type at speeds well below the 60 words per minute that 45.5 Baudot supports. In addition, we do not need letter perfect copy in order to enjoy RTTY. As in CW, you can miss a fair amount of copy without losing information. So, why should we be forced to embrace data rates far beyond our ability to type. After all, we don't normally converse in bursts, or burps. Now, along comes a new idea that addresses the keyboarders needs, rather than those of high speed traffic handling mailboxes, or nets. I refer, of course to the article titled "Have We Reached the IKM Yet?" and subtitled "A Proposal for a New Mode" by Crawford MacKeand, WA3ZKZ on p. 25 of the October 1994 DJ. When I first glanced at it, I thought that it was written with tongue in cheek. Upon reflection, I realized that it was written in dead seriousness, and sets forth a premise that has been waiting to be stated. Crawford's light hearted method of expressing himself can be misleading! If you haven't read it, do it now. If you have read it, go back and look at it again. You may not agree will all aspects of his proposal, but you must admit he has taken the first step in defining the Ideal Keyboard Mode (IKM). More power to you, Crawford!

DX DOINGS

(Signals are 45.5 Baud RTTY unless noted.)

Note that the DX Doings below include activity as reported from world-wide 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 reports at 18 minutes past the hour on WWV. Good luck!

BELIZE, V3 - The team of AE0Q/V31RY, WN0B/V31OB, and AA0KL/V31CW have been joined by K0IYF/no-V3-call yet, for the radio/skin diving junket to Ambergris Caye from 28 December through 9 January. Look for V31RY to make a big splash in the ARRL RTTY Roundup contest. Outside of the contest, look for them by their personal callsigns. QSL V31RY and V31OB via WN0B, others via home calls.

CHAGOS IS., VQ9 - VQ9TN is one of the most active station from here. He appears on 20 meters, between 1400Z and 1500Z almost very day. QSL via K5TNP.

DJIBOUTI, J2 - J28JJ is again active on 20 meters mostly around 1330Z, but is also often found around 2045Z. QSL to Jean Jacques Chatelard, Box 1076, Republic of Djibouti.

ETHIOPIA, ET - The legendary Sid May, ET3SID, is often on 20 meters between 1830Z and 2130Z. For QSL route see DJ, October 1994, p. 10.

FALKLAND ISLANDS, VP8 - VP8CQJ is a new callsign from this popular place. It is assigned to G8FXT, who will be there until late February 1995. See also South Georgia Island below.

FRENCH POLYNESIA, FO - FO5EM is quite active early in the UTC day starting at about 0025Z on 20 meters. He also comes up around 1730Z. QSL to P.O. Box 6345, Faaa, Tahiti, French Polynesia.

GUERNSEY, GU - My request for the QSL route of GU0SUP in a recent column, brought a nice note from Phil, GU0SUP, himself. Phil can be QSL'd directly to P.O. Box 100, St. Peter Port, Guernsey Island, Via UK, GY1 3EL. Phil promises 100 percent answers. For those who don't mind the wait, the Buro always works. He uses an FT757GX, with about 50 watts into a G5RV. The RTTY TU is a BARTG Multyterm with G4BMK software. Phil notes that he usually gets bombarded with Europeans, but he is always looking for DX calls. He has successfully worked West Coast U.S.A., Canada, and the Caribbean, but still not South America. Phil's packet address is GU0SUP@GB7GUR.GB7LWB.#27.GBR.EU. He is on RTTY mostly on the weekends, and a few evenings a week.

GUINEA, 3X - Didier completed his operation at 3X0DEX at the beginning of November, and has moved to the Ivory Coast. He was to be using a new broad band antenna, and a computer to replace his Tono 5000E terminal. As of this writing his TU call sign is not known. In the meantime, there is consternation, among many, that the 3X0DEX operation has now been disapproved by the ARRL DXCC desk, for lack of documentation.

INDONESIA - YB - If you are looking for a Pactor contact, listen for YB5QZ on 20 meters around 1330Z on 14073 khz. QSL to Anton Iriawan, P.O. Box 55, Pekanbaru 28001, Indonesia.

IVORY COAST, TU - See GUINEA, 3X, above.

JAN MAYEN, JX - JX7DFA is active on 20 meters. He has been worked around 1000Z, as well as 1700Z. QSL to Per-Einar Dahlen, 8099 Jan Mayen, Norway.

MACEDONIA, Z3 - We received a nice note from Venco, Z32JA, Secretary of the Macedonia Contest Group, who furnished information on the active RTTY hams in Stip. They are Z32XX (QRP with a Spectrum computer), Z37GX (Spectrum computer and TS-430S), Z32JA (C- 64, PK-64 and TS-930S), Z37GBC or Z30M-contest call (PC-286, PK-232MBX and IC-745). They are all members of the Z30M contest club station "Nikola Tesla". Z30M made over 1000 QSO's in the CQ/DJ

WW RTTY contest, 60 percent of which were with U. S. stations. In case you missed the QSL route, you can QSL Z30M to RC "Nikola Tesla", Box 71, 92000 Stip,. Macedonia. That address can also be used to QSL Z30IL, Z30RM, Z39HAM, Z37GBC, and 4N5M. Venco would like to see more hams in Macedonia on RTTY but equipment shortages preclude that at this time. Anyone wishing to donate a PK-232, or a PK-64, can do so by sending it to the attention of Stojcev Venco, Box 55, 92000 Stip, Macedonia.

MADEIRA ISLAND, CT3 - CT3AR is now most likely to be found calling CQ G-TOR in Amtor FEC near 14081 khz around 1600Z plus or minus an hour. If no takers, he will switch to Pactor. QSL either direct or via the Bureau.

MOUNT ATHOS, SV/A - The tempo of Monk Apollo's activity appears to be picking up. Most of his RTTY activity seems to be between 1700Z and 1800Z on 20 meters, although he has been reported as early as 1010Z. As he works simplex, he runs into the usual dog pile on his frequency. If you work him, suggest that he operate split. For direct QSL route see DJ, October 1994, p. 11.

NAMIBIA, V5 - In addition to the Pactor operation, of Gerd, V51GB, previously reported here, we now have V51CM operating Pactor around 14073 khz at about 1730Z. QSL route is needed. (Is this the same station as V50CM, which was reported here several months ago?)

NEPAL, 9N - We recently mentioned our hopes that Kyoko, 9N1KY would show up on RTTY soon. Since that time Kyoko told me, on SSB, that she would not be operating RTTY during her stay in Nepal. She did remind me, however, that Satish, 9N1AA is very active on RTTY. For those still needing 9N, check your propagation path/time to this mountain kingdom. You can try making a schedule with 9N1AA by dropping him a note at JA5TX.JPN.AS. QSL Satish to P.O. Box 4292, Kathmandu, Nepal. Do not send currency. It may not reach its destination. IRC's are preferred.

NORFOLK ISLAND, VK9 - Jim, VK9NS, who recently has tended to stay away from RTTY on DXpeditions, " because of the slow QSO rate", will occasionally be found on 15 or 20 meters around 1130Z. As expected, the pile up will cause him to QSX up a few khz. QSL to P. O. Box 90, Norfolk Island, Australia 2899.

OMAN, A4 - Look for A45XC on 20 meters around 1400Z. QSL route is needed. My previously stated QSL route for A45ZX misspelled Max's last name. Here is the corrected route: Max B. Barawid Jr. P.O. Box 123, Muscat, Sultanate of Oman. Sorry, Max!

PITCAIRN ISLAND, VR6 - The versatile Brian, VR6BX continues to give contacts with this country on RTTY, in addition to his activities on Pactor and SSB. You might find him on 20 meters either around 0030Z, or earlier, around 1830Z. To the dismay of many, Brian does not operate CW. QSL to Brian Young, P.O. Box 21, Pitcairn Island, South Pacific Ocean, via New Zealand.

QATAR, A7 - Chris, A71CW, in addition to being active on 20 meters around 1700Z, may be found on 15 meters, propagation permitting, as early as 1140Z. For QSL route see DX NEWS, DJ, November 1994.

SAN MARINO, T7 - If you are looking for a RTTY contact on one of the WARC bands, listen for T77T on 18105.5 khz in the early UTC day, about 0800Z. QSL to Pier Paolo Taddei, Via A. Lincoln 64, RSM-47031, Bergo Maggiore, Republic of San Marino, via Italy.

SOUTH GEORGIA IS., VP8 - The time for this DXpedition is drawing near. The team consisting of Al, WA3YVN, Jan, WA4VQD, and Vince, K5VT, will be at the Falklands from 23-28 December. They have promised some limited operation from there, prior to embarking for the trip on the Abel-J. Scheduled operation on Grytviken is 4-19 January. If you have not sent your contribution yet, send it to SGI DXPEDITIONS, P.O. Box 2235, Melbourne, FL 32902. John Parrot, W4FRU will handle the QSLs.

SOUTH SHETLAND IS., VP8 - We will soon see this one back on RTTY. Since we mentioned it in last month's DX NEWS, the International RTTY DX Association (IRDXA) has come through. IRDXA has donated a HAL Telereader RTTY Terminal for use at HF0POL, the Polish Antarctic Expedition Base on King George Island in the South Shetland Group. In mid-October, the equipment was shipped via air to the supply station in Puenta Arenas, Chile. There, it was to meet up with the new HF0POL operator, Andy Grotha, SP2GOW, for the supply ship voyage to the base on King George Island. Wald, SP4KM organized the RTTY effort and trained Andy on the keys. Special thanks are due to I5FLN, W6OTC, and W6OAT, who facilitated the initial communications between Poland and the U.S.A. when the possibility of this operation first became known. Be patient for this new one, as it may take several months before Andy gets to the base, and appears on RTTY. Keep an eye for updates in the weekly on-the-air VK2SG RTTY DX Notes.

SUDAN, ST - Lou, ST2AA has been very busy handing out Pactor contacts on 14069 khz almost every day between 0600 and 0700Z. He sometimes come on between 1800 and 1900Z. For QSL route see DJ, Oct. 1994, p. 11. If you worked him at the demonstration station, ST0K, between October 1993 and January 1994, QSL those contacts to WB2RAJ.

SWAZILAND, 3DA - Since Jon, 3DA0CA, has been back on RTTY, he has found that favoring 15 meters allows his 50 watts to be more effective than 20 meters. He usually appears between 1300Z and 1700z. Jon also is looking for Washington state on CW, for WAS. If you are in WA, and work him on RTTY, I am sure he would be pleased to have you request a QSY to CW! For QSL route see DJ, Oct. 1994, p. 11.

THAILAND, HS - Reiner, HS0/DL2VK is now operating from Nakhon Phanom in northeast Thailand. Look for him on Amtor, Pactor, Packet, CW or SSB. He will be there until late spring 1995.

ZIMBABWE, Z2 - Ken, Z21HD, can often be found on 20 meters between 1800Z and 2300Z. QSL to P.O. Box 257, Belvedere, Harare, Zimbabwe.

GOING ON A DXPEDITION?

Gary, K9GS, is involved in a project that will have as its primary goal providing equipment assistance for organized groups and individuals participating in DXpeditions. This equipment includes HF radios, amplifiers, antennas, satellite and digital gear, and other expedition related equipment. Those wishing assistance along these lines should contact Gary as follows: Postal mail at his CBA,Packet: K9GS@WA9KEC.WI.USA.NOAM, or internet e-mail: garyk9gs@solaria.sol.net. The destination and other relavent information should be described.

MACEDONIA DX AWARD

The Macedonia DX Award is issued by the Macedonian DX Group (MDXG) to amateur stations and SWL's as follows:

1. To work or hear:
-DX 5 members of MDXG
-EU 10 " " "
-Z3 15 " " "
2. Valid contacts after 1 January 1990, any band, any mode.
3. Send only Certified List of QSOs signed by two active hams.
4. Send Certified List together with 5 IRC's or $3.00 (for postage) to: MDXG Awards Manager, Box 55, 92000 Stip, Republic of Macedonia.

HAVE DX NEWS?

Leave a message in the W5KSI Amtor mailbox (1), find me on RTTY, or via any of the following: Packet: W2JGR @ WB0GDB.#STP.MN.USA.NA Amtor: WJGR on 14070 khz. Telephone: (612) 377 7269 FAX: (612) 374 8161 (mark for my attention). or use the U. S. Postal Service.

THANKS - Thanks to the following for all your information: 3X0DEX, 9N1KY, AI9W, DL2VK, I5FLN, KE6XJ, K9GS, W5KSI, WF1B, W2TKU, WB2CJL, W6OAT, W6OTC, W6PQS, Z32JA, ZS5S and DXNL.

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

73 de Jules W2JGR

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

CONTESTING

& Coming Events

by Rich Lawton, N6GG

RTTY Contests - Coming Events

Date:	Contest:
DEC 10-11	TARA RTTY Sprint (USA)
JAN 7-8 '95	ARRL Roundup (USA)
FEB 4-5	ADRS WW RTTY WPX (USA) <<— new!
FEB 11-12	EA WW RTTY (Spanish)

— — REMINDERS: — —

CQ WW RTTY/Digital Contest (September '94) log entries must be postmarked no later than December 1, 1994. Extension given if requested.
Mail logs to:

Roy Gould, KT1N
CQ WW RTTY/Digital DX CONTEST DIRECTOR
BOX DX
STOW, MA 01775

JARTS WW RTTY Contest (October '94) log entries must be received by December 31, 1994.
Mail logs to:

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

WAE WW RTTY Contest (November '94) log entries must be received by December 15, 1994.
Mail logs to:

WAEDC CONTEST COMMITTEE
PO BOX 1328
D-8950 KAUFBEUREN
FEDERAL REPUBLIC OF GERMANY

— — COMING UP: — —

TARA RTTY SPRINT

December 10-11 1994
Sponsored by Troy Amateur Radio Association, New York

CONTEST PERIOD: Second full weekend in December. Starts at 2100Z Saturday and ends at 0100Z Sunday. (4 hours)

MODES: RTTY ONLY

BANDS: 80, 40, 20, 15, and 10M

CLASSES: A) Single op, all band;
1) Less than 150W output
2) More than 150W output
B) Multi-op, single transmitter

EXCHANGE: USA stations: send RST + state
Canadians: send RST + province
All others: send RST + QSO nr.

MULTIPLIERS: each USA state, DXCC country, and each Canadian province, + VE8 & VY1.

NOTES:

- Multipliers count only once, not once per band.
- KH6 & KL7 count as DXCC countries only.
- USA & Canada do NOT count as DXCC countries.

QSO POINTS: Count 1 point per QSO.

FINAL SCORE: Total of QSO points x total of mults.

DEADLINE: Logs must be received by January 17, 1995.
Mail to:

Bill Eddy, NY2U
c/o TARA
2204 22nd Street
Troy NY 12180

COMMENTS: Strictly a 4-hour RTTY speed contest. All rules, scoring, bands, etc., are the same as ARRL RTTY Roundup. There are NO band multipliers. It's a good workout for quick band changing and trying different calling techniques. Since the rules are the same as the 'Roundup, you can use the same logging software, too. It should be a good tune-up for the 'Roundup 4 weeks later.

ARRL RTTY ROUNDUP CONTEST

January 7-8, 1995
Sponsored by ARRL

CONTEST PERIOD: Starts at 1800 UTC Saturday and ends at 2400 UTC Sunday. Operate no more than 24 hours of this 30 hour period. Two rest periods (for a combined total of six hours) must be taken in two single blocks of time, clearly marked in the log.

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

MODES: Baudot (RTTY), ASCII, AMTOR, or Packet (attended operation only).

OPERATOR CLASSES:

a) Single op, unassisted, all bands:
1) less than 150 watts output.
2) more than 150 watts output.
b) Multi op, single transmitter. Once station has begun operation on a given band, it must remain on that band for at least 10 minutes.

EXCHANGE: U.S. stations: RST and state. Canadian: RST and province. All others: RST and serial number, starting with 001. Both stations must receive and acknowledge complete exchange for QSO to count. Neither cross-band nor cross-mode QSOs are permitted. Packet QSOs through digipeaters or gateways are not permitted.

QSO POINTS: Count one point for each completed QSO (anyone can work anyone). A station may be worked once per band for QSO credit, but not for additional multipliers.

MULTIPLIERS: Count only once (not once per band), each U.S. state (except KH6 and KL7), each VE province (plus VE8 and VY1) and each DXCC country. KH6 and KL7 count only as separate DXCC countries. The U.S. and Canada do not count as DXCC countries.

Canadian Multipliers:

Prefix....Province	Prefix....Province
VO1/VO2....NFLD/LAB	VE4.....MB
VE1.....NB	VE5.....SK
VE1.....NS	VE6.....AB
VE1/VY2....PEI	VE7.....BC
VE2.....PQ	VE8.....NWT
VE3.....ON	VY1.....YUKON

FINAL SCORE: Total number of QSOs times total multipliers.

AWARDS: Certificates will be awarded to: Top scoring low power and high power single operators and multi-op scorers in each ARRL/Canadian Section; Top low power and high power single operators and multi-op scorers in each DXCC country (other than W/VE); each Novice and Technician entrant; each entrant making at least 50 QSOs.

LOGS and SUMMARY: Logs should contain the suggested standard format: BAND, MODE, DATE/TIME, ON/OFF TIMES, CALLSIGN, EXCHANGE SENT/RECEIVED, MULTIPLIERS (marked the first time worked). Entries with more than 200 QSOs must submit duplicate check sheets (an alphabetical listing of stations worked). A Summary Sheet must show: claimed score tally, class of operation, your call, name and address. Multi-ops stations please include names and callsigns of all operators.

DEADLINE: Entries must be postmarked no later than 30 days after the end of the contest (February 8, 1995). Mail entry to:

ARRL RTTY ROUNDUP
225 Main St.
Newington, CT 06111

Recommended Operating Frequencies (MHz):

3.580 to 3.620	14.070 to 14.095
7.040 — RTTY DX	21.070 to 21.090
7.080 to 7.100	28.070 to 28.150

COMMENTS: The Roundup is the most popular domestic contest. It's much like the SS contests on CW/SSB. To make a high score one must concentrate on high QSO rates and lots of CQing. There are no band multipliers, meaning that once you work Utah on 15M, you will not get another multiplier for working Utah on any other band. If maintaining a high rate is just not your thing, you can set yourself another goal: see if you can work all states or provinces in the 24 hour period. In past sessions, all states have had RTTY stations on the air. This goal is especially exciting when using contesting software, such as the the WF1B RTTY contest logging software. It automatically keeps track of states/provinces worked and always shows you on the receiving screen whether you need that particular station for a new multiplier.

The Roundup is one of the few RTTY contests that has a low power category. This means that there should be more activity, primarily on the high bands. (Low power stations have a harder time cutting through the D layer absorption and QRN (static) on the low bands.) Those operating low power RTTY should pay close attention to picking out a frequency to start CQing. On RTTY it is difficult to find a clear spot on a crowded band, and when running low power, you just get clobbered easier when you're a bit weaker. You can't always assume that everyone has sharp filters in their radios. And on the high bands you can't always hear stations within the skip distance of your QTH. Sending a "QRL? BK" is a good way to interrogate whether the frequency is in use, just as in CW and SSB. It really helps when skip distances are long. And it shouldn't upset anyone - unless the frequency IS in use, and the time between the "QRL?" and the CQ is less than one second!

****

-+- How Old Are We? -+-

The JARTS WW RTTY Contest in October has always been one of my favorites. A big reason is the required information exchange between stations. It's so simple, and so friendly. (RST + age)

As I looked through last year's contest logs, I began to wonder just how old the average contester was. It turned out that when I add all the ages of my QSO's on 20M and divided by their total of 196 QSOs, the average age was 47.38 years. I put this in the December '93 issue of the RTTY Journal, Contesting column.

So, I did it again this year. I had 224 QSOs on 20M. The average age was 50.27 years. The five oldest were: 82, 79, 79, 76, and 76. The five youngest were: 17, 19, 25, 30, and 32. There is no trendy average. We are from ALL ages.

While this is not a truly scientific survey, it does show a wide spread of age. We're not necessarily old or young. There seems to be no specific trends, such as youth vs. age. In RTTY contesting it all evens out. I noted:

- the average contest operator appears to be 3 years older than last year.
- the spread is less on the 5 oldest than the 5 youngest.
- I hope I am as active as that 82-year-old op when I get to be 82!

In summary, one can compare contesting to fishing. Both are sports that become fondly loved through experience. Youths become bitten through the thrills of landing a rare one, or catching more than their rival pals. But age is no deterrent in this game. In fact, maturing contesters, like fishermen, have a distinct advantage. They have learned, with patience and practice, just how to do it. Their true advantage is the wisdom of knowing precisely where to fish, of timing the cast, and of finessing the lure.

To succeed in RTTY/Digital contesting requires some different skills compared to CW/SSB scuffles. Newcommers into the digital world have a steeper learning curve than ordinary CW/SSBers. But most have a couple of advantages; keyboard expertise and a determination to master the digitals.

Young-un's ain't got no larnin' in this h'yar digi-contesting stuff. Most wannabe contesters soon find out that brute force can't replace skillful operating. And skillful RTTY operating is a learned craft, mastered only on RTTY.

Merry Christmas and Happy Holidays to all!

((73)) See you in the pileups, Rich, N6GG

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

CONTESTS RESULTS

EA & A.N.A.R.T.S.

EA RTTY CONTEST 1994 RESULTS

(CONCURSO DE SU MEJESTAD EL REY/RTTY)

NON EA STATIONS

CLASS A: SINGLE OPERATOR, MULTIBAND.

CALL	POINTS	MULT.	SCORE
EZ5AA	2204	195	429780
HH2PK	1105	128	141440
4X6UO	541	94	50854
OH2LU	399	122	48678
IV3FSG	333	124	41292
G0ARF	315	99	31185
SP4CHY	265	96	25440
GW4KHQ	286	85	24310
IK1HXN	231	90	20790
OH2GI	240	80	19200
PV2A	336	52	17472
OK1AJN	207	76	15732
S50C	187	83	15521
I2HWI	243	56	13608
KL7TF/W4	209	65	13585
I0VHL	204	66	13464
G5LP	236	57	13452
LA7AJ	178	71	12638
DL9GGA	187	62	11594
OM3RJB	180	61	10980
AB5KD	191	56	10696
T91ENS	179	58	10382
YL3FW	159	46	7314
JA3DLE/I	146	44	6424
JA1ZLO	146	39	5694
UN5PR	164	34	5576
RW0LZ	125	43	5375
S59F	102	52	5304
SP9LKS	122	43	5246
IK2HKT	169	31	5239
SM7BHM	119	43	5117
CP1FF	122	38	4636
SM7ATL	104	43	4472
UA6LP	99	45	4455
W4GIV	99	41	4059
ZL2AMI	132	29	3828
SP7FQI	119	28	3332
LA3YU	75	41	3075
SP3EJJ	74	39	2886
VE7SAY	117	22	2574
HP1AC	142	17	2414
IK2WIV	73	31	2263
SP3PLD	70	32	2240
I1QBI	90	23	2070
IK0PHW	79	24	1896
IK3VZO	79	23	1817
IK5VLS	80	19	1520
OK1AGA	53	26	1378
W8PBX	55	20	1100
WA8FLF	43	25	1075
DL8UED	38	25	950
IK8HCM/qrp	52	18	936
SM3BJV	63	15	945
SM3EZO	51	15	765
VE6ZX	65	11	715
IK2PZF	32	22	704
SP2EIW	34	19	646
KB4IJ	29	22	638
OZ5MJ	30	21	630
DL0HFC	31	20	620
LA6VIA	51	12	612
DK5KJ	21	18	378
JA1SJV	19	10	190
IK5QPS	17	5	85
7M2JTT	3	4	12

CLASS B: SINGLE OPERATOR SINGLE BAND

15 meters

CT1AUR	175	36	6300
N2CQ	72	27	1944
YL2KF	20	12	240
OH20M	18	8	144
JQ1NGT	23	7	161

20 Meters

LZ1MC	285	64	18240
S51DX	223	67	14941
S53MJ	187	61	11407
DL9MBZ	65	42	2730
ON4CZ	66	35	2310
IK2UVR	54	26	1404
ER3ED	55	20	1100
IK6QRH	52	20	1040
IK5MEQ	51	18	918
CX3ABE	31	9	279
LY2CG	18	8	144

40 Meters

UR0HQ	378	50	18900
SP7IIT	285	45	12825
OK2BXW	132	23	3036
G0LII	120	17	2040
I3BIP	117	13	1521
LZ1DP	48	10	480

80 Meters

LY1BZB	284	42	11928
S57A	210	36	7560
SM3BJV	63	15	945

CLASS C: MULTI-OPERATOR / MULTI-BAND

IK6WDY	589	147	86583
OM3RJB	180	61	10980
OK2KDS	129	39	5031
OM3KXM	85	38	3230

Submitted by Antonio Alcolado, EA1MV
EA RTTY Contest Manager

LAST MINUTE BULLETIN

The **Foundation for Amateur Int'l Radio Service** announces their **FAIRS DIGITAL WW CONTEST**

December 10 - 11, 1994

Modes: RTTY, AMTOR, PACTOR • **Bands:** 80, 40, 20, 15, 10

Categories: (A) S/O, A/B; (B) S/O, S/B; (C) M/O, A/B

Contest Call: "CQ FAIRS TEST" / **Excg:** RST + CQ Zone Numbers

Multipliers: Count each DXCC country and each FAIRS member on each band (band mult.) Note: CQ Zones do not count as mult.

QSO Points: Count 3 pts on your Cont. / 5 pts not on your Cont.

Final Score: Total QSO points x total multipliers.

LOGS: Use separate log sheets for each band. Logs must show Band, Date and Time in UTC, Callsign, Exchange sent & received, Country, Multiplier and points claimed. Entries with more than 100 QSOs must submit duplicate check sheets. Multiple operator station should include names and callsigns of operators.

Mail Logs to: FAIRS DIGITAL WW CONTEST MANAGER,
Yuri Katyutih, UA4LCQ
P.O. Box 1200, Ulyanovsk, 432035 RUSSIA

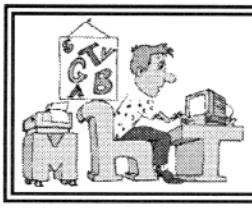
A. N. A. R. T. S. WORLD WIDE RTTY CONTEST RESULTS - 1994

	CALLSIGN	TOTAL POINTS	QSOs	QSO Pts.	MULTIS	CONTS.	VK Bonus
CLASSIFICATION A:		**SINGLE OPERATOR.**					
1.	VK2KM *	3. 765,325	212	7927	95	5	n/a
2.	SV2BFN	1. 987. 530	225	3415	97	6	1000
3.	JR5JAQ	1. 802. 920	171	3754	80	6	1000
4.	UA4LCQ	1. 009,704	188	1932	87	6	1200
5.	VETSAY	734. 888	173	2183	56	6	1400
6.	IV3FSG	420. 500	107	1401	50	6	200
7.	GW4KHQ	313. 790	110	885	59	6	500
8.	W2KHQ	285. 302	87	1011	47	6	200
9.	JH7QXJ	276. 620	63	1344	41	5	1100
10.	ZL2JON	190. 920	54	1561	30	4	3600
11.	ZA1AJ	188. 160	153	960	49	4	-
12.	4X6UO	187. 840	106	894	42	5	100
13.	ZL1SY	158. 080	56	1971	20	4	400
14.	CP1FF	145. 040	49	1036	28	5	-
15.	OM3ZJW	119,000	73	725	41	4	100
16.	YL2KF	113. 920	68	860	44	3	400
17.	VK2CTD	108. 368	46	1042	26	4	n/a
18.	SP3EJJ	102. 050	50	550	37	5	300
19.	VK2BQS	97. 824	39	1019	24	4	n/a
20.	DJ2YE	68. 150	49	470	29	5	100
21.	VK6GOM	64. 892	38	901	24	3	n/a
22.	SP9LKS	59,900	38	398	30	5	200
23.	SP6CYV	56. 520	41	364	31	5	100
24.	W9FFQ	52,268	53	464	28	4	300
25.	JM1NKT	39. 152	25	429	22	4	1400
26.	JA3BSH	38,000	25	450	21	4	200
26.	W6/G0AZT	38. 000	52	600	21	3	200
28.	VE6JAV	35,260	32	368	19	5	300
29.	VP9MZ	27.612	38	362	19	4	100
30.	W2JGR/O	21,530	40	395	18	3	200
31.	YU7AE	16. 500	43	220	25	3	-
32.	DL7VOG	10. 850	33	217	25	2	-
33.	ABSKD	10.620	31	177	20	3	-
34.	VK8BE	7. 829	14	327	9	3	n/a
35.	N2CQ	6. 720	42	224	15	2	-
36.	VK2SG	6. 447	11	307	7	3	n/a
37.	DF5BX	6. 240	23	156	20	2	-
38.	YO3FRI	2,596	17	118	11	2	-
39.	OH6UP	1. 818	13	101	9	2	-
40.	N2ALE/6	252	3	42	3	2	-
41.	JJ8DEN/I	60	3	20	3	1	-
Check Logs:	SM6APB	WA0ACI					
CLASSIFICATION B:		**MULTI-OPERATOR.**					
1.	VE3FJB *	441. 965	168	1797	49	5	1700
2.	LY1BZB	57. 728	78	352	41	4	-
CLASSIFICATION C:		**SHORT WAVE LISTENERS.**					
1.	ONL383 *	260,790	136	735	59	6	600
2.	ONL4335	118,550	66	515	46	5	100
3.	ONL3997	47.244	62	381	32	4	-
4.	DE0GMH	8.304	34	173	24	2	-

Classification World Plaque Winners shown (*)

Overall the decline in the sunspot cycle is reflected in the scores, very few of the entries improved on last years efforts. Those who did appeared to have worked longer hours (and maybe harder, hi). It would seem that there will not be any significant scoring improvement until the 1977 contest although maybe the "dead low" might be shorter this cycle. It was good to see that there are many old friends who still participate despite the difficulties, and in particular I draw the attention of all to the presence of Syd,

(cont'd on page 27)



The Last Word

from the Publisher

Jim Mortensen, N2HOS

Who else but the ADRS could do it? This Society pledged in the beginning to promote the "wisest" use of the bands . . . and meant it then and now. Read about the ADRS sponsored move of BBS activity to the top of the 20 meter digital segment. Then think about what it can mean to the space between 14065 and 14090, to the elbow-room for keyboarders. It won't happen overnight. Not all BBS operators can or will move. It can't happen without an incident or two, but if you give it your full support, the 20 meter pattern will gel as an intelligent mixture, then migrate to the other appropriate bands. We will all benefit and our patience will be rewarded.

But wait! Some ask if this is the "wisest" move or merely an attempt to downgrade or somehow diminish the role of the BBS sysops, to mistreat one class of user to benefit another; or is it a bandplan is sheep's clothing? To the cynical mind it may be all of the above and even more! But to those who conceived the plan it was simply a step delivering the greatest good to the greatest number of users. We have but a handful of BBS sysops operating on 20 meters and thousands of keyboarders. If, thought they, we could utilize an obviously underused portion of the band, increase BBS-to-BBS throughput up there because of lower levels of activity, and reduce the clutter in the primary keyboard frequencies as well—who is the loser? Nobody in a win-win situation like this. If, and only if those of us who remain on 14065-90 to work the keyboarders of the world learn how to tune our rigs properly (until we know for certain we are transmitting the right signal quality), only if we learn to listen before we transmit and only if we remember the word "courtesy." It is not too much to ask.

Incidentally, Nick N4SS advised me moments ago that he and N2JAW have already moved their NTS network to 14114. This is an active net and they spend their time moving public service traffic. The BBS sysops who are now in the midst of making up new scanning schedules should keep this in mind and leave this QRG to the NTS group.

In any event, this is an important step and you have good reason to take pride in the organization that brought it about (and have another very good reason why you should sit down right now and extend your membership for another three years. Do it today!).

This is the eleventh issue of the Digital Journal published in 1994 and the December volume marks the end of the first year of ADRS ownership of this magazine. It has been an eventful, stressful, exciting, rewarding year for those of us who contribute our time and talent to this enterprise. And there are many who deserve special recognition, members who have responded instantly to even the most unreasonable request for help. You may find many of them listed on page 3, under the heading of Journal staff. Warm thanks to each and every one of them. Keep in mind that, while Dale has been paid a modest fee for his production and mailing chores, everyone else is an unpaid volunteer. The contributed time, material, phone calls and faxes, postage and travel, in combination comprise an asset far beyond our Society's means. Without this group, and those other unnamed contributors, the Digital Journal would be nothing but another 32 page rehash of the bulletins floating around the system. With them on hand we print a vibrant journal full of original work, interesting ideas and new technology. When you see one of these folks wearing the new Digital Journal blue and white badges, please walk up, shake his or her hand and say "thanks, for a great job." They earned it!

Eras fade away and, all to frequently, retire without notice. But not this one. You see, the December Digital Journal is the last to be produced under the stewardship of Dale Sinner. An end of an era for sure, for this is the same guy who bought the Journal, then brought it back to life, redesigned it, grew it, developed a great staff as well as a loyal batch of readers around the world. What a performance! And in the process he created a vehicle tailor-made for the ADRS, even though he had no idea that would be the ultimate home of the Digital Journal until he and I met in California about 15 months ago. A full year has gone by since the change in ownership, a year in which Dale continued to contribute to the Digital Journal and the ADRS. Now it's time for a change, time for Dale to ease up a bit from the demands placed on him by a monthly publication schedule.

But if you think he is about to go loaf on the beaches of Mexico, you are dead wrong. Dale, you see, has agreed to take on a vital new role for ADRS—the development and management of our hamfest activities. This is a critical task for it is the stated goal of the ADRS to "present outstanding technical forums" at several of the major venues each year. Dale's job will involve every aspect of our presence at sites like Dayton and Dallas, among others. The forums, the booths and volunteers to man them, the promotional material, the dinners—all fall under his wing. There is no one I know of who can handle the task more effectively. He also becomes Editor Emeritus of the Digital Journal and will contribute a column whenever the needs of his new position require it. Thanks, Dale for helping all of us absorb the Digital Journal's background and culture.

Meanwhile, the production of the Digital Journal must go forward. And it will in a new location and under new supervision. We are fortunate to have Tom WA8DXD as general manager in Goldenrod. He is not only a professional in every phase of graphics and publication, he has also been actively involved in putting our magazine together for some months now. This issue, for example, is a Florida production except for printing and mailing. In January, all production and mailing makes the transcontinental leap for good. While we expect no problems, a new printer and new post office might make a dent in our normal schedule, so please bear with us. This move puts all of our operations in one office. Tom continues to report to me.

Packet Power, a packet newsletter founded and produced by Dave Wolf WO5H, becomes a part of the Digital Journal effective immediately. As noted elsewhere, the ADRS board approved the combination at the Charlotte meeting. Dave is a packet power for sure. He runs a packet BBS, will chair the ARRL/TAPR Digital Conference in Dallas in 1995, works with TAPR as a consultant, is an officer of the Texas Packet group as well as turning out the newsletter. After many years with Tandy, Dave is now active as a consultant. Beginning in January, Dave will start an extended series of "Packet Power" articles starting, appropriately enough, with packet basics. There are few people around who have his background and knowledge, so don't miss one of them. We welcome the Packet Power readers to the pages of the Digital Journal and into full-fledged membership in the ADRS.

Important. Beginning in February and then running every other month, Dave will be hosting a Packet Q&A column. There are no holds barred, so please list your VHF packet concerns, questions, comments, complaints, observations and suggestions. Send them to Dave directly (Packet Power PO Box 189 Burleson, TX 76097-0189) or to the Digital Journal in Goldenrod. Hot subjects right now seem to be the new "H-routing" schemes and the potential liability of the

(cont'd on page 26)

DIGITAL DIGEST

News, Views, Tips & Reviews

from the editing desk of Tom Arvo, WA8DXD

OPINION

Crowded 20 meter Band . . .

Just finished your article on 20 meter digital over crowding. This problem certainly isn't new and I am not sure there is a real solution. There are so many new digital stations coming on the air and all want to get on 20 meters. My personal solution has been to use other bands if I can get a contact or just other modes if I can't get one.

I have said for a long time Packet doesn't belong on HF. The only way you can remove it from there though, is by law. Clover or G-Tor could do the forwarding chores. That would free up a lot of spectrum for other digital modes.

Why do we need so many digital modes. Seems like PacTor, for keyboard to keyboard and BBS storing, plus Clover or G-tor for forwarding and passing of large files would do the trick.

Trouble is, short of passing international laws, it would be difficult to limit what modes could be used. On top of that, limiting modes discourages experimentation, which led to the development of these modes in the first place.

Your plan to expand the freqs available for use of the digital modes will help. Still, when the band is really open, like it rarely is right now, even the 30 or so Khz you propose will be but a drop in the bucket compared to the demand. Unfortunately, DXing and contesting teaches today's ham that it is all right to QRM your neighbor. Common courtesy, as you suggest, could go a long way towards elevating the mess.

Well, I don't have a solution, but I certainly do agree we had better find one soon if we hope to remain effective digital ops. Certainly we need to advertise the fact that digital works on all bands, not just 20 meters.

73, Doug Alspaugh

Bandplan Perspectives . . .

I am writing in regards to your article in the Oct *DJ* about the use of the 14080 to 14095 area. This is from the perspective of a DXer as most of my HF operating time is spent looking for, or working digital mode DX, although I also enjoy an occasional ragchew. I agree that packet has no place on HF. Especially below 14095, and around the 14.100 beacon frequency, which gets clobbered a lot. I have no objection to TOR modes up to 085 so long as it is kept to keyboard to keyboard. I would like to see more DX use the TOR modes for casual (non-contest) QSO's which may help. I realize that TOR modes usually have a higher equipment cost and perhaps this is why most DX is on RTTY. I don't know. Guess that's my 2 cents worth.

73, Dave KD6TO

##########

Thanks to Jules and his opening statements in the November DX column, my attention was drawn to your proposal in the October issue, page 19. You describe 14080-14095 as "unused space" and propose that Pactor move up to 14085 kHz while simultaneously recognizing that Packet incursions are "often well into the 085 area."

Pactor is already to be found in the segment, so is AMTOR. There is also an RTTY net to be seen daily on 14082, picture painters on 14087, strong daily packet on 14093 and an FEC net about 14094.*

Reserved for DX and contests?

So where are the DXers? They are listening, Jim. The segment is in use daily by DX ops around the world looking for that rare one to show up. DXers like to have nice, open holes uncluttered for the DX to shine through, particularly during these days of poor propagation. When tuning across the 14080-14095 segment, try to visualize the many rigs tuned to that range.

It is not "unused space." In encouraging Pactor to move up, you are acting to further plug up some of those few open holes.

Are you band-planning? I thought the ADRS voted down a band plan, relying on the "old gentlemen's agreement" to regulate usage. But you say that has failed.

I hope you consider future proposals in greater depth.

*add strong packet 14090

73, Carl K6WZ

HOW ABOUT DX-ers?

--ADRS WPX UPDATE--

Season's greetings to all from snowy Spokane in Eastern Washington state. It's been a long year and Ron AB5KD and I have spent a lot of time in putting together the upcoming ADRS WPX. That should satisfy most of the hard core contest folks, but what about the DX-ers?

Consulting with Betsy WV7Y the new "expert" and because of some pushing from the Publisher N2HOS (who must have some special juice to keep his ideas flowing—probably scotch), we came up with a great idea for 1995.

It's the DX-er's dream. WORK 95 COUNTRIES IN 1995! Send in the paper log or an electronic one and get a nice certificate. This DX event is open to all digital modes and endorsements are available for Clover, AMTOR, Pactor, G-TOR, RTTY, ASCII and even Packet.

I plan on concentration on Pactor. I have the gear hooked up and I am raring to go. The first person to submit a winning log will get some kind of special award, as will the first to submit a two-mode log, three-mode, etc. Look for the listings in the Digital Journal as they come in during the year. The contest starts at 0001Z on January 1, 1995 and continues throughout the year.

Logs come to me in Spokane:

Jay W. Townsend WS71
PO Box 644
Spokane, WA 99210-0644
Internet: jayt@comtch.iea.com

The last line is my Internet address and its good for electronic logs. It should be reachable for MCI, CompuServe and AOL.

This ought to give DX-ers something to do for 1995 and will keep you active even at the bottom of the sunspot cycle. 80 and 40 meters are really booming now so look for some activity on those bands. The rules are simple. Try 30 and 17 meters, too. Let's get some DX-ing activity on some of these "exotic" modes and have some fun in 1995.

See you in the pileups ... **95 in 1995** ... let the fun begin.

73, Jay WS71

Time to renew your subscription?

Be sure to check your label's "Last Issue" date!

(*Last Word - cont'd from page 24*)

sysop for the content of the messages forwarded by the BBS . . . but by February there may be several more tempests brewing on the high, high bands. So jump right in.

Winlink has new life and a new coordinator. The Winlink community is going to be pleased to find out that work on the BBS software has picked up again. Hans N8PGR has joined Vic W5SMM on the programming team. The first order of business is to clean up Winlink. "There is a stack of problems and anomalies that need work," Hans said. Although field testing on a limited basis is already taking place, no new release should be expected before December of this year. Once ready for release, the new version may be downloaded from the ADRS BBS. Hans can be reached at N8PGR.#NEOH.OH.USA.NA or on CompuServe 71327,3541. We also thank Hans for his contribution to this issue.

DJ1IJ writes of his working 13 countries on Clover during his first month with the new mode, and is aiming for DXCC! In the meantime he is looking for more Clover QSO's. He feels 14.066 is the right frequency for a CQ. That may be true as the Clover BBS stations move up the band, but for now, at least in the US, that is a very busy frequency. That is why many Clover users look at 14.066.5 for a CQ, a short step up the band. It shouldn't make too much difference. The point is that the Clover population in Europe has taken a sudden jump recently and we should be pointing the beam in that direction on a regular basis.

Bo W8ISG took time away from the installation of a new Gap vertical to drop us a note. He proposed publishing a bandchart in each issue. At first reading, it looked as though he expected a bandplan from the Digital Journal. ADRS opposes that approach, as you know. But when I re-read the paragraph, I realized he was asking for guidance. "Where should I call CQ?" kind of guidance. Not a bad idea. When we get the BBS issue resolved on 20 meters perhaps we take on that assignment. He also proposed more use of 30 meters. Right on. It is a very good band and, particularly at this time, it is as good as they come. Why don't keyboarders use it? He finds no RTTY on the band at all, only "an occasional Pactor signal around 10125." And that is most likely a BBS. By all means we should use 30 meters more than we do . . . and 17 as well. They share all of the good features of 40 and 20 meters and lack only the crowd. Since it takes two to tango, let's start a crusade and get some keyboard activity established on both bands.

My good friend Jules thinks I am a heretic! (I have been accused of that before). The ultimate DX-er, faithful columnist, a truly authoritative voice, Jules is not an individual with whom I wish to have a dispute. But he didn't read my column the right way. He expressed shock at my proposal to move Pactor into the RTTY segment of the band. And argued that the world is full of keyboarders just waiting to fill the void when and if some DX shows up on the bands. While I wish them well, and yes even I wish to increase my RTTY country count from the 220 level, I just don't seem to hear many of them on the air these days. And that's the point! I am not proposing that anything move into that hallowed space. What I am saying is that the segment is not being used and, since our absence allowed HF packet to clip off the top half of the RTTY segment, our continued absence can only allow Pactor or some other mode to sneak up from the bottom. It's like the rising tide Jules, and no other mode will defer to the potential use of the band by a mode that is notably absent a good portion of the time. Ron AB5KD pointed out recently that contesting faces the same problem as the DX community. But his attitude assumes other modes will use common courtesy and get out of the way during those weekends when the big contests come around. Can DX-ers cultivate the same attitude? It is an interesting question and needs more discussion and some proposed solutions. Only one thing is certain, RTTY cannot hold on to the frequencies without more use than we see on the screen at the present time. Let's hear from more on the subject. And, Jules, I am a realist not a heretic. Hi!

The year must not end without a special word of thanks to our advertisers. Their support is a vital ingredient in our recipe for success. Their commitment makes it possible for us to face the future with a new level of confidence. We appreciate their presence beyond words. But, keep in mind that they are investing their money in this publication in the belief that it will be returned to them, with profit, through sales of their products. So, do the right thing. When it comes time to buy that new piece of equipment or software, remember the brand names that stay with the Digital Journal through good times and bad.

Nor can the year end without a hearty dose of Season Greetings to all the good and faithful readers of this journal. May your holiday time be filled with peace, family fun and wonderful surprises. And may 1995 arrive safely at your house and may it be stuffed with new gear, great DX, contest awards and new-found friends around the digital world.

73 de Jim N2HOS sk

BULLETIN

JARTS HIGH CLAIMED SCORES

Single Op:

CALL	SCORE	QSO'S
AB5KD	433.888	1031
K4HSF	151,394	509
K0RC	149,625	526
N6GG	148,230	520
W7LZP	136.468	539
NA4M	125,000	410
WA6SDM	113,456	420
S56A	100,000	260
AA5AU	94,000	777
K2WK	75,548	301
N16T	49,125	286
Multi/sgle		
8R1TT	647,801	1210
VE3FJB	121,142	411

RTTY by WF1B

IMPORTANT UPGRADE INFO

The ADRS WPX contest is just around the corner—February 4th and 5th. 48 hours of non-stop fun. Ray WF1B says that software for the contest is now ready to be shipped. It comes with a very special feature called "Super Call Check." You can't afford to be without it. If you already have RTTY by WF1B, the cost of the upgrade is $5 for US and Canada, $7 for all others. Get it now!

(A.N.A.R.T.S. Results - cont'd from page 23)

VK2SG. Despite the poor health which he has suffered for quite some time now he managed a period of operating the keys. We all appreciated your effort Syd, well done.

There were many comments on the logs submitted, many referred to the lack of VKs (there were 18 Vks logged this year. an increase of SOY.) and many promised to be with us again next year. Examples follow:

SV2BFN -- A lot of QRN and someone stole 10 meters. only two QSOs .....
JR5JAQ -- Tnx fine contest. condx not so good but see you next year ....
VETSAY -- Maybe next year the bands will be better. cu next year es tnx for the QSO .....
GW4KHO -- Pleased to work at least one VK. I hope to improve on antennas by next year .....
VK600M -- I did not operate for long as was in the throes of putting up a tower/beam. Next year will be a different story .....
SP6CYV -- CU in ANARTS 1995 .....
W9FFQ -- Again this year condx were very poor here. Heard no JAs and only one African, even USA rather scarce! Enjoyed the contest!

Thanks for your efforts and 73 to all from the President and Committee of ANARTS. de VK2BQS (Jim) Contest Manager.

##########

(News from the BOD - cont'd from page 4)

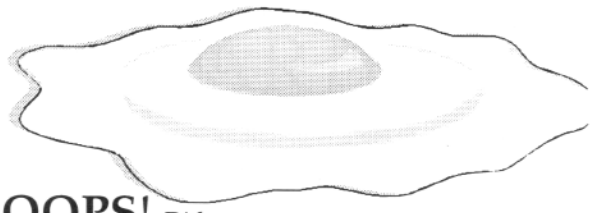
WATCH YOUR BBS FOR WORD ABOUT THE NEW SCANNED FREQUENCIES!!

While this effort will be focused on 20 meters at this time, there is every expectation that the same sort of pattern will ultimately be established on most bands. The shift will take time. Some exceptions must survive to accommodate some stations in those countries where such frequencies are not available and other similar special situations. There will be some toes stepped on. But the move offers a major bonus to the keyboard community. And it once again demonstrates the willingness of the digital community to adjust, adapt and break old habits in order to accommodate new technology and circumstances. All those who help bring about this shift deserve a special vote of thanks.

In other action, the board distributed some of the day-to-day responsibilities of the organization. Bob W4NPX was named Secretary of the corporation and Al W2TKU Treasurer. Jim N2HOS who had filled both seats was appointed Vice President and continues as the Digital Journal publisher. These moves are consistent with the board's desire to involve each member in some part of the Society's operation.

The board approved the absorption of Dave Wolf's (WO5H) newsletter, PACKET POWER, effective immediately. The board also welcomed the subscribers of Dave's publication into full ADRS membership. They will all soon receive a special one-time membership offer. Dave will produce a major series of articles for the Digital Journal beginning in January.

The budget for calendar 1995, the ADRS participation and technical forums at Dayton and Dallas, fund raising plans, attendance at the 1995 IARU Conference, were discussed and approved. The Society's new tax exempt status was discussed. Since directors pay their own expenses to all meetings, it was explained that all of their out-of-pocket expenses would be considered a deduction on the individual's tax return, just as any other contribution would be. ADRS will acknowledge the contribution upon submission of a documented expense account.



OOPS! Did we earn some egg on editing the **1994 CQWW RTTY Results** reported in the November issue. From reading the callsigns, you may have at first wondered if there were some new countries that had sprung up. There were letters, where numbers should be, and the scores had periods where commas should have been. A last minute fax of the results without the greatest legibility, and a less than perfect computer scan of the fax, followed by a lack of proper proofing by ye' old editor caused the errors. Our apologies to both the operators whose scores were butchered in the report and to you, our loyal and avid readers. --- *Tom, WA8DXD*

BTW - I prefer my eggs fried and over easy

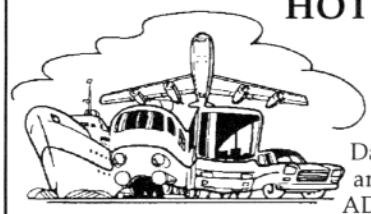
****

1994 CQWW RTTY (Revisited) High Claimed Score

(Condensed from the latest reports)

CALL	BAND	SCORE	QSO's
Single High Power			
HH2PK		1,300,578	1252
S50A		1,165,000	1065
S56A		1,130,000	1086
VY2SS		1,028,970	1122
K4JPD		961,155	994
WE9V		818,845	958
		(at-KS9K STA)	
K2WK		723,989	815
N91TX/7		661,000	1054
N2DL		591,660	704
K2TW		556,000	817
Single Low Power			
AA5AU		580,400	400
TY1PS		380,000	585
KA4RRU		375,560	560
Single Assisted			
N40N1		421,940	601
KB4GIB		370,326	594
N9CKC		311,000	594
Multi-Single High			
WU3V		1,500,000	1200
DL2NBU		1,068,000	985
W9KDX		1,050,000	1142
Multi/Multi			
KING		2.7Mi1.	2273
W3LPL		2.6Mi1.	2192
Single Band			
K7WUW	40M	16,401	
N2AA	20M	160,000	499
K4HSF	20M	110,000	475
KP2N	15M	300,279	847

de Ron AB5KD <ron481@austin.relay.ucm.org>



HOTEL ROOMS FOR DAYTON '95 - ORDER NOW!

If you plan to attend the Dayton Hamvention in 1995 and will need a room, the ADRS has reserved a block for your convenience. These rooms are at the Radisson Inn (north). This is where the digital gang stays. This is where special events will be held. Forums, hospitality suite, and the Digital dinner will are take place right here. Stay where all the action is - reserve a room today.

The rooms will accommodate from one to four people. The room rates are $86.00 per night. The hotel will need a deposit of $80.00 per room. We must know if you need a room NOW. We do not need your deposit money at this time, only your request. You will be advised later on when to send your deposit money.

To reserve a room, contact Dale Sinner, W61WO via one of the following methods.

Phone/FAX (619) 723-3838
Mail: 1904 Carolton Lane, Fallbrook, CA 92028
CompuServ: 73074.435
Dayton Hamvention dates are: April 28-30. 1995

(Hits & Misses - cont'd from page 4)

If you have plans to go, now is the time to secure a room. Even though there is a large block of rooms, they go fast. Also the hotel wants deposit money up front and early. You must obtain one of these rooms through me (not the hotel). Don't send money at this time, just sign up. I will notify you on when to remit. But, don't hesitate to contact me if you plan to go. DO IT TODAY!

What can you expect from the ADRS at Dayton 95? Again there will be short forums at the hotel. These will take place on Friday morning only. The Hamvention opens at noon on Friday. No doubt you will want to be one of the first in the door (it's a stampede). Friday evening, at the hotel, a hospitality suite will be hosted by the ADRS where the famous and infamous love to meet and swap stories. Saturday, it's back once again to the arena for shopping. The "Digital Digest" forum will be held at the arena on this day (time slot not available yet). Saturday evening will find many of us enjoying dinner together at the hotel (announcement later). This is our premier event. Those of you who did not get a chance to see us before now, will probably be at the dinner. The ADRS will have a short program (to be announced later). After dinner, it's back again to the hospitality suite for more camaraderie. Sunday morning, many of us head for home, while others make a last minute trip to the arena for a special purchase. By noon, we must reluctantly vacate the arena. By early evening, most everyone left has headed for home base, having enjoyed and survived another year at Dayton. Undoubtedly, with visions in their heads of how they will save up for the next one in 1996.

The Dayton Hamvention is a dream come true for many each year. Those who make the trek for the first time seem to walk around the arena in an aura that lasts the entire weekend. For Hams the world over, the Dayton Hamvention is the ultimate goal. It seems each year it gets bigger and better. Never a disappointment but rather a great source of satisfaction to those who attend. Try to make Dayton 95. You'll have a fantastic time. All for now.

73 de Dale, W6IWO

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First 30 words $7.50, additional words 10 cents each. Cash with Ad. Deadline for ads is the 5th of the prior month of publication. (Example - Ad arrives by the 5th of September, will appear in the October issue.)

NEWS - NEWS - NEWS - NEWS

Amateur Radio's Newspaper "WORLDRADIO". One year subscription (12 issues) $14.00 for U.S., non U.S. $24.00,2 Year subscription (24 issues) $27.00 U.S., non U.S. $47.00, 3 year subscription (36 issues) $39.00 U.S. non U.S. $69.00, Lifetime subscription $140.00 U.S. non U.S. $240.00. Contact: WORLDRADIO, P.O. BOX 189490, Sacramento, CA 95818

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RS-232C and COM PORT booklet: This is a compilation of all articles published in past issues of the RTTY Journal on these two very important topics. If you are using a computer in conjunction with Ham Radio, you will find this booklet an invaluable tool to have in your shack. The booklet contains information about COM ports 1,2,3 and 4 as well as the RS-232C information. Send $5.00 to the ADRS, PO BOX 2550, Goldenrod, FL 32733 and you will receive a copy of this invaluable booklet by return mail, postage paid.

"What is your TNC doing?" is a book that explains packet radio using plain-English. It explains how the TNC talks to other stations, the computer, and the radio. All 120 pages are loaded with details, operating hints, trouble-shooting tips, and good reference material. Author, KA5ZTX. Available at many ham radio stores. To order direct, send $15 plus $3 U.S. shipping and handling (no credit cards) to zm xpressions, 1544 N 1000 Rd, Lawrence KS 66046-9610.

For Sale - AEA PK-64 with HF modem, Commodore C-64, disk drive, printer, Sanyo monitor, all cables and documentation. Worked DXCC and WAS RTTY with this gear. Sold as a system only $175.00. Dovetron MPC-1000R-II $250.00. Barry Fox, WIHFN, 431 Mulpus Road, Lunenburg, MA 01462 Ph: (Days) 603-889-6600 Ext 320 (leave voice mail if not there); (e-mail) fox@imagitex.com (eves) 508-582-7521.

For Sale - PCI-4000 HAL CLOVER board. Complete with cables and software. $600, I ship. Certified check or Money Order. Gary Kaehler, W7DCR, P.O. Box 750 LaPine, OR 97739; 1-503-536-3153.

BACK ISSUES - All Back Issues of the Following: RTTY Digital Journal - ATVQ - A5 SPEC-COM & ATV TODAY. Write for list & prices - SASE - ESF Copy Service, 4011 Clearview Dr., Cedar Falls, IA. 50613 (319) 266-7040

PCI-3000, PK-232 and RTTY/CW SOFTWARE FOR IBM-CP! With new features like Terminal Emulator window for TNC for DX Cluster! Contest features include ON-THE-FLY duping! CompRTTY 11/PCI uses bus interface on PCI-3000. CompRTTY II/PK uses host mode of PK-232 for complete control. CompRTTY 11/STD is for all other TUs. Supports COM3/COM4. Full editing of both transmit and receive text! Instant mode/speed change. Hardcopy, diskcopy, break-in buffer, select calling, text file send/receive, customizable full screen logging with duping, 24 programmable messages. $65.00 Send call letters (including MARS) with order. C.O.D. add $3.00 Call (315) 469-6009, or send check to: David A. Rice, KC2HO, 4452 Ashfield Terrace., Syracuse, NY 13215

RTTY CONTEST SOFTWARE: This is the program used by WINNERS. RTTY by WF1B is the premier teletype contest software. Supports CQWW, ARRL, SARTG, BARTG contests. New DXpedition mode recently used by AHIA. Supports HAL PCI-3000, PK-232, KAM, MFJ-1278, UTU, AMT-1, and Standard TUs. Online features: Automatic duping, Automatic multiplier identification, Automatic scoring, Mouse support, Break-in buffer, Buffer tags for dynamic custom transmissions, File transfer. Post Contest features: Complete paperwork generation, QSL labels, Statistics. Call (401) 823RTTY for fact sheet. IBM-PC, $41.95 (US/VE) $44.95 (DX). Specify disk size. Wyvern Technology, 35 Colvintown Road, Coventry, RI 02816-8509

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Wanted For Museum: Apple-1 and other pre-1980 microcomputers. Also early microcomputer journals, newsletters, and advertising literature. KK4WW, (703) 231-6478 / 763-2321.

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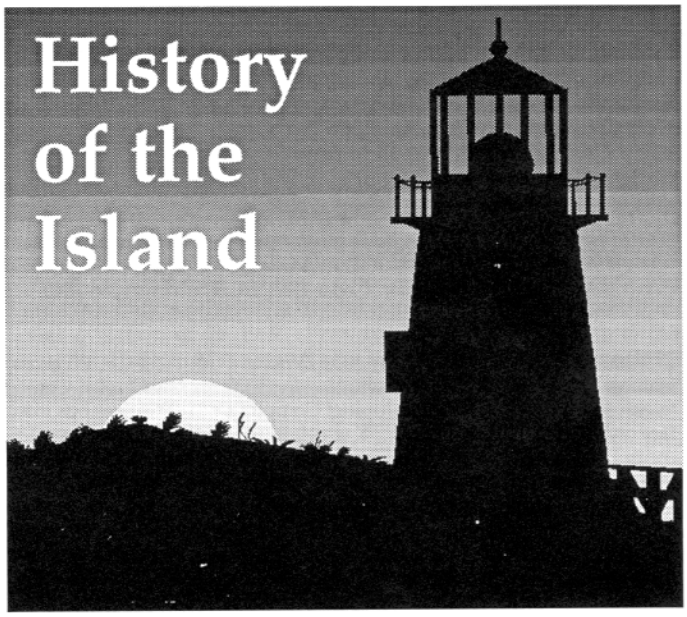
State/Country_____ Zip/Postal Code_____ - _____



South Georgia Island, 53 56' S, 34 4,5' W, is located 1350 Km ESE of the Falkland Islands. South Georgia is administered by the Governor of the Falkland Islands who is appointed by the United Kingdom government.

South Georgia Island was the center of whaling operations dating back to the 1800's. One prominent whaling station, Grytviken, located on the north coast. started whaling operations in December 1904 and was an immediate success. By 1910 Grytviken was producing 55,000 barrels of oil and in 1912 it had the distinction of having caught the largest whale ever. This was a blue whale 112 feet long end was claimed 10 weight over 100 tons!

Grytviken whaling station expanded and changed over the sixty years that it operated. The Station was virtually self-sufficient for all its requirements.
Transport ships brought clown coal and fuel oil. barrels for the whale oil. harpoons, ropes and food for the station workers. The station had its own facilities for the catchers, including a floating dock, slipway end excellent quay facilities, There were foundries. a blacksmith's shop. laboratories. etc.

Life on South Georgia for the station workers was a long end arduous business, Men normally worked a 'season". that is the austral summer from October to March inclusive. They came mainly from Norway. but also from Buenos Aires and the Falklands. They lived in the barracks at the rear of the station. Some 500 men were employed during the catching season, reduced to 30 to 100 during the winter. The day was long - six in the morning to six at night - with a break for lunch. Catcher crews had to endure the hardship of long periods of cold end danger in freezing and stormy seas.

Whaling at Grytviken continued without a break through two World Wars and during this period the company provided essential supplies to the British government, particularly whale oil for edible fats and glycerin for explosives.

Meanwhile, the other whaling stations in South Georgia closed down. Norwegian whaling ceased et Grytviken in 1962 but between 1963 and 1965 the station was leased to a Japanese company.

Whaling ended at Grytviken in 1965 simply because the whale stocks had become "fished out'. Whales unfortunately are now only occasionally seen in the bays and waters around South Georgia.

The DX operation planned for January 1995 will be conducted from the now derelict Grytviken whaling station.

73, Al Hernandez

(The Contest Chair - cont'd from page 5)

In '91, his 1st year in P.E.I., before his single/Op station was ready, he participated in the 1991 CQWW SSB Contest Multi/Multi category. Using call VC1DX, they set a new Canadian record.

Software . . . as Robby put it, "nothing can touch RTTY by WF1B for RTTY Contesting." He uses a 486-33 Computer and a PK-232 TNC for contesting and doesn't do any other digital modes on HF. (Nor does he "approve of any!") On VHF ("where packet belongs") he uses a KPC-2 connected to a Digital VT320 terminal for occasional BBS and packet cluster operations.

Whenever he does well in a contest, it will most likely be due to one or more of the following reasons:

A) he is as close to Europe as he can get and still be in N.A.,
B) he enjoys 'Island' propagation with his path to Europe and Africa and gets "many mults" almost entirely over water,
C) antennas seem to work better from PEI than any other QTH he has operatedfrom (most likely due to the high conductivity of their 'RED' clay),
D) he is usually the only VY2 active in the contest and his attracts a lot of attention that he might not get from another location and
E) he can often keep on running European stations when the rest of N.A. has no opening.

As a result, he thinks he spends too much time running pileups, rather than hunting mults. But, if he is the only one giving out the VY2 mult, they need him as bad as he needs them, so he finds most of the rare ones in his pileup sooner or later anyway. The only thing he could say about RTTY contesting is that if two stations are calling, there may as well be a dozen because you can't print either one. Just hang on for 'tail end Charlie' and watch the screen for a while. Calls will start to appear eventually. List them and call them back in turn with no dead air between them. When the list is done, give another QRZ. He finds this gets the best rate out of a pile-up. If you can't hold a frequency or sustain a pileup, of course you must Hunt & Pounce.

In any contest, it is the combination of RATE and staying in till the bitter end that counts most. He entered CQ/DJWW'94 RTTY Contest again this year as single/op, high power, all band, category. And finished with a very impressive claimed score of 1,028.970 and 1,122 QSO's. There is another contester in VY2 land, Robby's 12 year old son Daryl. He just got his ham ticket and says he is going to be a contester with the call VY2DR.

Congratulations to you Daryl, for we need more young contesters. One tip I might pass on to Daryl. Don't let dear old dad sell that QTH for any reason, it will definitely be to your benefit in the future... hi hi! When Robby does another single band effort, maybe Daryl can pass out a few needed mults on the other bands! We will be looking for ya! I would like to thank Robby for all the background info and pictures he sent me. We wish you the best in all your contesting efforts.

Until next time,

73's de Ron AB5KD

"Remember" Big Antennas high in the sky work better than little ones close to the ground...

Have you checked your mailing label lately?
If the ***Last Issue 12/94*** appears next to your name, it means your **ADRS** membership, and subscription to the ***Digital Journal,*** expires with this issue.
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A Message from the Sudan

Dear Friends,

Thank you all for your many kind messages. I hope with this message I can address my many new friends collectively about the situation here. Any support and assistance is really appreciated.

GENERAL
Amateur Radio here has never been banned officially and legally. At the same time the authorities are not giving facilities for the issuance of licenses to suitable candidates. I am trying to change this situation. I operated ST2/G4OJW with an old FT-75 QRP XTAL VXO rig on 28.130 and 14.0625 kHz between September 1993 and October 1993. Thereafter I used my IC-735 at the Sudan Telecommunication Public Corporation Headquarters. From October 1993 to January 1994 call was ST0K. This demonstration was successful in that it introduced amateur radio to the licensing manager, who supports the concept and will hopefully become a radio amateur himself, and attracted the attention of many other interested prospective Amateurs. Now only approval by the security forces is needed for the issuance of private licenses.

MY STATUS
I shall be here for the foreseeable future and am trying to set up a business. I had a hard time this first year because of the different way things work or don't work here. I should be out of the vicious circle of poverty soon I hope. I came after a period of unemployment in the UK to try something new. As I am an Australian you will not be surprised, we always go walkabout to unlikely places before we settle down and get hitched.

MY STATION
I have been allowed to take my IC-735 home (locked to some 12 MEMO channels and the VFO A and B fixed) but not given authority to use it. I am a radio amateur and cannot live without the sound of CW and static. I already spent 13 days on free holiday and lost many things due to the misunderstanding of the situation here with Amateur Radio.

My FT-75 needs fixing, I opened it and broke it. I have an old KATSUMI memory keyer MK-1024 which works if you slap it every 30 seconds or so. I have two pumps but hate to use them, it's hard work. I have a fist mic but don't use it for above mentioned reasons. I have an SCS PTCplus CW/RTTY/AMTOR/PACTOR Controller. I have a 15/(17)/20m dipole up 6ft. I have a nice telescopic pole and an array of dipoles ready to go up.

INTERNATIONAL UNIVERSITY OF AFRICA AMATEUR RADIO CLUB

I explained Amateur Radio, its benefits as a national resource and personal enrichment, its unique ability to further people-to-people friendship and understanding across all artificial borders, to the Vice Chancellor of the University. He is the most wonderful person and understood it from the beginning. We are now getting approval to set up a Club Station on campus and for me to teach a Course. Once this begins it will be much easier to demonstrate this wonderful hobby and service to all important personalities and institutions here. The students are from all over the continent (and the world), so it is the most wonderful opportunity to promote Amateur Radio in Africa. I am going to thoroughly enjoy it and am patiently awaiting approval.

HELP
The following most kind and generous help has been received and has kept my spirits up, in this what often SEEMED a losing battle:

Library:
Nao Akiyama, NX1L, ARRL International Projects Manager donated a complete Library for the Club:

- ARRL Handbook
- Now You're Talking
- ARRL Antenna Book
- ARRL Novice/Technician Instructor's Guide
- International Amateur Radio Study Guide
- Morse Practice Tapes
- All license class manuals
- FCC Rule Book
- ARRL General Class Instructor's Guide (en-route)

QSL manager:
OM Kash, WB2RAJ has kindly taken on the unenviable task of taking care of QSLs for ST0K. Most of them "went missing" those that arrived had been severely "tampered with" - he is patiently awaiting my logs. I am in regular contact with Kash and he is the reference point for all information. Please keep contact with him and support him by making his job as easy and pleasurable as possible. Please be patient and allow plenty of time for a response to your card bearing in mind the back-log which needs to be cleared, logs to be received, cards to be printed. We will worry about ST2AA cards once we have cleared ST0K.

Equipment:
Ron, GM3SAE, donated a telescopic mast for an inverted V dipole. It caused quite a stir in the village where I was staying!

PROMISES OF HELP

The following have most kindly offered help:

- Support to the Amateur Radio Service (STARS), Hans, ON6WQ@ON7RC- Yoshi, JA0AWF: FT101 for l0MHz operation - JARL Equipment for Club Station(s)

I want to put Sudan on air on the following modes:

CW, SSB, RTTY, AMTOR, PACTOR, 10 FM, Satellite, QRP. My own personal preferences are CW, Digimodes and Satellite. There will be plenty of interest by Club Members in SSB too.

I have now been experimenting with RS-12 and would like to set up an Oscar and Pacsat satellite station here. Perhaps I can get a 70cm converter for the IC-735 and use my FT-23R 2m FM Portable if I can get it back from security.

HELP NEEDED

Advice on equipment needs for a cheap but usable satellite station. This is a must as there is great interest in this here. We can start with Sputniks and Dove/Pacsat before upgrading. Periodicals for the IUA-ARC Library old or new, such as QST, QEX, CQ, Digital Journal, Satellite and DX magazines and News Letters.

Please co-ordinate posting of materials with Kash. A Satellite Experimenter's Handbook for the library? Maps and things for the walls of the Club room. Programs for Satcomms/Logging.

A small ham-bands only like the Scout 555 for /P operation. I will then try to put different states ST1-9 on air and demonstrate the emergency communication potential of Amateur Radio from the various state capitals. 15/20/40m band modules would suffice.

I also have plans to set up SARNET (Sudan Amateur Radio National Educational/Emergency Training Network), to train in message handling and disaster communications as well as conduct courses on Amateur Radio in different parts of the country - the largest in Africa and one heavily dependent on radio communications in the absence of a good telecoms system.

Funds and donations are best sent to Kash for co-ordination. All proceeds will be used for the advancement of amateur radio.

Very 73 es Good DX,

de Lou, ST2AA.

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- Dynamic Range > 75 dB
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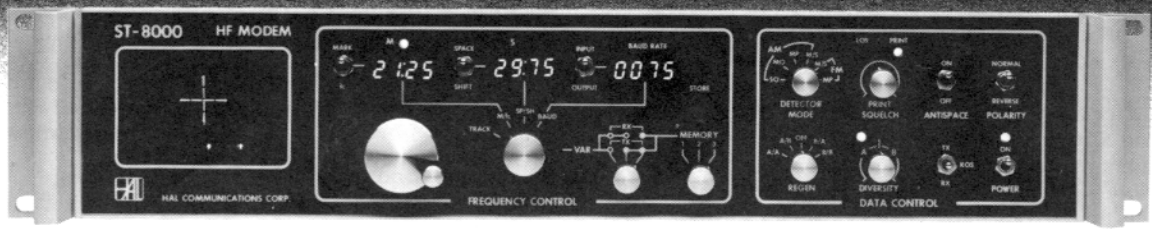

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Real HF radio teleprinter signals exhibit heavy fading and distortion, requirements that cannot be measured by standard constant amplitude BER and distortion test procedures. In designing the ST-8000, HAL has gone the extra step beyond traditional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

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- Split or Transceive TX/RX
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- Signal Regeneration
- Variable Threshold Diversity
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- FDX or HDX with Echo
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- Signal Amplitude Squelch
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Write or call for complete ST-8000 specifications.

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