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SUPER STATION - WA2MFY

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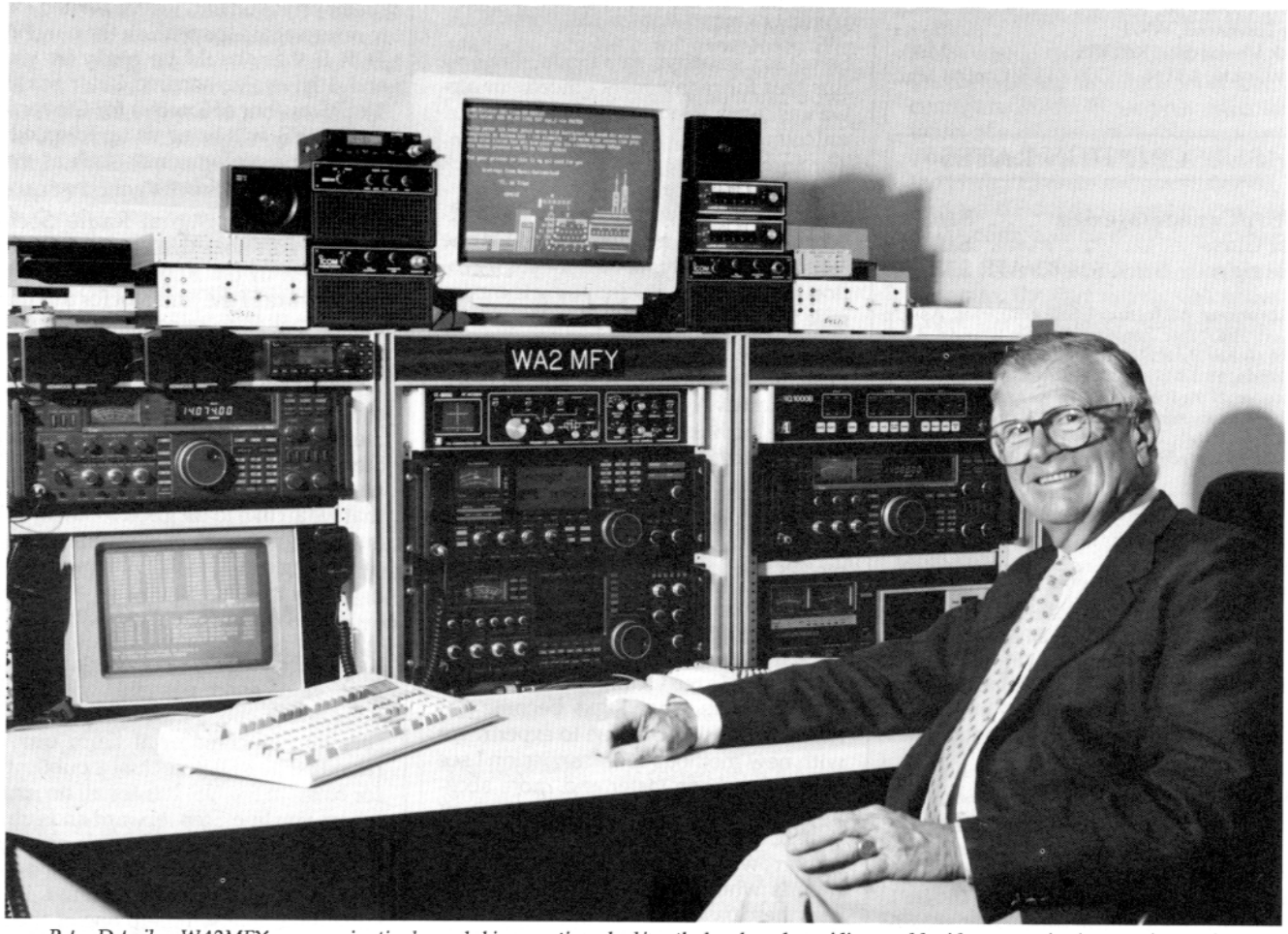
Story pg. 19



Peter Detwiler, WA2MFY, now semi-retired spends his spare time checking the bands and providing world-wide communications services to the amateur world and the maritime arena.. His dedication to world-wide communications is lauded by those who use his varied services.

RTTY DIGITAL JOURNAL

Dale S. Sinner, W6IWO
Owner, Publisher, Editor

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

Phone - FAX
(619) 723-3838

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HITS & MISSES

Dale Sinner, W6IWO
1904 Carolton Lane
Fallbrook, CA 92028

From Steam to Speed

This month I am publishing the last column on MSOs. Dick, K0VKH, has informed me that the activity has be dwindling over the past few years. Many of those who used the MSO systems on the air have now taken to other modes of operation that are much speedier than a 60 WPM MSO.

So we say goodbye, to a mode of operation that for many years graced our airwaves and gave untold hours of enjoyment to RTTY enthusiasts. Throughout most of these years, Dick had been the voice of MSOs. He has covered this topic with his expert knowledge, experience, and fortitude. I for one salute him and thank him for his devotion to the hobby and for going the extra mile by writing his column for ten long years.

Dick will not be leaving the RDJ for good, however. He is going to continue to write the "Hornet's Nest" occasionally as time permits and warranted.

I hope everyone will take a few minutes and read Dick's column this month. As he and others like him pursue other modes that are faster and more state of the art.

As I look forward a bit, (if I am allowed) I ask myself if today's new modes will still be here in ten years. Since the advent of computers, speed has become the norm and as we continue to experiment with new methods of transmission I see us moving even faster and more accurately in the future. Goodbye to MSOs of yesterday and hello to all new modes of tomorrow. Dick, on behalf of all your friends who have followed your writings these past ten years, thanks from the bottom of our hearts. You did a magnificent job.

Dayton 94

In this issue on page 11 I have announced the rooms availability program for this coming year. Please read over the notice and make your plans. Don't wait until the last minute to reserve a room if you plan to attend. Rooms are always at a premium for Dayton each year but I think we have a very good arrangement with the Radisson that will satisfy our needs.

To help you make your plans, I am pleased to tell you that I have the Digital Digest forum speakers lined up already. For those of you who were there last year you heard Peter Helpert, DL6MAA, speak on PACTOR. I have invited Peter to return again to speak on the new PACTOR II that should be ready by year's end. I have also secured Peter Schulze, TY1PS, author of Express for Clover. Peter, TY1PS, will bring us up to speed on his latest developments, such as voice and pictures via Clover.

The American Digital Radio Society (ADRS) will hold their annual meeting at Dayton in the RDJ hospitality suite. I'm not sure of the time slot for this meeting yet but as soon as that is firmed up I'll announce it here.

As usual we will have the RDJ dinner at the Radisson and your host MC will be Steve Waterman, K4CJX, again this year. Steve really knows hold to put this dinner together, always keeping in mind that we all like to eat good food. Look for an announcement on the dinner in an upcoming issue.

Material Needed

Keep submitting your material for publication. As space permits I will publish your submission. I would also like to receive some material from our DX friends. The RDJ is not just a publication for hams in the US. It is for all no matter where you live. Step forward and submit a station profile with pictures or maybe a tech tip to share with us all. I'll do my best to publish what you submit. If it is something that will help one of the columnists, then please send your material to them personally.

All for now, 73.

de **Dale, W6IWO** ■

THE LINK

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

I enjoyed my summer in the mountains of southern Wyoming. During that time I had the opportunity to do a little hamming, although I could not leave a rig on all the time scanning as we don't have power there and have to run off a generator. As a result of that experience, I would like to recommend WinLink to many of you who are active on the digital modes even if you do not want to run a full time MBO. The software is quite stable now. With the addition of PacTOR this summer the software is more complete. By using the software, your local BBS will be able to forward mail to you over the packet port and if you regularly send and receive messages by the way of a WinLink MBO you can speed that process up by taking advantage of the AUTOFORWARD features of WinLink once the link with the other MBO has been established. WinLink may be of help to you if you are active with traffic handling also. The next item I would like to see added to WinLink is the capability of sending compressed (and therefore binary) files. This will come along as soon as the software developers agree on suitable standards I think.

REQUIRED HARDWARE

WinLink requires WINDOWS to be installed on your computer. This implies that you have at least a 386SX processor. As a minimum, I recommend that you have at least 4 Meg RAM and 10-20 Meg free space on your hard drive. In addition, you will need the controllers for the modes you plan to operate. The HAL PCI-4000 is used for CLOVER. You may use either the HAL PCI-3000, the PK-232, or AMT-1 for AMTOR. The PK-232 is required for PacTOR. If you use the PK-232, you will be able to run both AMTOR and PacTOR, but not both at the same time. That is you may have either the AMTOR or the PacTOR window active at any time, but not both. If you run 2 PK-232's or the HAL PCI-3000 and a PK-232, then you can have both modes running at the same time. A standard TNC-2 (or clone) is required for packet. You may have as many packet ports as you care to have TNC's and radios. The radio could be any that is suitable for the digital modes.

HOW TO GET THE SOFTWARE

The latest version of WinLink is to be always posted on the ADRS BBS (212-698-2102). If you have not joined The American Digital Radio Society, I will make my plea. The organization is starting to move itself along and has many worthwhile objectives. Look in this issue for more information on how to join. Anyway, the ADRS BBS has several popular software packages available for download, WinLink, FBB, and the TY1PS Scanner. The BBS runs up to 14,400 baud and I downloaded the 420 K+ WinLink file in a little less than 4 minutes. After you get into the BBS, hit "F" for files and look for WinLink files. Get WIN.EXE, or whatever the latest version is named.

HOW TO INSTALL THE SOFTWARE

First, put the .EXE file in an empty directory on your hard drive, then run the program. It is a self-exploding program that creates all the files needed for WinLink. Having done this, open WINDOWS and from File Manager find the program "WLSETUP.EXE". Double-click on that file to execute it. This file is the auto-install program for WinLink. You will first be asked to confirm the directory that you wish to have WinLink installed in. I suggest that you do not change the name of the directory, but feel free to change the drive designation if you like. I use my compressed drive for WinLink instead of C:.

The next thing that comes up is a screen entitled "WINLINK.INI File Setup". All you need to do here is fill in the blanks. The prefix/postfix information is only used when you identify your station. Any message headers will have your call only according to the standard protocol. If you are not going to run a full time MBO/BBS, then leave the Route box blank. When that box is blank, WinLink does not create headers on outgoing messages. Check the boxes for the Message Manager as you like. The default is a good place to start.

The install program will create a WINLINK Group for you with all of the programs showing as icons in that group.

MODIFYING YOUR AUTOEXEC.BAT

WinLink uses MBBIOS.COM to communicate with the serial ports on your computer and this TSR must be installed before WINDOWS is opened. This is conveniently done in AUTOEXEC.BAT. Include the following line in the AUTOEXEC.BAT:

```
C:\WINLINK\BIN\MBBIOS.COM
```

Also, include the following line in the same file so that UTC time will properly appear on messages:

```
SET TZ=xxxnn
```

Where xxx = the local time zone, (example: EST for Easter Standard Time) and nn is the number of hours offset from UTC, (example: 05 for Eastern Standard Time). Your computer system clock should be set to local time.

MODIFYING MBBIOS

From within the WINLINK Group, click on the Mbbios Configuration icon and configure MBBIOS for your situation. A word of explanation here is appropriate. You will not need MBBIOS if you only use the HAL PCI-4000 and/or PCI-3000. You only need it for those controllers that talk to the computer through a serial port.

When you run the Mbbios Configuration program, the first screen will allow you to set the parameter you need for each COM port used by WinLink. If you are using COM 1 and/or COM 2 for communications to your controllers (PK-232 and TNC), then you can use the default IRQ for each of those ports in the following manner. To set COM 1, enter 1 at the cursor to select slot 1. The next screen will allow you to enter the port number for this slot. Use "C" for IBM ASYNC Card addressed as COM1 in the first box. Put a "1" in the second box for the COM number. Make sure that Hardware handshaking is set to "Y" and the last to boxes are set to "N". Hit F3 to Return and set the second slot to COM 2 if desired in a similar manner.

If you are going to use COM 3 or 4, the you need to enter port type "B" (Specify all card parameters exactly) on the second screen for that slot. This will bring up a third screen that allows you to set all the parameters for that port. Normally you will be using an IBM compatible ASYNC port. The standard address for COM 3 is 3E8H and for COM 4 is 2E8H. I use IRQ 5 and 7 (printer interrupts) for COM 3 and COM 4 since DOS and WINDOWS do not use the printer interrupts. I recently purchased from my local computer shop a "MULTI I/O CARD" (ATIO V8 2S printed on the box) for $20 that has a game port, printer port, and 2 serial ports. The serial ports are jumper selectable COM1 -

COM4 and IRQ 3-9. Again, be sure that you specify hardware handshaking. I have not found a conflict between MBBIOS and WINDOWS in the handling of the COM ports.

CONFIGURATION OF CONTROLLERS

WinLink configures the controllers for all modes except for packet. On packet, you must set the parameters in the controller and make sure that the controller is set for the proper baud rate to communicate with the computer. To quote from the APLink documentation regarding the Packet TNC:

Any TNC that recognizes Control-C to enter command mode, responds to CONOK ON and OFF should work. The program looks for the "*** Connected to..." sequence as well as the DCD control line (pin 8) to control the state of the BBS.

The critical TNC parameters are:

- ECHO OFF
- FLOW OFF
- NEWMODE ON
- NOMODE OFF
- BBSMSGS ON
- XFLOW OFF
- XON $00
- XOFF $00
- START $00
- STOP $00
- MONITOR OFF
- MYCALL your call

Parity: None

Characters: 8-bits

Baud rate to the computer: The same as set in the configuration in the Packet Window.

Using a terminal program (Terminal in the WINDOWS Accessory Group) enter the above parameters into the TNC and leave the battery backup on.

EDIT ASCII FILES FOR YOUR SYSTEM

There are several files in C:\WINLINK\APDATA that your system will use and which need to be modified for your operation. The WINLINK.INI (configuration file) will be set if you went through the auto install as mentioned above except for the last block which has to do with auto packet forwarding. This last block is need for those who wish to run a full time MBO/BBS and want to auto forward to a packet BBS. Click on the WinLink Guide icon for an explanation of how to set the script in that block to do what you want to do.

In a similar fashion, you will probably want to set the FORWARD.APS file so that you can forward your messages to other MBO's. You can edit this file by clicking on the Forwarding icon in the WINLINK Group. This file tells WinLink to which station you would like each message to be forwarded to when you do an autoforward. The first line of that file should contain your call 2 times, i.e.,

KE5HE KE5HE

This will keep any message addressed to (or at your station) from being forwarded. Let's say that you want all messages addressed to (or at) N2HOS to be forwarded to K4CJX and alternately to W4NPX. The line in the forward file would read:

N2HOS K4CJX W4NPX

If you want all traffic to go to K4CJX, W4NPX, or W2NRE (which ever you link to first) the appropriate entry into the FORWARD.APS file would be:

*** K4CJX W4NPX W2NRE**

Notice that WinLink searches down the file, it stops searching whenever it finds a match and therefore only uses the first allowable entry for any call in the first column.

The INTRCPT.APS file may be edited by clicking on the Intercept icon in the WINLINK Group. WinLink looks at the first field of every line in the Intercept file any time a message is entered on your system. If the call in that first field appears in the "to" or "at" field of the message, then the "at" field of the message is changed to the second field in the INTRCPT.APS file. For example:

W5SMM WA8DRZ.#NOCAL.CAL.USA.NA

In the intercept file would automatically put "WA8DRZ.#NOCAL.CAL.USA.NA" in the "at" field of the message. This is handy when you create messages to the same person frequently as you don't have to enter the BBS hierarchical address.

You should edit INFO.AMT, INFO.CLV, INFO.PTC and INFO.PKT as appropriate for you station with NOTEPAD.

After doing all this, you should reboot your computer so that all of the changes will take effect and so that MBBIOS is installed.

STARTING THE COMMUNICATIONS WINDOWS

Let us say that you want to configure AMTOR to run on your PK-232 that is installed on a COM port configured by MBBIOS. Just open the HF AMTOR WINDOW from within the WINLINK Group by clicking on it. When it is open, click on configuration to bring down the configuration menu and click on Controller which will bring up a secondary menu. From the secondary menu, click on PK-232. This will bring up a menu for the PK-232 that allows you to specify the serial port used, the baud rate to communicate with the PK-232, transmit delay (milliseconds), and select the controller. See the PK-232 manual, ADelay, for details about transmit delay. After finishing with the information, click OK to close the window and then go to File and Save to save the configuration. Look at the other selections under "configuration". You will have almost complete control of the configuration of the port from that one menu. Set the configuration to suit your needs. Once the configuration is saved, it will be the same the next time you open that window.

Close the AMTOR WINDOW and if you have PacTOR, open PacTOR by clicking on the HF Pactor icon. You may configure Pactor in a way similar to the configuration for AMTOR. The same is true for CLOVER and Packet. Remember that you can have as many windows open at once as you like, but you must have a separate controller and radio for each.

While your AMTOR window is open (even if it is minimized) it will be active and others can link with you if the radio is on and properly set up for the mode. To call another station, click on Channel and then on ARQ Call (or ARQ Call with autoforward). You will be prompted to supply a call, but the default is the last station that was entered. If someone calls you, you will answer in the MBO mode. If you want to talk with that individual, simply click on keyboard from within the MBO pull-down and you will be KSR. While you are transmitting, you may click on Ident! which will identify by sending the other call (if known) followed by de (your call). The T/R! button sends the +? changeover if you are transmitting and grabs the link if you are receiving.

MESSAGE MANAGER

Any messages entered by you or received from other go through the Message Manager. All messages are available to all modes. If you are going to leave the system on, you should leave Message Manager running (but minimized). When you open Message Manage, you will see a list of all messages according to the display parameters set in WINLINK.INI. If you have PRIVATE and PENDING set, you will see all pending messages listed (even if some are traffic) as well as all PRIVATE messages in your system regardless of whether they have been forwarded (or read) or not. To view a message, simply highlight the line by clicking on it and click on VIEW from the menu bar. If you want to reply to the message, click on Reply message under File. If you just want to send a new message, click on Sysop message

under File. File in the blanks as required when the menus come up. Use the TAB key to space down through the menus. If you do not leave WinLink running and use the auto UPDATE, you should click on UPDATE under File every few days to clear out old messages. UPDATE marks messages as "cancelled" 24 hours after they have been forwarded (read). Note that cancelled messages may still be read. After 7 days, cancelled messages are deleted from the system (not archived).

SUMMARY

I hope this has been adequate to get you going with this software. The main point I think is that WinLink is very good software and may suit your needs even if you do not plan to run a full time MBO/BBS. There are new and better things coming down the pike, especially more compatibility between EXPRESS (TY1PS) and WinLink. Get on board and enjoy.

73 and GOD BLESS

de **Jim, KE5HE** ■

DX NEWS

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

Each new issue of the RDJ, with its plethora of the latest technological developments in digital radio, continues to reinforce my "Gee Whizz!" outlook on our fascinating hobby.However, lest we think that all the new modes capable of saying "Hello" using different treatments of bits and bytes have obsoleted the venerable RTTY mode, I submit that the level of activity in the recent CQ WW/RDJ RTTY DX Contest indicates otherwise. Blessed with good propagation we saw wall-to-wall signals from all over the world. In some cases, we even saw signals beyond the normally recognized "walls." RTTY is a long way from being buried. Even though it will often give far from perfect copy, there is something elegant about its simplicity, including its musical sound. How many of you copy RTTY with your volume turned off? The slogan "RTTY Forever" may be a bit extreme, but it is a good approximation.

In the midst of all this new high technology, it seems appropriate to reflect on some applicable history. In a recent issue of WORLDRADIO Bill Snyder, W0LHS, who many years ago wrote this DX News column, wrote, in his "Digital Bus" column, of the first amateur RTTY transmission. It happened on 2 meters, in the late 1946. He cites Dave Winter, W2AUF, as the holder of that historic distinction. While he was in high school in the late 20's, W2AUF was the mentor in Ham Radio of Harvey McCoy, W2IYX. Harvey recently recalled to me how Dave introduced him to the modulated oscillator feeding a longwire antenna extending from his rooftop across two back yards to that of a neighbor's. He also vividly recalled catching hell from his parents for burning a big hole in the parlor rug from a combination of leakages from Leyden Jars and a couple of lead-acid storage batteries.

The point of the W2AUF/W2IYX connection is that W2IYX received the original patent for that mode to which we have become endeared, i.e. frequency shift RTTY (FS RTTY), while working for the U.S. Army during WW2. Harvey filed the patent application in 1943, but the War Department clamped a SECRET classification on it. It was not declassified until 1952, the year before HF RTTY was authorized for ham use.

Harvey has further described to me, how, during the war, when he was looking for ideas for effectively linking a pair of teletypewriters on a radio circuit, he visited the Hearst newspaper people in New York, who had been playing with a couple of transatlantic radio circuits.

He writes: "The Hearst circuits were not too impressive. Fading would all too frequently mess up words and sentences, often throwing the receiving printer out of sync. There had to be a way to alleviate the fading problem. I remembered reading that RF signals separated by as little as 100 cycles demonstrated different fading characteristics (level differentials and time or phase differences.) It was worth a try. I called Bell Labs and asked them if they could provide me with audio filters (such as were used in their J and K Carrier Telephone Systems.) Their answer was that they had thousands of available 2125 and 2975 filters in stock. That is why we began with an 850 cycle shift. (I have been commended for designing FS RTTY with the "ideal" shift of 850 cycles. Now YOU know that the only reason I selected a shift of 850 cycles was because of the availability of those audio filters)." (Editor's Note for those licensed since about 1960. One Cycle then = one Hertz now.)

In addition to inventing FS RTTY for the U. S. military during WW2, W2IYX received a Presidential Citation for his work in proposing and introducing VLF communications as an effective antisubmarine tactic in the North Atlantic. But that is another story.

Both W2AUF and W2IYX, now both in their early 80's, are still active on-the-air amateurs. Dave is active in both the Founders Chapter, and the Long Island Chapter, of the QCWA. Harvey still cranks out the venerable Long Island DX Bulletin every two weeks.

We digital DXers owe a debt of gratitude to both these ham pioneers for laying the foundation for our niche in the hobby.

DX DOINGS

BAHAMAS, C6 - John, C6A/W9ILY and Ed, C6A/K2ZDC were to have been operating from Treasure Cay, Great Abaco Island 17-20 October. If you worked them QSL via W9ILY.

CHAD, TT - Steve,TT8OBO, has left Chad for the present, but has promised to return within the next couple of months. If you worked him, QSL to WA4OBO. Check the weekly VK2SG RTTY DX Notes for news of his next operation.

CORSICA, TK - Most of the recent RTTY action from Corsica has come from visiting /TK hams. However, you may find TK5QW around 1155Z on 20 meters. QSL route is needed.

CROATIA, 9A - This Balkan country is well represented on RTTY by 9A1CCY, 9A2RA, and 9A3AM. Look for them on 20 meters between 1215Z and 1700Z. QSL 9A1CCY to Box 87, 43500 Daruvar. QSL 9A3AM to Box 44, 50000 Dubrovnik. 9A2RA gets his cards via Box 108, Zagreb. All, of course are to Republic of Croatia.

CYPRUS, 5B - Cyprus is well represented by 5B4VX on 20 meters between 1615-1745Z. Also look for 5B4XA around 1840Z.

DODECANESE, SV5 - It is good to see Vasillis, SV5TS back on RTTY. Look for him around 2030Z on 20 meters. SV5BYR is also active ealier in the UTC day around 0745Z, and after 1315Z until about 1500Z. SV5BYP also shows up on 20 meters around 1250Z and 2250z. This time spread for SV5 activity should provide propagation to most of the world.

ERITREA, E3 - On September 30, 1993, the ARRL Awards Committee voted u-

nanimously to accept a recommendation fo the DX Advisory Committee (DXAC) to reinstate Eritrea as a DXCC country. The committee, in a vote of 4 to 3, made reinstatement effective May 24, 1991. The DXCC desk will accept QSL cards for Eritrea starting January 1, 1994. Cards received prior to that date will be returned without action. Those that have credit for deleted Eritrea need not resubmit cards.

ETHIOPIA, ET - Dragen, ET3YU, seems to have changed his operating hours. He shows up as early as 0715Z on 20 meters, and around 1245Z on 15 meters. QSL to P.O. Box 60349, Addis Ababa for a very quick response.

FRENCH POLYNESIA, FO - FO5EM has been quite active on 20 meters between 0200Z and 0330Z. For QSL, try the CBA

FRENCH SAINT MARTIN, FS - JG1RXQ and JL1MUT were to have been signing /FS in the middle of October. If you worked them QSL FS/JL1MUT via JH1EDB, and FS/JG1RXQ via JA1VPO. (Tnx QRZ DX)

GAMBIA, C5 - A group of Canadians will be here from 21 October to 4 November, straddling the CQ WW SSB contest, 30-31 October. Before and after the contest, VE1QD, VE1AI, VE1RU, and VE1AOE will be signing /C56, QSL via W3HNK.

GUANTANAMO BAY, KG4 - Add to the list of active stations here, KG4GB who may be found on 15 meters around 1930Z.

GUINEA, 3X - Didler, 3X0DEX, located in Conakry, made a sudden appearance, one evening, at the end of September, around 0100Z on 14087 KHz. He caused the expected traffic jam, and attempted to pull signals out of the pileup, on his frequency. To add to the confusion, he listened in LSB, and transmitted in USB. He would listen for about four or five minutes, extract three or four callsigns, and then give multiple reports during one transmission. Most times he did not ask for his report and simply sent QRZ. Sometimes, he did single out individual stations and stood by for a report. His signal, using a dipole, was outstanding here in the North country.

After enduring what must have been sheer frustration, at about 0200Z, he complained (!) of the QRM, and then went to 7045 KHz. The same scenario accurred the next few nights, starting at about 2145Z.

He will be there through the end of December 1993. Hopefully, when he does learn the art of split operation, the eager beavers amongst up will show consideration by refraining from calling over the top of the station he is working. He gave his QSL Manager as F6IBA.

INDIA, VU - VU2RAK has been showing up around 1530 on 20 meters. It nice to see Sanjeevi, VU2SJV on the band again. Look for him on 20 meters around 1530Z. QSL VU2SJV via N2HOS. For VU2RAK, try the CBA.

IRAQ, YI - Hafsa YI1HS has been appearing as early as 0700Z on 20 meters. If that time does not offer propagation to your area, listen for YI1AL around 1915Z on the same band.

MALAYSIA, 9M2 - I was pleasantly surprised to see a report that 9M2DW was active on 20 meters at around 1500Z. Tan, "Two Dancing Witches", gave me my first 9M2 RTTY QSO back in 1984. Some years prior to that he had given me that country on SSB. Also look for 9M2AX and 9M2DW around that same time. They sometimes put in nice signals to the Upper Midwest USA.

MOUNT ATHOS, SV/A - The Mt. Athos saga continues. It now appears that the screen on the laptop of Monk Apollo, SV2ASP/A, is malfunctioning with an intermittent. Both Shin, JA3AUQ, and Doc, JA3PFZ told me that if the computer is sent back to Japan, it will be fixed. Shin further confirmed that the planned expedition from Japan will take place next spring. So I think it will be a few more months before we see RTTY from the Holy Mountain. There is also the possibility that a big gun DXer from the USA, who is an experienced DXpeditioner, will go there next year. Stay tuned. If you are inclined to offer financial support to Monk Apollo, you can transfer money to the account of Karzis Apollo at the

Interbank of Greece, S.A.
Thessaloniki Branch
Tsimiski 33 Str.
54624 Thessaloniki
Greece. **(Tnx SV2WT)**

PENGUIN ISLANDS, ZS0 - After the DXCC struggled so many months over qualifying these offshore islands , you can expect to see them deleted from the DXCC country list some time early next year. See Walvis Bay below.

PETER I I., 3Y - Ralph, K0IR has given this update. The DX'pedition to Peter I is on schedule. The group has made a 50% downpayment on their ship, purchased their shelters, and received environmental clearance from the National Science Foundation. Antennas have been preassembled and repacked and include two tribanders, a WARC beam, monobanders for 15, 20, and 40 meters, a Battle Creek Special, and a GAP vertical. Four complete HF stations with amplifiers are packed and ready. The crew will be QRV on RTTY, CW, and SSB.

Approximately 50% of the supplies and equipment will go aboard the expedition's ship in Bremerhaven, Germany in mid-October. The remainder will be shipped to the Falklands, and go aboard the vessel there.

The team will rendezvous in England on or about Jan. 15, 1994, depart for the Falklands on Jan. 17, and arrive there on Jan. 18. After final equipment checkouts, and provisioning, the team will sail on Jan. 23.

Arrival on Peter I is still scheduled for Feb. 1. Helicopters will land the team on the island, and take them off around Feb. 16. There will be no support vessel off shore during the team's stay on Peter I. Hence, the best of shelters and equipment is a must.

The trip back will be through Punta Arenas, Chile and then on to the Falklands to meet a return flight to England. The team hopes to be home by March 1, 1994.

Up front costs are extremely heavy. Donations are sorely needed. All help from the ham community will be greatly appreciated.

If you have not yet done so, send your support to Jerry Branson, AA6BB at 93787 Dorsey Lane, Junction City, OR 97448.

REUNION I., FR - In addition to his usual operating in the middle of the UTC day, Herik, FR5DX can often be found on 20 meters between 0330Z and 0515z, as well as around 2030Z. QSL to his CBA.

T. BARTHELEMY ISLAND, FJ - Look for Charles, N2HIG and friends to be operating RTTY from this island in the French West Indies. They will straddle the CQ WW SSB contest which runs October 30-31. Callsign is not known, but may be /FJ. QSL direct to Charles' CBA.

SAUDI ARABIA, 7Z - We have a report that 7Z2AB was on 20 meters at about 0720Z. QSL via AA0BC. Was this a temporary use of the HZ1AB station?

SINGAPORE, 9V - In addition to 9V1JY, also active around 1500Z is 9V1UD. For QSL, try the CBA.

SOUTHERN SUDAN, ST0 - John, PA3CXC is back in ST0, and has tested his RTTY setup, but as of the beginning of October, there has been no information on any RTTY operation. Watch the weekly VK2SG RTTY DX Notes for late breaking news.

TONGA, A3 - See Western Samoa below.

U.K. SOVEREIGN BASES ON CYPRUS, ZC - Look for ZC4EPI on 20 meters around 1400Z. ZC4ML is likely to be found on 20 meters around 1645Z. QSL ZC4ML via G4LSL. ZC4EPI is a club station and can be QSL'd via the Bureau.

WALVIS BAY, ZS9 - Recent newspaper reports tell us that early next year, the Republic of South Africa will cede this enclave to Namibia, thereby eliminating its "raison d'etre" as a DXCC country. The same is true of the Penguin Islands,

ZS0. Both areas will then count as V5.

WESTERN SAMOA, 5W - Mori, 5W1MW can be worked on 20 meters around 0115 from either 5W, or from his other location at Tonga, A35MW. QSL via VK2BEX.

RYRYRYRYRY

Our listing of KD2YG's "More RTTY Operating Hints" (RDJ July/Aug 1993 p. 22) evoked a spirited response from a correspondent who ambiguously identified. It is not usual practice to answer anonymous mail. However this subject strikes at the very heart of RTTY operating.

"Pse fellow RTTY ops, lets get one thing straight, from your Aug '93 RJ column, are you telling us NEVER to send an RY string at any time??? Ever??? and anyone who does is a LID op???

"Enclosed herewith is a copy of one of the best operators in the worlds, Serge UZ9CWA, Sverdlovsk, sending RYs with his 7 element Yagi on 20M. Are you calling him a Lid???

"Lets discuss this a little. Why do people send an RY string anyway?

- 1. DRIFT..to allow a drifting station, like Russians who build their own equipment, to fine adjust before text arrives.
- 2. To prevent cutting off beginning text. some stations lose one or two letters/characters because they start sending BEFORE the xmit is turned on.
- 3. Used as TYPE AHEAD. It gives you 3 or 4 seconds jump on the Cursor. Keeps the diddles down to a minimum.
- 4. RYRY is as traditional as ZCZC es NNNN. Some operators use all 3 at times.

"...Is sending RYs really a major problem? Indeed I can see that it would be when making 20 second QSOs with DX..(exchanging RST reports) but as I see it problems of greater magnitude exist.

- 1. Haranguing DX. 4 or 5 exchanges
- 2. AMTOR es PACTOR QRM on 14081
- 3. Automatic BBS popping up in middle of QSO
- 4. Sending Brag Tapes to RARE DX.
- 5. Daisy Chaining..turning DX over to your buddy.

"I'm not calling above type "LIDS" but just "inconsiderate". Most of them have Ham Extra.

TU es 73

Doctor RY"

His enclosed printout was of a final QSO segment between UZ9CWA and K7DSR. I have a few reply comments of my own. The floor is then open to anyone else who wants it.

The initial line from UZ9CWA was nine sets of RYs (RYRYRYRYRYRYRYRYRY). At 60 wpm these 18 characters amount to approximately 3 seconds... hardly a significant type ahead lead.

How many DX stations that UZ9CWA works build their own transceiver? And those that do, do they build them to 1960 specs, or with modern stable Phased Locked Loops?

I believe the cutting off of beginning text can usually be avoided by starting with one or two **characters.**

If you start your transmission with 3-4 seconds of RYs, you are cluttering up the spectrum with non-information bearing signals.This is called QRM/noise. If you need a type ahead buffer, I suggest you install software that provides for it. Don't use an archaic procedure to substitute for it.

RYs had a necessary place in the world of mechanical machines. And ZCZC and NNNN continue to perform an automatic start and finish function, recognized by most modern software. RY does not perform any needed function with modern technology. I grant you there are still a handful of mechanical machines in use. Their numbers are miniscule. The tale should not wag the dog.

I agree with Doctor RY's "problems of greater magnitude." But those problems, and the cluttering up of the bands with needless RYs, are mutually exclusive.

Finally, I admit that KD2YG's characterization of all RY users as "lids," is a bit extreme, but when I see two solid lines of RYs on my screen, I tend to believe, at times he may have a point. In a decade of RTTY operation, mostly with DX, and at DX locations, I have never used RYs, and have never lost a contact as a result. Nor has any station ever requested me to use them!

I have had literally dozens of successful QSOs with Serge and his seven element Yagi at UZ9CWA, without ever once sending him an RY.

For some old timers, still enmeshed in the old ways, habits die hard. Change is the name in this game. What is your opinion?

HELP FOR TUVA

I received, via John, N0ISL, interesting information about a worthy project being undertaken by Patrick, AA6EG, to equip a high school radio club in the Tuvan capital city of Kyzyl in Siberia. This effort is to open a communications channel for cultural exchange with this very remote DX country. I quote from Patrick's letter to John.

"In 1981, the late Dr. Richard Feynman, Nobel Laureate, and one of the greatest Physicists of modern times, founded a group which evolved into what is now "Friends of Tuva" with his friend and fellow teacher, Ralph Leighton. Dr. Feynman may be remembered by many through his work on the Rogers Space Shuttle investigation commission, and especially for his demonstration of icewater and O-Ring interaction."

"Dr. Feynman and Mr. Leighton spent the last decade of Feynman's life figuring out how to visit the remote country of Tannu-Tuva.....and investigation of its capital city, KYZYL. This quest was the subject of a popular book, called TUVA or BUST written by Mr. Leighton.....I am involved in Friends of Tuva.....trying to obtain ham radio equipment to enable radio club activity at the school. The school radio station is likely to become a centerpiece of attention of the whole country, enabling the school area to become "connected" to the rest of the world and to serve as an example of implementation of similar radio communications systems throughout the country, especially in the remote areas."

Patrick is looking for all kinds of station equipment: HF Transceiver, Accessories, VHF multimode transceiver, TNCs, Software programs, 400 ft. of RG-213/U cable, or equivalent, Antennas, and optionally CLOVER HF Digital Comms Board for their IBM PC. All gear must be able to tolerate 50 hz primary power.

Because the path to this interior Siberia location, adjacent to Mongolia, is a difficult one, Patrick is building a rhombic antenna at his Monterey, CA QTH. To expedite the import of the radio equipment, he is obtaining a Presidential Letter by the President of Tuva to allow unobstructed transport through customs to the High School. If you can assist in providing any of the needed equipment, get in touch with

Patrick Barthelow
810-B Airport Road
Monterey, CA 93940
or AA6EG @ K6LY.#NOCAL.CA.USA.NA

Prior to the dissolutiuon of the USSR, the country was the Tuva Autonomous Soviet Socialist Republic. I have often wondered why no one ever proposed it as a separate DXCC country. Perhaps AA6EG might wish to determine whether Tuva now so qualifies. To have it declared a DXCC country would undoubtedly stimulate the acquisition of the necessary equipment to get the high school on the air.

I can recall only one operation from Tuva, which occurred back in October and November of 1979. This was a dxpedition by

a group of eleven Krasnoyarsk hams, assisted by six SWL's, led by Bob, UA0AAK, and Vlad, UA0ACQ. Their purpose was to give amateurs, world wide, an opportunity to work Oblast 159 in Zone 23 on CW and SSB.

ANOTHER NEW DXCC COUNTRY?

A news article in the New York Times of September 30, 1993 describes a locale, that in a few years, might well qualify as a new DXCC country. This is a place in the north west of Somlia, called Hargeisa. Students of colonial history may recognize it as the former British Somaliland. It claimed independence from Somolia more than two years ago, although this step has not been recognized by the world community of nations. Unlike Somolia, "... it has a working administration.. a feldgling tax system, functional police force, and legal system." Understandably, "... the government, even while emphasizing its statehood and independence, is very fragile, based on a loose relationship between the administration and the clan militias that roam the countryside.

It appears that this situation is somewhat akin to that of Eritrea and neighboring Ethiopia, but Hargeisa is almost completely devastated, having '... had 80 percent of its buildings destroyed between 1988 and 1991." This is an interesting area to watch for future developments.

And, a final retorical question on the new DXCC country subject; how soon will a new Palestinian state be in place to qualify?

HAVE DX NEWS?

I can be reached, directly by dropping mail into my AMTOR PAMS, leaving a message in the APLink box of W5KSI, sending me a packet message addressed to W2JGR @ WB0GDB.MN.USA.NA, finding me on RTTY, telephoning me at (612) 377 7269, or FAXing me at (612) 374 8161. (If you FAX me, please address it with my full name, as that FAX number serves a number of people.) When these high tech approaches fail, the U.S. Postal Service can find me. When I am not chasing DX, my PAMS listens on 14074 khz. Set your chirping to WJGR.

THANKS - Thanks to the following for all your information: AA6EG, CE3GDN, DJ3IW, DJ6QT, I5FLN, JA3AUQ, JA3PFZ, KE6XJ, K7DSR, K0IR, N0ISL, NJ0M, SV2WT, TT8OBO, W2IYX, W0LHS, WB2CJL, S5S, 4X6UO, 5W1MW, and 9X5LJ. Without you there would be no column.

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

de **Jules W2JGR** ■

SOFTWARE

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

HDQ--PART III

News item: *Recent quotes remain steady--one picture commands a thousand words in exchange, regardless of the market or the currency. But what of the value of a single word in digitized voice....is it one, one hundred or even a thousand pictures? This fresh offering is too new to quote and the price is in the hands of the users. And they are too few to establish a market relationship between these two senses. Early reports from scattered auctions suggest, however, that there will be a significant premium . . . perhaps because of the novelty of digitized voice; or because even at this elemental stage, voice lives and moves and breathes in a way the graphic image fails to equal despite its clarity; or finally, because it introduces the future of amateur communication.*

"Jim, this is your first E-Mail message," is all it contained, the first digitized message from Peter. Strange that a few words coming out of this computer speaker carried such an impact. Damaged by compression, crammed into a 500 Hz slot, a small fraction of the space and amplitude demanded by any normal voice signal, they were nonetheless all Peter--understandable, fully inflected, instantly recognizable. Impact? Throughout history carefully chosen words moved mountains. Show no surprise in this case either because those few seconds of voice brought back the wonder and the mystery of radio that lured all of us to this hobby in the first place.

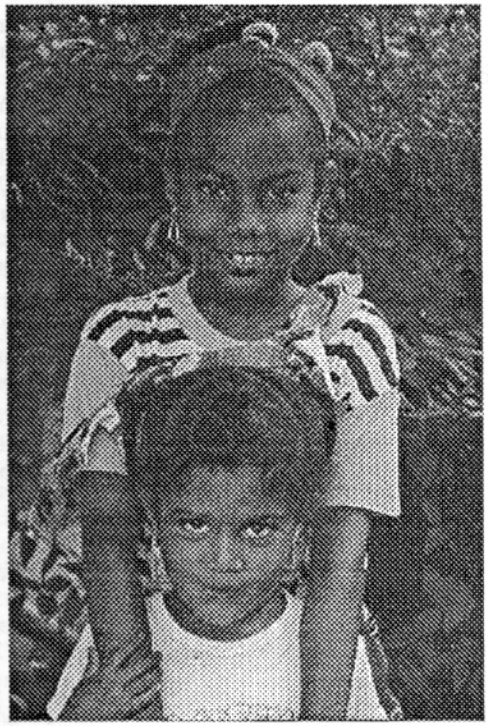
Message number two was less successful technically but far more charming. The 60 second song from Angelika (see pic.) was purposely over-compressed because of its length. Yet the song was most of what a very young (4) lady's song should be, despite the deletion of all empty spaces, the clipping of the highs and lows, the French. Angelika surmounts such trivial obstacles and makes an event out of her Transatlantic debut. And we want to hear more.

Meanwhile, I sent nothing. It took the better part of a day to discover that the SoundBlaster Pro defaults to zero mike gain! And more hours to determine that the gain must be at the maximum level (on the Mixer screen) in order to record a satisfactory message! Finally, we demonstrated that the eastbound results could be the same as those headed west. And we went on to other things. Analyze your sound card's manual and have those little irritations under control before you try your first sound link. What a good place to pick up the threads of last month's comments.

SOUND SCREEN

Remember that a sound card (like the basic SoundBlaster) is a basic requirement for Express 2.0. Then, get an inexpensive mike so you can record sound files before linking with a Clover station or during the QSO. Sound files can be sent from all directories on your hard disk, or created within the Sound screen. Access this feature with little difficulty. Click the Load button and select the appropriate file from the directory tree. Remember that an uncompressed voice file uses a .WAV suffix, a compressed file .COV.

Create a sound file either before or during the QSO by selecting the New button on the Sound window. Pick the record

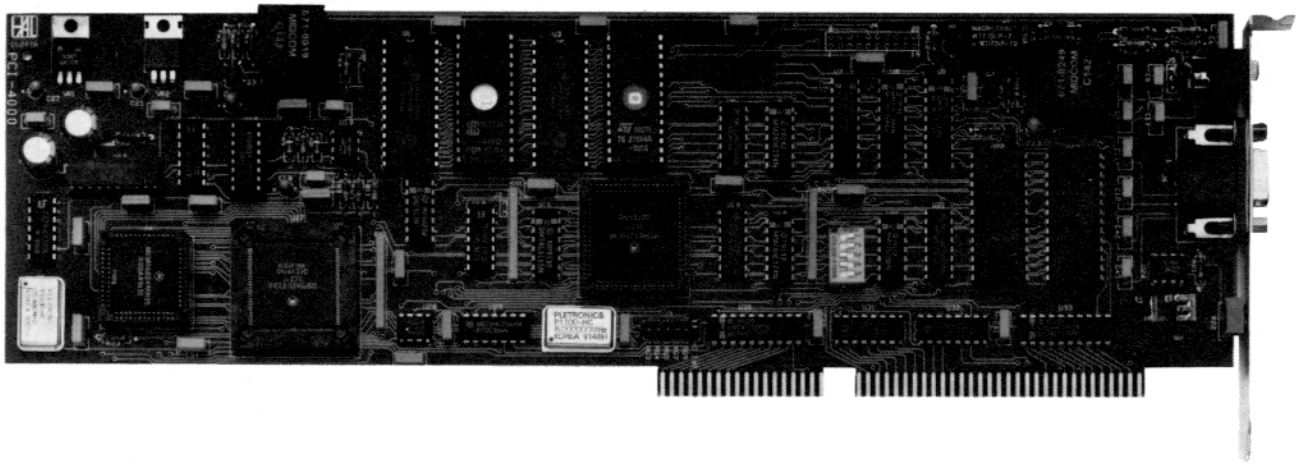


Peter's (TY1PS) children, Tina and Angelika

NEW!

HAL Announces the PCI-4000 PC-CLOVER System

For Fast, Bandwidth-Efficient HF Data



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

The PCI-4000 PC CLOVER system features:

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

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

PCI-4000 PC-CLOVER System Only $995.00

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Urbana, IL 61801
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FAX (217) 367-1701

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button in the Uncompressed Track window. Begin speaking at once. Hit the stop button when through, the play button on the left to listen to the message. Then listen to it again in the Compressed File box. The normal compression setting is at ten or below. Feel free to experiment with higher rates for the voices in and around your shack. If the quality is adequate to the specific need either save the file to disk or send at once by clicking the Transmit button. Okay returns you to the command screen.

Is this portion of the program ready for prime time? Not quite yet, but it works and promises dramatic progress in the next version of Express. As quality improves, the simplicity will be maintained. This will allow all users to be in on the birth of something like "surround sound" in digital form. Stay with it, experiment, and keep everybody posted about your experience.

MAILBOX.

One last look at Express and one of its key modules. This portion of the program is prime time all the way! If you operate, or ever wished to operate an HF BBS, or if you simply communicate regularly with one or more BBS stations look no further. One glance at the copy of the screen and you will be convinced. (See Screen drawing above)

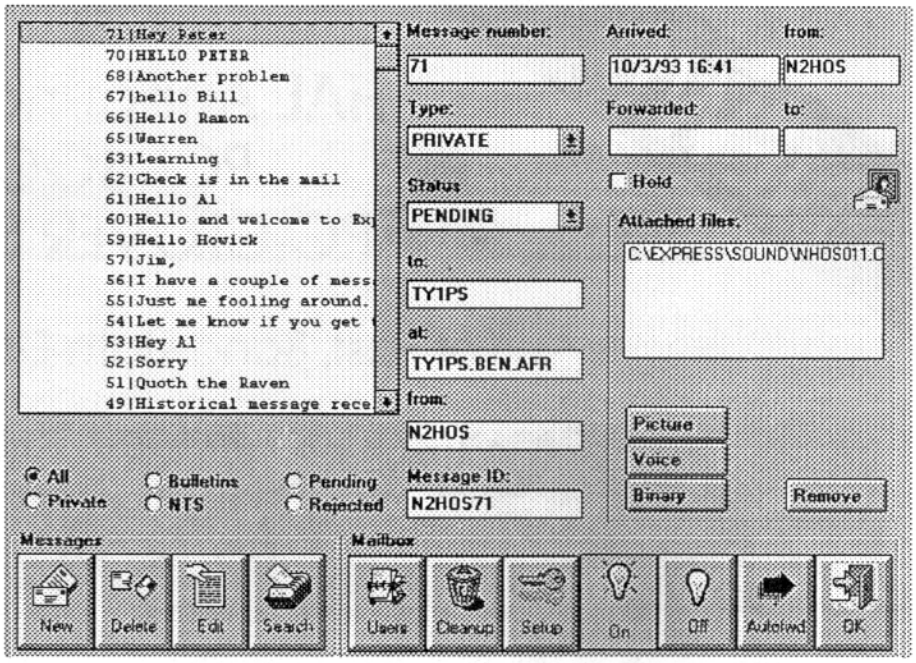
Setup. This button brings up the mailbox management screen and establishes the guidelines for operation of your BBS. The Welcome, Logout, H-Route, Message Header and Zip message boxes are edited directly within the white space provided.

The five Edit boxes on the lower half of the Setup screen bring up a full screen editor when clicked. Only the Help Message is complete in the distribution copy of Express 2.0. The New User and System Info messages need to be developed to match the characteristics of your own station.

Intercept and Forward files are required for the autoforwarding and routing function of the BBS. Express uses the Winlink Intrcpt.aps and Forward.aps files in Winlink\Apdata directory, but they must be copied (for now) to the Express directory. The information can be developed independently of course.

Fast Forward enables a distinctive feature of Express. If two Express BBS stations link and have traffic to pass, the messages are combined and compressed into one high speed transfer. The rate is several times faster than normal.

Back on the main Mailbox screen, the large window lists all of the messages in the directory. The Search is handy. Use any text string, then when found, click



View to bring up the entire message. Edit is equally useful. Select any message and Edit brings up a full screen view of the message to be edited.

New starts the message creation, and at first might seem confusing. The message precedes the address. Remember that little twist and you will have no problems. A large, blank window appears. Type the text and click OK. As the message window closes, the To: box in the center of the Mailbox window contains the cursor. Insert the callsign of the addressee. If that station is in your User file the At: box automatically fills with the proper hierarchical address. If not type in the details (ie., N2HOS.FL.USA.NA).

The Attach Files box on the right side of the screen allows you to add any type of file to an existing, pending message. Select the message you wish to enhance, then chose Picture, Voice or Binary. Chose the file to be appended to the message and it is all done. The transfer takes place along with the text message previously prepared! It will even do so automatically in Autoforward whether you are the calling or the called station (provided both stations are using Express 2.0). The Remove button detaches the file from the message but does not erase it.

Users. When operating as a BBS, the Users file is accessed by Express whenever a station calls in. If the station is listed, your sign-on message includes the name of the caller as well as his callsign. Each station that links is listed here. Build your own user file in advance.

Finally, when operating as a BBS, the mailbox may be turned Off. A normal keyboard QSO exchange may then take place for any length of time. The On button returns the program to the BBS for autoforwarding. Click the Autoforward button after turning the BBS on. When complete, the mailbox will drop the link and return to standby. Normally, Autoforwarding is enabled at the time the link is made by clicking Link+Autoforward option.

All in all, the Mailbox feature is outstanding. Some will use this program as the Clover port within Winlink. (Be advised to shut down the Winlink Clove function before trying this. The PCI-4000 can serve but one master at a time). Others will use it as a free-standing BBS but even those who are BBS patrons will enjoy the message management strengths included here. When the PK-900 version of Express is available next year, the options will even more interesting.

THE FINAL DASH

Peter (and partner Volker, TY1VH) arrived here on the 23rd of September. They moved into their temporary quarters on the beach, almost within the long morning shadow of my tower. Within hours, Peter was at the computer doing the last round of debugging. I cannot pretend to have contributed much but talk to this period of dancing screens. His command of Visual Basic results in a monitor filled with three or four layers of boxes, windows and messages--all seemingly related but mostly proclaiming my ignorance of the proceedings. Time outs were called from time to time but, finally, on the evening of the 25th, we zipped up the program and said, "So be it." The two of them promptly left for the Everglades and left me with the Help file/Index assignment. Not to be bested by such a ruse, I completed both files

over the weekend and laid it on his assignment list upon his return! By the 29th, we engaged in the process of integrating the help file into the program. "An easy process," according to Peter; which, in fact, involves about 357 steps each time anything is added to the distribution disk and an equal number to correct an error! Nevertheless, at 2200 hours EDT on the 29th, the file was closed for good. And on the 30th (some seven hours before the drop-dead deadline) the first complete copy was actually shipped to Jim KE5HE the first true-believer to ante up the $25 (in cash, as Texans are want to do) way back in July. Al W2TKU did come by for a visit and lunch (meanwhile, waving his check for $25) and was able to walk away with a partial version, a shortage soon remedied with a mailed copy of the help file. All other orders have since been shipped. There is no backlog so get your order in now! Send a $25 check (payable to ADRS, $50 for non-members) to me at box 328, Indian Rocks Beach, FL 34635.

Despite the effort, their visit was not devoted exclusively to the world of RF communication. The non-digitized non-ham talkfest was a continuous feature of the eight day affair. Wide ranging talk over coffee, over food (lots of food), over adult beverages, next to the swimming pool, in the car, the kitchen, the shack. No subject escaped the panel discussion's agenda even the morning of the good-byes, even though they had been up most of the night cramming 200 pounds of disk drives and related hardware into an 80 pound box! (If I had worked for the airline, I would have suggested that the cargo terminal was on the other side of the airport). Gen the XYL barely escaped complete exhaustion of the vocal cords . . . and loved every minute of it! She was not alone.In their absence we have slept more and eaten less, yet count the days until the return of these two special friends

What now? Rather than a big software project, I look forward to lots of Express operating time. I am scanning 7066, 10135, 14064, 14065 and 21066 24 hours using Clover and Express. Check in and start enjoying the multi-media world created by Peter. Pick up your first graphic or sound file attached to the bulletins and then leave one for me. And you will have begun your venture into this new and wonderful world of High Density QSOing. Express 2.0 and **HDQ** forever!

END NOTES

Next month we start a new series called **Windows**. Subjects include,"Windows Right For You?," "Packratt For Windows," "What's Next for Windows?". It just might be interesting.

Did no contesting but some listening during the CQWW RTTY test. The propagation was much better than anybody had hoped, but my FT1000D arrived four days too late! However, I learned a few things. First, the most frequent interference I noted was the usual automated packet above 14093. All of it appeared to be DX. No RTTY contestee worth his/her salt paid any attention to it. Hi! The packet stations just kept on repeating, polluting the bands. But the troublesome thing was the number of booming pactor signals pushing up into the lower end of the RTTY band. Not only are they where they shouldn't be, they are about five times as wide as they ought to be. Hey, folks, work your TLC and get that bandwidth down to the 500Hz level! I measured several at 2.8 to 3.0Khz and had reports of some running 5.0Khz wide. There is no room within the digital bands for that kind of nonsense .

See you next month. 73

de **Jim, N2HOS** sk ■

HOTEL ROOMS FOR DAYTON 94

ORDER NOW!

All rooms are at the Radisson Hotel. This is where the digital gang stays. The RDJ Dinner is held here and the hospitality room is also here. Everything exciting happens at the Radisson. If you are going to be there and need a room, now is the time to reserve one. The RDJ has a block of rooms available but they will not last. Don't wait to reserve a room. You must reserve through the RDJ not the hotel.

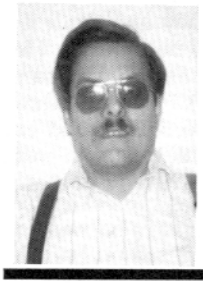
Most of the rooms are two bed rooms, so if you wish to share a room with someone, your cost will be reduced. I must know if you want a room NOW. I do not need deposit money as this time.

Room rates: $86.00 per night. A $80.00 deposit will be needed. You will be advised when and where to send the deposit money.

The room rates are slightly higher this year but the Hotel has not raised their rates to us for a long time. The hotel also ran a survey of competing hotels in the area and this slight increase is in line and comparable to what is being charged by their competition.

Hamvention dates are: April 28, 29, and 30, 1994

Please order your rooms immediately either by Phone/FAX or letter.



PACTOR

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

CONNECTED: KB8LUJ

Greetings once again and a hearty welcome to all. There was more mail in the box this month, so let me acknowledge Bob, AA4PB; Hans, DJ1IJ; Peter, DL6MAA; Tom, DL2FAK; Bert, G4NJI; Rick, KV9U; Ken, N4SO; Carl, W3IVY; Glen, WA6MHA; Ron, W8ILC; and Chris, WO1V. Thanks for your communications.

Bob Lewis, AA4PB, sent a sample of PacTERM V1.1 software for operating the PacComm PACTOR controller. Another review added to the busy schedule.

M.J. Kerry, G4BMK, of Grosvenor Software, sent a revised copy of BMK-MULTY with PACTOR version 2.00. He advises this software, along with a call-sign database/logger module, should be available by the time this is published. (See Sidebar below)

BMK-MULTY SUMMARY OF CHANGES JULY 1993

GENERAL (All text modes)

* The 26 key combinations of ALT plus a letter A thru Z can be assigned to commands of your choice. The supplied .CTL file assigns mode selection commands to ALT+A, ALT+P etc. so that ATL+A switches to AMTOR, ALP+P switches to PACTOR, etc. ALT+T toggles TXR.

* CTRL+ESC allows commands to be issued without breaking a link.

* A screen saver facility is invoked via the SAVES command. (SAVES 5 blanks the screen after 5 min. of keyboard inactivity)

* You can call another program (text ed, etc) or shell out to DOS by use of ALT keys. As supplied ALT+D shells to DOS and ALT+X calls a text editor. CW id can be send via CWID command. ALT+I is initially assigned.

* A new file ADVANCE.DOC gives further information on these items.

PACTOR

* A completely new PACTOR listen mode (Mode-L) has been added which automatically runs on computers showing a speed factor of at least 100 on the BMK-MULTY title screen. It needs an 8086 (or faster) to compute 5000 CRC frames/second. It works equally on ARQ or FEC. On slower computers, the listen mode defaults to an older 1.11 PACTOR requiring ARQ/FEC listen selection. New listen can be 'forced' by setting IRATE to 800 and FAST to 1 on slower machines.

* HUFFMAN now automatically selects on a frame by frame basis. It no longer has to be manually disabled to send high bit graphics.

* DIGITAL Memory ARQ has been improved by the adding a multi-path compensation feature. This especially helps on lower bands links. The letters DMA now precede the Memory ARQ counter on line #2.

* The type ahead buffer is NOT cleared on a link failure. Instead the HOME key is used to clear the buffer.

CW

* New commands CWPAD and CWDELAY added. Command CWGAP expanded.

FAX

* Support for IOC 288 and IOC 576, aspect ratios, has been added.

In response to many inquiries, PACTOR-2 will NOT make PACTOR-1 units obsolete. PACTOR-2 is FULLY COMPATIBLE so there's no need to replace PACTOR-1 equipment. However, there is some frequency confusion. PACTOR-1 frequencies are usually expressed in terms of MARK frequency, like AMTOR or RTTY. Since PACTOR-2, operates on SSB, reference to MARK is confusing. So I recommend that all PACTOR frequencies be referenced to the 'center frequency' concept. With PACTOR-2's ability to vary AFSK tone frequencies, and the wide variety of equipment on the air, there must be a common reference in order to maintain a uniform frequency standard[1].

A question was asked about 170Hz -vs- 200Hz shift. The Germans say 200Hz is better mathematically and some manufacturers agree. But there is a lot of 170Hz shift PACTOR on the air. The tuning difference of 15Hz (200-170 = 30; 30/2 = 15) is within the band pass of most filters; so there's not much difference. PACTOR-2 uses QPSK and LSB, making shift a moot point.

PACTOR GRAPHICS

An interesting feature of PACTOR is the ability to send graphic characters. These are nothing more than high bit ASCII usually defined as those characters from 128 ($80) thru 255 ($FF). They are also known as the IBM graphics set and require a computer that can display ASCII 128 thru 255.

At one time graphics characters were tabled in printer manuals. Today a good list is hard to find. So, with a pat on the back to Dale (for the space), here is a complete ASCII character table. (See pages 15 & 16.)

Graphics are created, stored, transmitted, received, captured, and displayed as text files. Many text editors (like PC Write, etc) can create, change, delete, or manipulate characters. Some computers or programs only work with 7 bits, so CHR 171, ½, ($AB, the half) would display as CHR 043, +, ($2B, the plus sign). Likewise, a change in settings may be required for your printer to properly display the IBM graphics set. Also, some programs, like LAN-LINK, pass ANSI protocol to control color. These matters, however, are beyond the scope of this months' column.

One important item to note. When creating graphics, it is wise to avoid using any low bit (ASCII 000-032, $00-$1F) or high bit (ASCII 128-159, $80-$9F) control character. These characters may cause unpredictable results when encountered, such as disconnecting links or locking up printers.

The ability of PACTOR to exchange files without error is responsible for the

popularity of graphics. A good TNC control program, capable of moving files, is a requirement. Some hams insert graphics into most aspects of a QSO, from saying hello (PIX 1) to saying goodbye (PIX 2) or sending a shuttle just flying high (PIX 3). They are used as a brag (PIX 4) or sent as a flag (PIX 5). From busy city (PIX 6) to simple train (PIX 7) and various rigs running complex (PIX 8) to plain (PIX 9). With moniker (PIX 10) or call (PIX 11) language is no problem at all (PIX 12). (Pardon my rhyme, but only this time) (ED: Pictures 5, 11, and 12 not shown)

Some graphics start with a basic concept. But, even after wide circulation, including numerous additions and modifications, you often see familiar patterns. Others are quite unique. Creativity is bounded by limits of the imagination and the available graphics characters. As future transfer speeds increase, sending large binary files in a reasonable time will be possible.

Simple graphics is only the start. High resolution pictures and even digital voice will be in your future, the very near future.

Next month a look at HUFFMAN compression and a glimpse into the future of PACTOR.

Thanks to our contributors. Your efforts make this column possible and your continued help is needed. Please send what you can. It is all appreciated.

Thanks for sharing your time by reading. Until next month.

de **Phil, KB8LUJ** ■

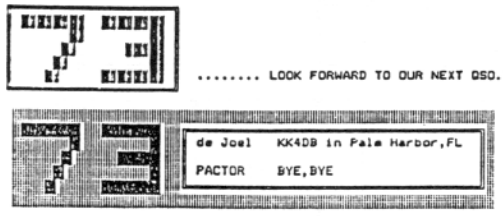
May God Bless you and yours. Link d-o-w-n..

*** DISCONNECTED: KB8LUJ

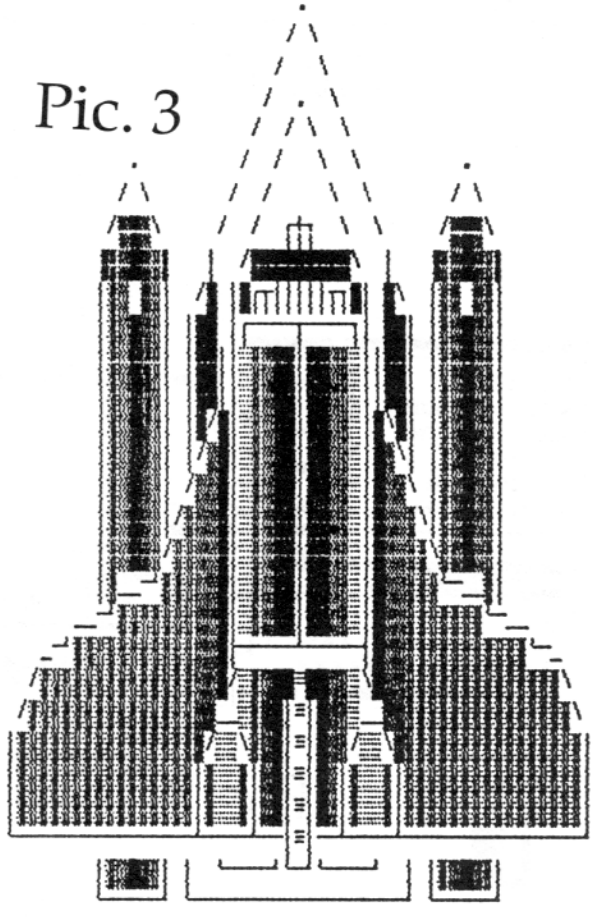
1. See Jim Jennings Column, The Link, RJ Jul/Aug, Vol 41 No 6, pp 19-20

Pic. 1

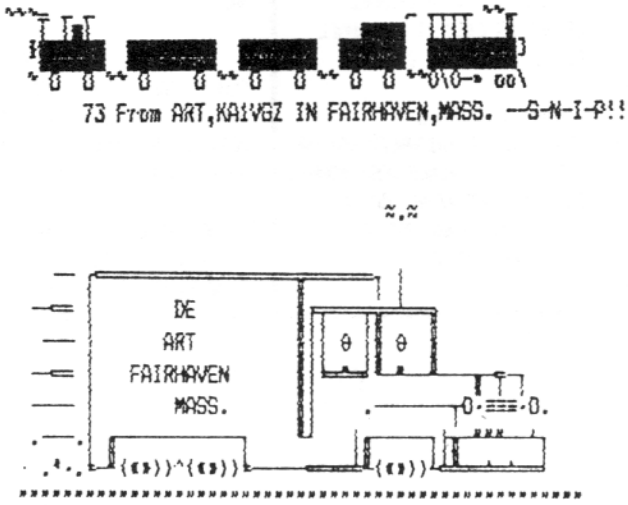
Pic. 2

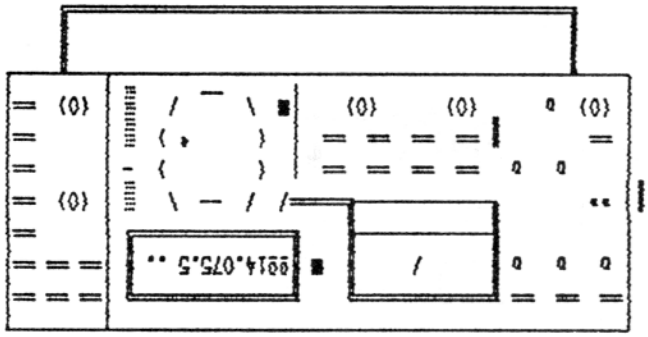


Pic. 3

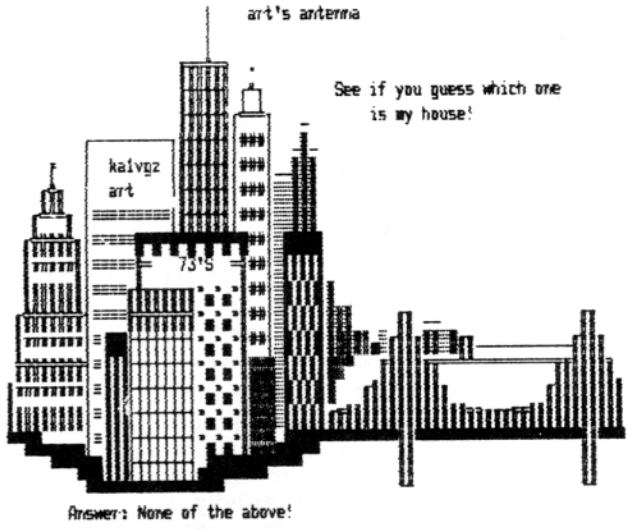


Pic. 7

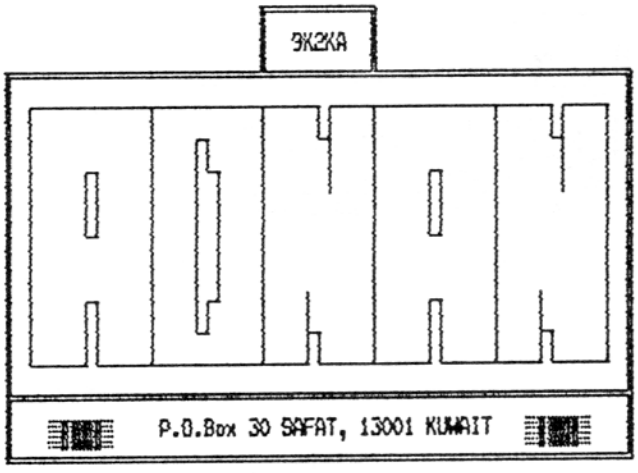




Pic. 9



Pic. 6



Pic. 10

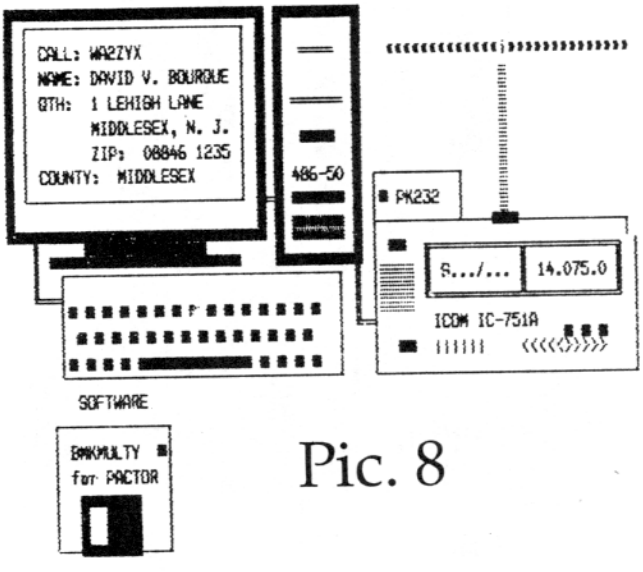
---VE2KN---Jim---Montreal,---Que.---------

T/R: IC-751A with Computer Control
Antennas: ATB-34, Dipoles
Computer: 286 Clone, PK-232MBX (Pactor)
Program: ACUTERM 1.10, Auto Logging

KD4CFF

PACKET ADDRESS KD4CFF@KE2IX.#FMY.FL.USA.NOAM
TCP/IP ADDRESS KD4CFF.AMPR.ORG 44.38.0.131

RADIOS	TNC'S
VHF ICOM IC720A 100 WATTS	KANTRONICS ALL MODE KAM VER 6.1
HF GE PHOENIX SX 16 CHANNELS	NAPLK BAYCOM MODEM
GE MASTER EXEC II 1 CHANNEL	
ALINCO DR-570 20 CHANNEL	COMPUTERS
ANTENNAS	CLONE 386SX-25 130 MEG DRIVE
VHF MOSLEY 3 ELE TRIBANDER 45' UP	VGA COLOR 4 SERIAL DEVICES
HUSTLER 5BTV FENCE POST MOUNTED	HOSTMASTER'2 PLUS SOFTWARE
HF DUAL BAND 2MTR/440 35' UP	SP VER 6.11 SOFTWARE
VHF GROUND PLANE 35' UP	
440 RINGO 60' UP	CLONE 286-16 20 MEG HDD MONO
	2 SERIAL DEVICES
	KA9Q TC/IP NOS SOFTWARE



Pic. 8

Pic. 4

IBM Graphics character set

BINARY	DEC	HEX	DESCRIPTION
00000000	000	$00	CTRL-@ MEDIA OR TIME FILL (NUL)
00000001	001	$01	CTRL-A START OF HEADING (SOH)
00000010	002	$02	CTRL-B START OF TEXT (STX)
00000011	003	$03	CTRL-C END OF TEXT (ETX)
00000100	004	$04	CTRL-D END OF TRANSMISSION (EOT)
00000101	005	$05	CTRL-E INQUIRY (ENQ)
00000110	006	$06	CRTL-F ACKNOWLEDGE (ACK)
00000111	007	$07	CTRL-G BELL (BEL)
00001000	008	$08	CTRL-H BACKSPACE (BS)
00001001	009	$09	CTRL-I HORIZONTAL TAB(HT)
00001010	010	$0A	CTRL-J LINE FEED (LF)
00001011	011	$0B	CTRL-K VERTICAL TAB (VT)
00001100	012	$0C	CTRL-L FORM FEED (FF)
00001101	013	$0D	CTRL-M CARRIAGE RETURN(CR)
00001110	014	$0E	CTRL-N SHIFT OUT (SO)
00001111	015	$0F	CTRL-O SHIFT IN(SI)
00010000	016	$10	CTRL-P DATA LINK ESCAPE (DLE)
00010001	017	$11	CTRL-Q DEVICE CONTROL 1 (DC1)
00010010	018	$12	CTRL-R DEVICE CONTROL 2 (DC2)
00010011	019	$13	CTRL-S DEVICE CONTROL 3 (DC3)
00010100	020	$14	CTRL-T DEVICE CONTROL 4 (DC4)
00010101	021	$15	CTRL-U NEGATIVE ACKNOWLEDGE (NAK)
00010110	022	$16	CTRL-V SYNCHRONOUS IDLE (SYN)
00010111	023	$17	CTRL-W END BLOCK TRANSMISS (ETB)
00011000	024	$18	CTRL-X CANCEL (CAN)
00011001	025	$19	CTRL-Y END OF MEDIUM (EM)
00011010	026	$1A	CTRL-Z SUBSTITUTE(SUB)
00011011	027	$1B	ESCAPE (ESC)
00011100	028	$1C	CTRL-\ FILE SEPARATOR(FS)
00011101	029	$1D	CTRL-] GROUP SEPARATOR(GS)
00011110	030	$1E	CTRL-^ RECORD SEPARATOR (RS)
00011111	031	$1F	CTRL-_ UNIT SEPARATOR(US)
00100000	032	$20	SPACE
00100001	033	$21	!
00100010	034	$22	"
00100011	035	$23	#
00100100	036	$24	$
00100101	037	$25	%
00100110	038	$26	&
00100111	039	$27	'
00101000	040	$28	(
00101001	041	$29	)
00101010	042	$2A	*
00101011	043	$2B	+
00101100	044	$2C	,
00101101	045	$2D	-
00101110	046	$2E	.
00101111	047	$2F	/
00110000	048	$30	0
00110001	049	$31	1
00110010	050	$32	2
00110011	051	$33	3
00110100	052	$34	4
00110101	053	$35	5
00110110	054	$36	6
00110111	055	$37	7
00111000	056	$38	8
00111001	057	$39	9
00111010	058	$3A	:
00111011	059	$3B	;
00111100	060	$3C	<
00111101	061	$3D	=
00111110	062	$3E	>

BINARY	DEC	HEX	DESCRIPTION
00111111	063	$3F	?
01000000	064	$40	@
01000001	065	$41	A
01000010	066	$42	B
01000011	067	$43	C
01000100	068	$44	D
01000101	069	$45	E
01000110	070	$46	F
01000111	071	$47	G
01001000	072	$48	H
01001001	073	$49	I
01001010	074	$4A	J
01001011	075	$4B	K
01001100	076	$4C	L
01001101	077	$4D	M
01001110	078	$4E	N
01001111	079	$4F	O
01010000	080	$50	P
01010001	081	$51	Q
01010010	082	$52	R
01010011	083	$53	S
01010100	084	$54	T
01010101	085	$55	U
01010110	086	$56	V
01010111	087	$57	W
01011000	088	$58	X
01011001	089	$59	Y
01011010	090	$5A	Z
01011011	091	$5B	[
01011100	092	$5C	\
01011101	093	$5D	]
01011110	094	$5E	^
01011111	095	$5F	_
01100000	096	$60	`
01100001	097	$61	a
01100010	098	$62	b
01100011	099	$63	c
01100100	100	$64	d
01100101	101	$65	e
01100110	102	$66	f
01100111	103	$67	g
01101000	104	$68	h
01101001	105	$69	i
01101010	106	$6A	j
01101011	107	$6B	k
01101100	108	$6C	l
01101101	109	$6D	m
01101110	110	$6E	n
01101111	111	$6F	o
01110000	112	$70	p
01110001	113	$71	q
01110010	114	$72	r
01110011	115	$73	s
01110100	116	$74	t
01110101	117	$75	u
01110110	118	$76	v
01110111	119	$77	w
01111000	120	$78	x
01111001	121	$79	y
01111010	122	$7A	z
01111011	123	$7B	{
01111100	124	$7C	|
01111101	125	$7D	}
01111110	126	$7E	~

IBM Graphics character set

01111111	127	$7F	DELETE
10000000	128	$80	Ç MEDIA/TIME FILL (NUL)
10000001	129	$81	ü START OF HEADING (SOH)
10000010	130	$82	é START OF TEXT(STX)
10000011	131	$83	â END OF TEXT(ETX)
10000100	132	$84	ä END TRANSMISSION (EOT)
10000101	133	$85	à ENQUIRY (ENQ)
10000110	134	$86	å ACKNOWLEDGE(ACK)
10000111	135	$87	ç BELL(BEL)
10001000	136	$88	ê BACKSPACE (BS)
10001001	137	$89	ë HORIZONTAL TAB (HT)
10001010	138	$8A	è LINE FEED (LF)
10001011	139	$8B	ï VERTICAL TAB (VT)
10001100	140	$8C	î FORM FEED (FF)
10001101	141	$8D	ì CARRIAGE RETURN (CR)
10001110	142	$8E	Ä SELECT OUT(SO)
10001111	143	$8F	Å SELECT IN (SI)
10010000	144	$90	É DATA LINK ESCAPE (DLE)
10010001	145	$91	æ DEVICE CONTROL 1 (DC1)
10010010	146	$92	Æ DEVICE CONTROL 2 (DC2)
10010011	147	$93	ô DEVICE CONTROL 3 (DC3)
10010100	148	$94	ö DEVICE CONTROL 4 (DC4)
10010101	149	$95	ò NEG-ACKNOWLEDGE (NAK)
10010110	150	$96	û SYNCHRONOUS IDLE (SYN)
10010111	151	$97	ù END TRANSM BLOCK (ETB)
10011000	152	$98	ÿ CANCEL(CAN)
10011001	153	$99	Ö END OF MEDIUM(EM)
10011010	154	$9A	Ü SUBSTITUTE(SUB)
10011011	155	$9B	¢ ESCAPE(ESC)
10011100	156	$9C	£ FILE SEPARATOR (FS)
10011101	157	$9D	¥ GROUP SEPARATOR (GS)
10011110	158	$9E	₧ RECORD SEPARATOR (RS)
10011111	159	$9F	ƒ UNIT SEPARATOR (US)
10100000	160	$A0	á
10100001	161	$A1	í
10100010	162	$A2	ó
10100011	163	$A3	ú
10100100	164	$A4	ñ
10100101	165	$A5	Ñ
10100110	166	$A6	ª
10100111	167	$A7	º
10101000	168	$A8	¿
10101001	169	4A9	⌐
10101010	170	$AA	¬
10101011	171	$AB	½
10101100	172	$AC	¼
10101101	173	$AD	¡
10101110	174	$AE	«
10101111	175	$AF	»
10110000	176	$B0	▒
10110001	177	$B1	▒
10110010	178	$B2	▓
10110011	179	$B3	│
10110100	180	$B4	┤
10110101	181	$B5	╡
10110110	182	$B6	╢
10110111	183	$B7	╖
10111000	184	$B8	╕
10111001	185	$B9	╣
10111010	186	$BA	║
10111011	187	$BB	╗
10111100	188	$BC	╝
10111101	189	$BD	╜
10111110	190	$BE	╛
10111111	191	$BF	┐
11000000	192	$C0	└
11000001	193	$C1	┴
11000010	194	$C2	┬
11000011	195	$C3	├
11000100	196	$C4	─
11000101	197	$C5	┼
11000110	198	$C6	╞
11000111	199	$C7	╟
11001000	200	$C8	╚
11001001	201	$C9	╔
11001010	202	$CA	╩
11001011	203	$CB	╦
11001100	204	$CC	╠
11001101	205	$CD	═
11001110	206	$CE	╬
11001111	207	$CF	╧
11010000	208	$D0	╨
11010001	209	$D1	╤
11010010	210	$D2	╥
11010011	211	$D3	╙
11010100	212	$D4	╘
11010101	213	$D5	╒
11010110	214	$D6	╓
11010111	215	$D7	╫
11011000	216	$D8	╪
11011001	217	$D9	┘
11011010	218	$DA	┌
11011011	219	$DB	▉
11011100	220	$DC	▄
11011101	221	$DD	▌
11011110	222	$DE	▐
11011111	223	$DF	▀
11100000	224	$E0	α
11100001	225	$E1	ß
11100010	226	$E2	Γ
11100011	227	$E3	π
11100100	228	$E4	Σ
11100101	229	$E5	σ
11100110	230	$E6	µ
11100111	231	$E7	τ
11101000	232	$E8	Φ
11101001	233	$E9	Θ
11101010	234	$EA	Ω
11101011	235	$EB	δ
11101100	236	$EC	∞
11101101	237	$ED	φ
11101110	238	$EE	ε
11101111	239	$EF	∩
11110000	240	$F0	■
11110001	241	$F1	±
11110010	242	$F2	≥
11110011	243	$F3	≤
11110100	244	$F4	⌠
11110101	245	$F5	⌡
11110110	246	$F6	÷
11110111	247	$F7	≈
11111000	248	$F8	°
11111001	249	$F9	∙
11111010	250	$FA	·
11111011	251	$FB	√
11111100	252	$FC	ⁿ
11111101	253	$FD	²
11111110	254	$FE	■
11111111	255	$FF	DELETE

TS-520, S, and SE Mod using 400 Hz filter for AMTOR

Submitted by Richard Kalaga[1], KE7XO, via C. Brown[2], N4SO

The following describes a Mod that will allow use of the YG-3395C/400Hz CW filter on AMTOR and RTTY. It requires a new carrier oscillator Xtal for LSB and a wiring change to the wide/narrow switch on the radio. Since there are many of these radios still in use or for sale at reasonable prices, this Mod will provide you with an excellent radio that can be dedicated to strictly digital modes. The advantages are obvious, so what are the disadvantages? LSB for voice will no longer work and the final transmitted LSB frequency will be changed along with the fixed crystal frequencies. These disadvantages are only minor problems if manual tuning is used.

Requirements

1. 400Hz CW filter available from International Radio & computer, Inc., 3804 South U.S. 1, Fort Pierce, FL 34982. Tele: (407) 489-5609, FAX (407) 464-6386. Estimated cost $2.00

2. A new crystal from International Crystal Manuf., Co. Inc., P.O. BOX 26330. 10 N. Lee, Oklahoma city, OK 73126-0330. Tele: (405) 236-3741. Order a Xtal frequency of 3.392790MHz for the Kenwood TS-520SE LSB/USB carrier oscillator in the folder (HC-6/U). The data for this Xtal is found in catalog Nr 685127Y, order Nr. 3020412.

The Xtal that will be changed is the LSB Xtal marked X3 on the radio. Refer to carrier board picture on page 30 of the manual. In the picture on Page 30, the Xtal is on top. The Xtal frequency is 3393.5KHz, and is marked X1.

The Mod

Remove both top and bottom covers and look at the bottom. Refer to Page 49 for the location of the carrier unit - X50-009-01. It is on the side and in the middle, next to the large audio transistors. Take out the 4 screws and back out the screw in the case. Lift out the board. Using a de-solder wick, remove the solder from the LSB Xtal and then remove the Xtal. Replace it with the new 3.392790 ICM crystal. Solder it into place and replace the board and screws. Be sure to screw the case screw back into place.

The wide/narrow switch has to be defeated. The idea is to apply a continuous 14 volts to the middle leg of the wide/narrow switch. On the TS-520SE, the wiring from the top to bottom is Brown, Brown, Orange/White. Cut the middle Brown wire from the wide/narrow switch. Now extend this wire so that it will reach Point 14 on the I.F. board. Refer to Page 31 of the manual and Figure 15 that shows the I.F. board. Point 14 is a 14 volt terminal and is located right below the CW crystal, next to T1 and T9. The wire from the "Narrow" terminal goes to the CW terminal on the I.F. board. The wire from the "Wide" terminal of the switch goes to the SSB terminal of the I.F. board. When 14 volts is applied to the middle leg of the narrow/wide switch, the switch will be active in any mode. Tape off the end of the brown wire previously removed from the middle leg of the switch.

Attach a frequency counter to the "out" and "grd" terminals on the carrier board. These points are on the right side of the board. Referring to page 30, "out" and "grd" are shown in the top picture. Use TC3 to fine tune the crystal. Accuracy to within 100Hz can be obtained and is allowable when using manual tuning.

Place the mode switch of the radio in the LSB position. The CW filter will now be in the circuit. You now have an older radio updated for digital use that will perform much like newer radios. Please see the drawings of simulated before and after filter widths. (Figs. A & B)

Note: Referring to Fig A, you notice that the space tone (2295Hz) is still higher in audio frequency that the mark tone (2125 Hz). During the final mixing stage, the LSB passband becomes inverted, making our mark tone higher in RF/IF than the space tone; take the page with figure A on it, turn it over and hold it up to a light source. This will give the correct drawing of the wave form after mixing.

The basic principles of modifying the SE can also be applied to the 520 and 520S models. Owners of these two radios will quickly notice one major difference: neither has a front panel narrow/wide switch.

Figure C shows a simplified block diagram of the original scheme for switching filters using a normal 9-14 vdc. If the radio will only be used on digital, moving the wire from the SSB to the CW terminal on the I.F. board is all that is required. This means the CW narrow filter will be in line for both USB and LSB.

On the other hand, you might want to use the SSB filter for tuning, then switch to the CW filter when needed. Figure D shows a simple modification that allows that option. It only requires a few more minutes,

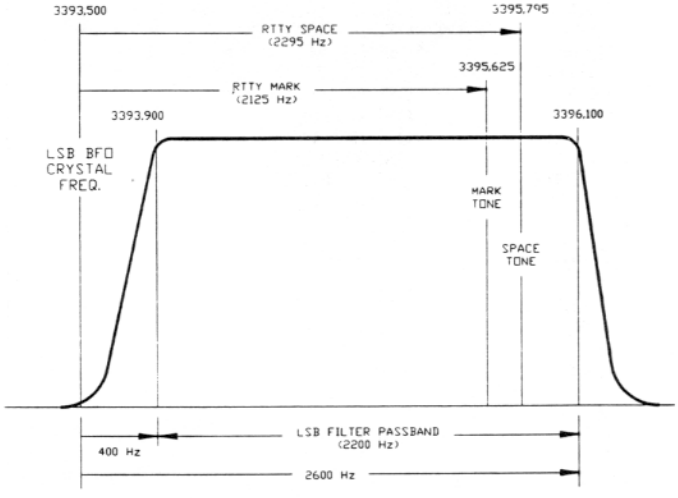


Fig. A

NOTES:
1. SSB FILTER IS 2200 Hz WIDE, CENTERED AT 3395.000 Hz
2. ORIGINAL LSB BFO CRYSTAL FREQUENCY = 3393.500 Hz
3. FILTER'S -6 dB CORNERS = 3393.900 Hz & 3396.100 Hz
4. 3393.500 + 2125 = 3395.625 Hz (MARK)
5. 3393.500 + 2295 = 3395.795 Hz (SPACE)

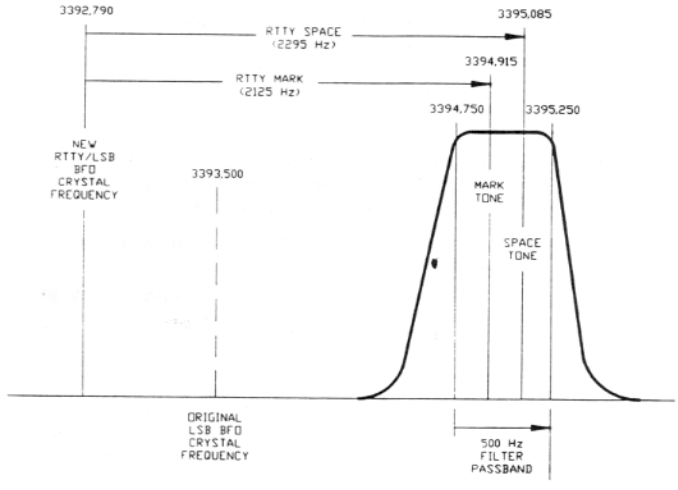


Fig. B

NOTES:
1. CW FILTER IS 500 Hz WIDE, CENTERED AT 3395.000 Hz
2. NEW RTTY/LSB BFO CRYSTAL FREQUENCY = 3392.790 Hz
3. FILTER'S -6 dB CORNERS = 3394.750 Hz & 3395.250 Hz
4. 3392.790 + 2125 = 3394.915 Hz (MARK)
5. 3392.790 + 2295 = 3395.085 Hz (SPACE)
6. A 400 Hz WIDE FILTER MAY ALSO BE USED

and can be done when performing the LSB BFO modification.

The switch can be almost anything from the junk box. A common modification was to use the fixed channel switch on the front panel of the 520 or 520S radios. If you are using that particular switch, those radios had several unused holes on the back panel where a switch could be added.

This modification can also be applied to any combination of filters. Figure E shows how the addition of a daughter board will allow switching from a 2.4 KHz to a 1.8 KHz filter. Similar modifications can be done for CW, switching from a 500Hz to a 250 Hz filter.

You may find minor differences between each of the radios, so be sure to check all the wiring colors carefully. Good luck.

de **Richard, KE7XO** ■

1. 4741 Brushfire. N. Las Vegas, NV 89031-0111
2. 12165 Miller Lane, Grand Bay, AL 36541

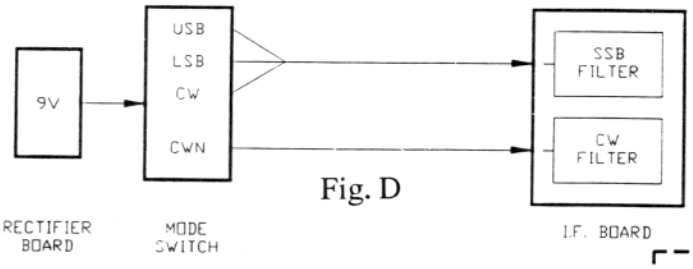


Fig. D

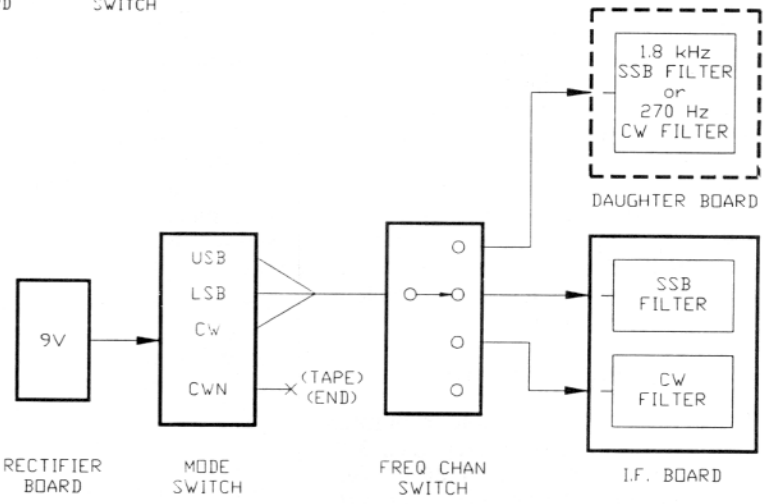
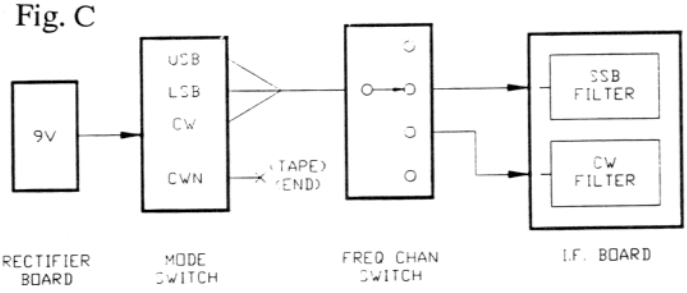


Fig. E

Fig. C



QSL ROUTES

If you have been reading the Rtty Digital Journal lately you've seen some good advice on DX. Here is some good advice on getting QSL cards. First, always use a SASE. Always means for any card that you really want! Second, follow the instructions of the station. Now, you may not agree with their instructions,but if you want a card -- do it. Over the years I have seen certain hams who handle a lot of QSLs get a bad rap. They have certain ways and some are picky. What's interesting is that if you follow "their rules" a card always comes back if you are in the log. But there will be times when your card comes back "NOT IN LOG," so check your dates and times. This is the number one problem i.e., incorrect information on 15% of all cards. As manager I search these incorrect cards after I do the correct QSLs; most QSL managers don't.

Keep sending me those QSL routes as you come upon them! See you in the next contest.

73 & 88, de **Betsy, WV7Y** ■

From my latest list of routes:

9A3AM	QSL Box 44 Dubrovnik 50000
AH9B QSL	OKDXA, Box 88, Wellston, OK 74881
CO6RR QSL	POB 255, Cienfuegos, 55100 Cuba
CE0ZIS	QSL Elsazar Rojas, Box 1, J. Fernandez, Chile
ET3YU	QSL Box 60349, Addis Abeba
OE1MBB	QSL to Markus. PB 22, 1101 Vienna
RI1B/UZ9CWY	QSL to POB 874, Ekaterinburg, 620063 Russia
SV5BYR	QSL BOX 212 Rhodes, Greece
SV5TS	QSL Vasilis Argyris Box 7, 85106 Paradissi, Greece
3X0DEX	QSL F6IBA
4X0A	QSL DJ6QT
5W1MW	QSL VK2BEX
7Q7ZZ	QSL JA1UMN
7Z2AB	QSL AA0BC
9G1XA	QSL K0EU
9H1EL	QSL LA2TO
9N1HL	QSL DJ6JC
9Y4/N9FTC	QSL N9FTC
C21/KC6DX	QSL JA2NVY
C91AI	QSL CT1DGZ
CR3Y	QSL HB9CRV
E31A	QSL JH1AJT
HB0/DL0GK	QSL DL6ET
HL9KU	QSL N7NMR
HS0AC	QSL W5VSZ
HV4NAC	QSL IK0FVC
HZ1AB	QSL K8PYD
JT/JE7RJZ	QSL JA7FWR
JT1CS/3	QSL JR0CGJ
JT3SDX	QSL JR0CGJ
KC6KY	QSL JA3OIN.
OM3JW	QSL OK3JW
RC2CR	QSL NF2K
SV2ASP/A	QSL SV2WT
UH8EA	QSL W5BWA
UO5OC	QSL I8YG
VK9MM	QSL VK4CRR
VP5JM	QSL W3HNK
XM3T	QSL VE3FOI
XX9AS	QSL KU9C
Z32GX	QSL YU5GBC
ZC4SC	QSL G4SGD
ZL3AFT	QSL AA5GS
ZS9A	QSL ZS1IS
ZS9/DJ0WQ/P	QSL DJ0WQ
ZS0PI	QSL DJ0WQ

SUPER STATION - WA2MFY

by Peter M. Detwiler[1], WA2MFY

ED: This month we profile Peter's fine station which has some special features. If you would like to have your station profiled, please submit stations particulars, etc. and when space permits, the RDJ will profile your station.

This station has three goals: High Speed, Advanced Technology, and World Coverage.

The mailbox software was written by Bill Malloch, W8KCQ, and represents years of work and extensive experience in data communications. The software operates with three terminal node controllers. Two were recently designed and built in Germany to operate in PACTOR and AMTOR (Sys/1 and sys/2). System /3 operates in Clover, a new system developed by HAL Communications in Urbana, Il. Scanning is accomplished by 3 scan controllers designed and constructed by Frank Jaworski, K1FJ. The solid state logic controller is entirely external to the transceivers. Thus, all scan timing and control parameters can be set independently and precisely.

The station consists of three 386/33mHz and two 486/60 computers on a Novell Lan version 3.11.

Kelly Hulse of Ft. Lauderdale, Florida developed the software to run the mailboxes with common files on the File server, which is located in another building separate from the station. He also developed the auto-download for the marine and state weather forecasts four times per day from N0AA, the auto-initialize program for the Alpha 87A linear in Sys/1, and the auto-download program for the WWV Solar Flux report from the 2 meter Packet net every 3 hours.

The use of a Lan provides a powerful tool to share traffic and information from a near infinite number of terminal nodes, as all can be put in a common file available to all users. For instance, the weather forecasts are received by telephone link automatically but are distributed by radio link in PACTOR or AMTOR. There are numerous possibilities for expansion from the Lan platform.

The mailbox consists of System/1, System/2 and system/3.

System/1 operates with an Icom-765 transceiver and an ETO Alpha 87A Linear feeding a HY-Gain vertical up 53 ft. with 36 radials of 70' and 140'. Coverage is 80 meters through 10 meters. Power is 1000 to 1500 watts (no ALC used). This System operates in FSK (500 Hz Rx bandpass filter - 9mHz IF) on AMTOR/PACTOR. This system used when more power is needed for DX or vessels at sea.

System/2 operates with an Icom -765 and feeds a Cushcraft R-7 vertical antenna up 65'. Coverage is 80 meter through 10 meters including the "new" bands 30m, 17m, and 12m. Power is 100 watts. This system operates in FSK (500 Hz rx filter - 9 mHz IF) in AMTOR and PACTOR.

System/3 is identical to System/2, except that it uses a modified Icom- 2K linear amplifier to drive another antenna system similar to system/2 at a nearby location. System/3 operates ar 200 watts (no ALC used). System/3 operates in LSB (2.1 kHz Rx filter - 9mHz) in Clover only.

The mailbox message and information files for system/1, system/2 and system/3 are maintained in the Network File server. Messages coming in on one system are available on any frequency on that system or the other systems. All systems may be used at the same time.

There appears to be no practical limit to the number of nodes such a system can encompass as long as there is a common nomenclature (which there is). It is anticipated that additional technologies and programs will be added as appropriate in the future.

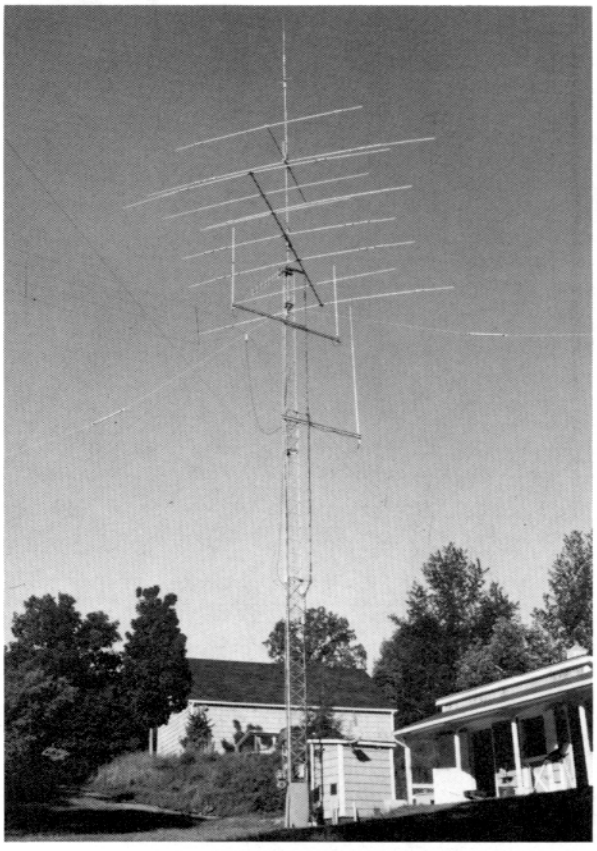
The group that has developed this system feels that it is well positioned to use communication technologies as they come forward - AMTOR, PACTOR, Clover and others to come.

I believe that in the field of digital HF communications we are now in a period of great growth such as in the early days of radio itself. This has been made possible by applying the computing power of relatively inexpensive PCs to the processing of data and the management of traffic in the HF radio spectrum.

This spectrum, has been difficult to use due to the "processing" required and hence is highly susceptible now and in the future to computer analysis and management. Clover is 10X faster than AMTOR (before data compression). PACTOR is 6x faster than AMTOR (after data compression) and both are "error free". PACTOR II is expected in 6 - 12 months.

All this has happened virtually overnight after decades with little HF data progress. High frequencies have a compelling virtue of little link cost as opposed to satellites. Technology may make these two modes quite competitive for some purposes.

Growth will hardly stop here!



Part of antenna system at WA2MFY station. Photo by G. Amiaga

BIO for Peter, WA2MFY

My wife and I live on a farm which, among other things, provides the space for the antenna system. I am partly retired now and hence have more time to spend with Ham radio which has been a life long interest. The QTH is in rural New Jersey about 50 miles west of New York City.

This mailbox is available to amateurs world wide for message exchange and to provide information of general and technological interest to them. Hopefully, it will stimulate scientific thought and experimentation in amateur radio. It's goal is to be a highly reliable system with redundant capabilities to foster communications in these fields. The system's 8 bands, three transceivers, three modes and high power capability when needed make it available to users in all parts of the world on a 24 hour continuous basis.

Any comments or suggestions for improvement of the system are welcomed.

de **Peter, WA2MFY**

1. P.O. BOX 360, Gladstone, NJ 07934

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

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

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

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

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

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Call our literature request line at 1-800-432-8873.

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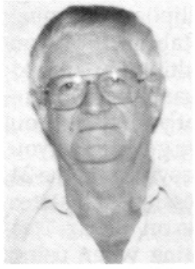
PO Box C2160, 2006 - 196th St. SW, Lynnwood, WA 98036

AEA

Connect with us



CONTESTING

Richard, Lawton, N6GG
14395 Bevers Wy.
Pioneer, CA 95666

RTTY Contests - Coming Events

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

Date:	Contest:
NOV 13-14	WAE RTTY (Germany)
DEC 11-12	TARA 2nd Annual RTTY Sprint (USA)
JAN 8-91994	ARRL RTTY Roundup (USA)
FEB 12-13	EA WW RTTY (Spain)
MAR 19-20	BARTG RTTY (British)

NOTE: A new contest has been added to the Contester's Calendar. I received a brochure from the Troy Amateur Radio Association (TARA) announcing their December RTTY Sprint. Read on for details.

REMINDERS

CQ WW RTTY Contest log entries must be postmarked no later than December 1, 1993. An extension may be given if requested.

Mail logs to:

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

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

Mail logs to:

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

COMING UP

WAE RTTY CONTEST

November 13-14, 1993

Sponsored by Deutscher ARC (Germany)

Contest Period: 1200 UTC Saturday to 2400 UTC Sunday. (36 hours)

Rest Periods: Only 30 hours of operation are permitted for Single op stations. The 6 hours of non-operation may be taken in one but not more than 3 periods at any time during the contest, and must be clearly noted in the log.

Bands: 80, 40, 20, 15, and 10M (five bands). Minimum operating time on a band is 15 minutes. A quick band change is allowed only for QSO with new multiplier.

Modes: Baudot (RTTY) only.

Operator Classes: a) Single op, all bands; b) Multi-op, Single transmitter (only one signal on any band at the same time is permitted); c) Multi-op multi transmitter (no limit to transmitters, but only one signal per band permitted). All HF transmitters must be located within a 500 meter diameter and within the property limits of the station licensee's address. d) SWL.

Message Exchange: RST + QSO serial number, starting with 001. USA stations must also give state. (Multi-multi stations must keep serial number by band.) A station may be worked only once per band.

QSO Points: Count 1 point for each QSO and 1 point for each QTC (see below).

Multipliers: Each DXCC/WAE country counts as a multiplier. Multipliers count only once per band. WAE country list: C3 CT1 CU DL EA EA6 EI F G GD GI GJ GM GM(Shetland) GU GW HA HB HB0 HV I IS IT JW(Bear) JW(Spitsbergen) JX LA LX LZ OE OH OH0 OJ0 OK ON OY OZ PA SM SP SV SV5(Rhodes) SV9(Crete) SV(Athos) T7 TA1 TF TK UA1,3,4,6 UA2/UZ2F UA1FJL UB UC UN/UA1N/UZ1N UO UP UQ UR Y2 YO YU ZA ZB2 1A0 3A 4J1 4U1(Geneva) 4U1(Vienna) 9H1. MULTIPLIER BONUS: Each mult on 80M counts as 4 mults; each mult on 40M counts as 3 mults; each mult on 20/15/10M counts as 2 mults.

QTC Points: Count 1 point for each QTC reported to any station NOT ON YOUR OWN CONTINENT. Each station may both send and receive QTCs, but the sum of QTCs exchanged between two stations (sent plus received) must not exceed 10. Each QTC (message) will contain: Time, callsign, and QSO number. Example: "QTC: 1307/WA7EGA/131" means that you worked WA7EGA at 1307 UTC and received his serial number 131. A QSO may be reported only once and not back to the originating station. (You cannot report a QSO with WA7EGA back to WA7EGA for credit.) The same station can be worked several times to complete the quota of 10, but only the original contact has QSO point value. A uniform list of QTCs sent must be kept. QTC 3/7 indicates that this is the 3rd series and that 7 QTCs are now being sent. Record all received QTCs on a separate sheet with a clear indication of the sender. If more than 100 QTCs are claimed, a QTC checklist must show that the maximum quota of 10 QTCs per station has not been exceeded.

Final Score: Multiply total number of QSOs + QTCs by total of multipliers.

Awards: Certificates will be awarded to highest scorer of the different classifications in each country (a reasonable score provided). Continental leaders will receive a plaque. Each participant with at least half of the score of the continental leader will also receive a certificate.

Logs and Summary: Use separate logsheets for each band. Indicate clearly all band changes. Duplicate contacts must be clearly marked in the log. If more than 100 stations have been worked on a band, a separate dupe sheet is required.

(Summary sheet, logsheets, dupesheets, and QTC records sheets may be copied from the RTTY Contester's Guide) NOTE: Logs violating these rules can be regarded as checklogs.

Deadline: Log entries must be received by December 15, 1993. Mail to:

WAEDC CONTEST COMMITTEE

PO BOX 1328
D-8950 KAUFBEUREN
FEDERAL REPUBLIC OF GERMANY

Comments: This is the RTTY version of the CW/SSB WAE Contest. While the QTC rules seem complex, one doesn't have to get into the QTC portion of it to enjoy the comaraderie. Besides, there may be a new country to work, or a DXpedition pileup challenge to undertake. A maximum of 30 hours or operation is allowed. Check out those low band bonuses - especially if you have a good shot to Europe.

TARA 2nd Annual RTTY Sprint Contest

December 11-12, 1993

Sponsored by

Troy Amateur Radio Association

Contest period: Starts at 2100 UTC on December 11 and ends at 0100 UTC on December 12. Contest is 4 hours long. All scoring, rules, bands, etc. are exactly the same as ARRL RTTY Roundup. (See below)

Deadline: Logs must be received by January 17, 1994. Mail to:

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

Comments: Hey! We have a new one for RTTY! RTTY Sprint? This sounds like fun. I've participated in the CW Sprints but... Well, why not on RTTY? RTTY Sprint with the Roundup format should be a winner. What a Sprint Contest needs is lots of publicity. Spread the word, and get ready for a 4 hour burst of energy. This can help you fine tune your operating skills for the ARRL RTTY Roundup 4 weeks later. And you can use the WF1B RTTY contest software as is, fooling it into thinking it's working the ARRL Roundup! PREPARE!!

ARRL RTTY ROUNDUP CONTEST

January 8-9, 1994

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, and 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:

PrefixProvincePrefixProvince

VO1/VO2NFLD/LABVE4MB

VE1NBVE5SK

VE1NSVE6AB

VE1/VY2PEIVE7BC

VE2PQVE8NWT

VE3ONVY1YUKON

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, 1994). Mail entry to:

ARRL RTTY ROUNDUP
225 Main St.
Newington, CT 06111

Recommended Operating Frequencies (MHz):

3.580 - 3.62014.070 - 14.095

7.040 - RTTY DX21.070 - 21.090

7.080 - 7.10028.070 - 28.150

Comments: The Roundup is the most popular domestic RTTY contest. It's much like the SS contest 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, right 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 absorpsion 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!

Hint of the Month

Taming Static Crashes on the Low Bands

One of the major problems of RTTY contesting on the low bands is static crashes. Lightning storms at various locations around the world create most of the QRN that prevails on the low bands. These pulse-like, randomly spaced wide band signals are killers of digital signals. They are nature's spark transmitters. Not only do they clobber the digital data codes, they also cause shifting of letters into figures and eventually into garbage.

Here's some ideas that can improve digital reception on the low bands: 1. Turn down the the receiver's RF gain control so that only an occasional static crash kicks the "S" meter. Then increase the audio gain control to compensate for the signal level needed to drive the TNC. Whatever AGC time constant is left will

be faster than before, which is good. (Always use "AGC FAST" on RTTY, rather than AGC OFF. Some AGC is better than none, as far as your ears are concerned. Loud static crashes are not the only noise or clicks that will suddenly blast your ears! Slow AGC will actually lengthen the static's pulse duration fed to the TNC and will make things much worse.)

2. Using the RF Attenuator on your receiver, insert 10 Db of RF attenuation on 40 or 80M. Then compensate for the TNC signal input loss by increasing the audio gain control. The attenuator reduces the input sensitivity (not the RF gain). The advantage here is that you help prevent static and noise from actually entering the receiver's RF input circuit. This desensitization will also reduce local noise pickup (computer noise, monitor flyback oscillator radiation, TV flyback noise, etc.) because if the coax feedline does not have a good match to the antenna, it will also pick up local man-made noise along with the static.

3. For quieter reception, consider using receiving antenna configurations that have a shorted DC path, such as folded dipoles or closed loops. They will help minimize rain and snow static. Receiving antennas should be located as far away from your transmitting antenna as practical, and should be oriented for minimum pickup from your transmitting antenna. Heights of 10 or 15 feet are quite OK. They should not be vertically polarized, and should be placed away from man-made noisemakers. (Most man-made noise is vertically polarized.) Installing separate receiving antennas on transceivers was described in my column of the May/June '93 issue of the RTTY Journal, page 23. That topic was hooking up special receiving antennas for multipath reception, which is also another reason to design and use separate antennas for receiving.

Readable digital signals under heavy static conditions is our goal. If you can't read 'em, you can't work 'em. So... what good is antenna gain for receiving when static crashes drown out the desired signal? The need is for good signal-to-noise ratio - an absolutely crucial requirement in digital reception. *When you make the signal weak, and you make the interference weaker, then you've gained in readibility.* And it is truly amazing just how weak an RTTY signal can be and still be copied. It actually rivals CW in that respect, except that your brain does none of the work!

((73))

See you in the pileups,

de **Rich, N6GG** ■

P.S.

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

PACKET

Richard Polivka, N6NKO
5800 South ST #221
Lakewood, CA 90713

Porting the Port

Now what does he mean by that? Well, it is a word game on this end. Whenever one rewrites a program for a different environment or computer system, that process is referred to as porting. Here again, this is a play on words. This month, I am going to get deeply into the latest version of the KA9Q NOS package that is out for packet users. The lineage of these packages gets to be quite convoluted because of the myriad modifications that have been performed on the software. The package that I am going to discuss is a highly modified version of PA0GRI's code, pulled and added to by WG7J, and ported over to Linux by KF8NH.

Before we get to the code end of it, first a presentation on getting information in and out of the program. The standard stock NOS package uses several assembly routines that are used to do the low level communications to the ports and to any network or adapter cards that may be used in a NOS system. These cards could be an ethernet card, a serial port card, a PackeTwin card, etc. These routines have to maintain the interrupt stacks and other chores associated with talking to an adapter. This requires the program to do direct port maintenance and control.

This direct port maintenance and control situation can present a challenge to any kind of DOS multitasker, like Windows or Desqview. The software has to present itself to the program as the real McCoy while arbitrating all demands for ports and all other housekeeping requirements that are necessary to run a multitasking environment, and yes, there is MUCH housekeeping that needs to be done. It is all of this housekeeping that keeps port speeds down and requires the use of input FIFO's in the UART's on serial cards to prevent port overrun. These accessories are there to allow the computer time to service what it is doing at the receipt of the interrupt from the serial card and then process the interrupt from the serial card.

It works this way under DOS. Under UNIX, that is a whole new ballgame. Actually, from a programmer's point of view, it's simpler. Unless you are really a masochist, the operating system kernel takes care of the chores mentioned above. Once you set the characteristics of the port, also referred to as a device and addressed as a file, life becomes real simple. All you have to do is read from and write to the file while monitoring for your status signals. That is all handled in the source code in C, not in assembly. This procedure is neater and more easily understood by the code maintenance people and all the hackers, like me, who want to get their hot little paws on the code.

In reference to the DOS vs. UNIX question. Recently I had a stimulating discussion with some people on a local conference bridge. What was really interesting is that some people were having memory problems, specifically the lack of, on their DOS machines when running NOS. When I told them that I do not have the 640 KB low memory partition and I have a flat address space, of 16 MB, they started to ask some questions. That is when I told them about what I am using and doing. They listened intently....

DECISIONS, DECISIONS, DECISIONS.....

The expansive growth of the NOS project has resulted in many different versions of the program suite. Under UNIX, the routines, ftp, telnet, and others are separate standalone routines that are called from the command prompt. This is not possible in the DOS world and is why the NET/NOS package was developed.

These programs bear the custom signatures of the people who have modified the software. Probably one of the more powerful versions was penned by Johan Reinalda, WG7J. It is quite popular here in the Los Angeles, CA area. I have seen it on mostly IBM clones, and I believe the program has been compiled on other platforms. The NOS program has to use inline assembly code to run some of the lowest level port control. Under UNIX, that is all done by the kernel.

The WG7J version of NOS has been somewhat rewritten and modified for the

UNIX/Linux system by Brandon Allbery, KF8NH. He substituted the assembly routines with the appropriate code in C and added more features. Some of the features that are included are mentioned below in the following segment of the "config.h" file:

```
#ifndef_CONFIG_H
#define_CONFIG_H
/* This is the configuration as distributed by KF8NH */
/*
* This configuration file has turned on every option that works, except that
* mutually-exclusive options (NNTP, NNTPS) only the most inclusive option is
* turned on (but either will work). You may turn options off, but do not
* turn on any option that isn't turned on in this file.
*/
/* Software options */
#define MAILBOX   1  /* Include SM0RGV mailbox server */
#define MAILCMDS  1  /* Include mail commands, S, R, V etc */
#define CONVERS   1  /* Conference bridge (babble-box :-) */
/* Use only ONE of the 2 news options below !!! */
#undef NNTP       1  /* Netnews client */
#define NNTPS     1  /* Netnews client and server */
#define SERVERS   1  /* Include TCP servers */
#define DSERVER   1  /* Include Domain Name Server */
#undef STKTRACE   1  /* Include stack tracing code */
#define TRACE     1  /* Include packet tracing code */
#define RIP       1  /* Include RIP routing */
#define HOPCHECK  1  /* IP path tracing command */
#define DIALER    1  /* SLIP redial code */
#define NRS       1  /* NET/ROM async interface */
#define NETROM    1  /* NET/ROM network support */
#define LZW       1  /* LZW-compressed sockets */
#define RLOGINCLI 1  /* Rlogin client code */
#define SLIP      1  /* Serial line IP on built-in ports */
#define PPP       1  /* Point-to-Point Protocol code */
#define VJCOMPRESS 1  /* Van Jacobson TCP compression for SLIP */
#define POP       1  /* Include POP2 Post Office Protocol */
#define POP2CLIENT 1  /* POP2 client – IAB not recommended */
#define POP2SERVER 1  /* POP2 server -- IAB not recommended */
#define POP3CLIENT 1  /* POP3 client – IAB draft standard */
#define POP3SERVER 1  /* POP3 server -- IAB draft standard */
#define ESCAPE    1  /* Allow Unix style escape on PC */
#define RDATE     1  /* Include the Time Protocol */
#define RSPF      1  /* Include Radio Shortest Path First Protocol */
#define AXIP      1  /* digipeater via ip port 93 interface */
#define RARP      1  /* Include Reverse Address Resolution Protocol */
#undef CALLBOOK   1  /* Simple callbook server over Internet */
#undef CALLSERVER 1  /* Include BuckMaster CDROM server support */
#undef ICALL      1  /* Buckmaster's international callsign database April '92 */
#undef CALLCLI    1  /* Include BuckMaster CDROM client code only  */
#define ATCMD     1  /* Include timed 'at' execution */
#define EXPIRY    1  /* Include message and bid expiry */
#define MBXTDISC  1  /* Include mailbox timeout-disconnect */
#define NR4TDISC  1  /* Include Netrom L4 timeout-disconnect */
#define FTPTDISC  1  /* Include ftp-server timeout disconnect */
#define TIPMAIL   1  /* Include TIP mailbox server */
#define XMODEM    1  /* xmodem file xfer for tipmail  */
#define IPACCESS  1  /* Include IP access control code */
#define TCPACCESS 1  /* Include TCP access control code */
#define ENCAP     1  /* Include IP encapsulation code */
#undef AUTOROUTE  1  /* Include AX.25 IP auto-route code(causes problems
when VC mode is used for ip) */
#define LOCK      1  /* Include keyboard locking */
#define MAILFOR   1  /* Include Mailbox 'Mail for' beacon */
#define RLINE     1  /* Include BBS R:-line interpretation code */
#define MBFWD     1  /* Include Mailbox AX.25 forwarding */
#define USERLOG   1  /* Include last-message-read tracking for users */
#define TTYCALL   1  /* Include AX.25 ttylink call */
#define MONITOR   1  /* Include user-port monitor trace mode */
#define AXBCSTR   1  /* Include "ax bc " */
#undef MULTITASK  1  /* Include Dos shell multi-tasker */
#define SHELL     1  /* Include shell command */
#undef XSPAWN     1  /* BUGGY ! Include swapping to ems or disk on spawning
shell */
#undef SWATCH     1  /* stopWATCH code */
#define ALLSESSIONS 1  /* Include all session types */
/*if undefined, deletes outgoing telnet,ftp,ax25,netrom sessions */
#define ALLCMD    1  /* if undefined, exclude a bunch of commands */
/*excluded are:
   *          delete,rename,more,tail,dump,status,motd,cd,dir,fin-
ger,fkey,info,mail,mkdir
*  pwd,record,rmdir,watch,test,upload
*/
#define ALLSERV   1  /* if undefined, exclude a bunch of servers */
/*excluded are:
*echo,discard,tip and ttylink servers
*and the ttylink command (with no split screen code anymore)
*/
/* Software tuning parameters */
#define MTHRESH 16384 /* Default memory threshold */
#define NROWS     25    /* Number of rows on screen */
#define NIBUFS    5     /* Number of interrupt buffers */
#define IBUFSIZE  2048  /* Size of interrupt buffers */
#define NSESSIONS 10    /* Number of interactive clients */
#define DEFNSOCK  40    /* Default number of sockets */
/* Hardware driver options */
#undef ARCNET     1  /* ARCnet via PACKET driver */
#undef PC_EC      1  /* 3-Com 3C501 Ethernet controller */
#define KISS      1  /* KISS TNC code */
#undef HS         1  /* High speed (56kbps) modem driver */
#undef HAPN       1  /* Hamilton Area Packet Network driver code */
#undef EAGLE      1  /* Eagle card driver */
#undef PACKET     1  /* FTP Software's Packet Driver interface */
#undef PACKETWIN  1  /* Gracilis PackeTwin driver */
#undef PC100      1  /* PAC-COM PC-100 driver code */
#undef APPLETALK  1  /* Appletalk interface (Macintosh) */
#undef DRSI       1  /* DRSI PCPA slow-speed driver */
#undef SCC        1  /* PE1CHL generic scc driver */
#undef PI         1  /* VE3IFB pi dma card scc driver */
#define ASY       1  /* Asynch driver code */
#undef SLFP       1  /* SLFP packet driver class supported */
(ifdef's conditionals deleted for brevity)
#endif/* _CONFIG_H */
```

As you can see, the above "config.h" file is quite complex. That file defines what options are going to be compiled into the program. This can result in a small program or a large one. Well, this configuration results in a fairly large program. The program, with all of the buffers and such, takes up 3.5 MB of core when running (Try that on a DOS machine ;-)). Now to tackle the software section of the "config.h" file.

The first two options, MAILBOX and MAILCMDS, are to control the option that allows for the Packet BBS system. This mailbox is capable of being a full-service mailbox system that is capable of auto-forwarding and all of the goodies that go with a packet BBS system. This BBS can be accesses by AX.25 or by TCP/IP connection. The CONVERS mode is one that is, IMHO, a gross invention that can hog up the bandwidth of any channel that it appears on. This is the (in)famous conference bridge. This process allows for the operation of a packet "party line" or conference connection. You can have two or lots of people on one of these connections. As people connect to the conference bridge, packet traffic increases greatly in and out of the bridge and the associated packet channels. These bridges can span several channels, according to the program's configuration. This can be a blessing and a hinderance. The conference bridge code and its operation can tie up much of the processing power of your computer and can really slow operations down immensely when there are many users on the system. It is not advised to run this CONVERS system on a 386SX or a 286 based system. All it will do is turn itself into a snail.

NNTP stands for Network News Transport Protocol. This allows news packets off of the internet to be transported from a server to many clients. This is a great idea but problems can be presented because of such a connection and can be innumerable and quite illegal. The internet can, and does, carry traffic that is verboten on the amateur bands. Even if you only carry the ham radio related newsgroups, something that would not be allowed could be crossposted to the posted

newsgroups. There was an attempt by a local ham at a local university to set up such a link. When I advised him, over a conference bridge, that the crossposting of verboten material is possible and could joepardize his license, he immediately dropped the idea. The only way that it could succeed is if all news articles are scanned first before being allowed to be disseminated. This would be inpractical at best. Technology does have its boundaries.

The code has in it the capabilities of using the BuckMaster CD-ROM callbook. This would allow someone to connect to the station and get a ham's address. This program is also capable of being attached to internet and used as a server on internet which maintains a current listing of addresses. As a club a connect to the CD-ROM disk could be made to provide usuage over packet. This would be great for a DX club or for contesters.

The rest of the code is well documented with comments on each line explaining what each line triggers. Just about all of the other parts of the code is self-explanatory. The stock code hardly needs to be touched. I just eliminated what features I do not have supported with by hardware, mainly the callbook server features.

There is another file that one has to be aware of when compiling this program. That file is "files.c". This routine's assignment is to tell the program where to find the control and information files that allow this creation run. The actions of this file depend on the operating system that the program is to be compiled for. In the MS-DOS world, there is a given set of directories and files that will make NOS run. In the UNIX version, these structures are a bit different. This nailed me when I started up the program but after some snooping, I printed out the file and saw the errors of my way. This file should be printed out, along with the "config.h" file, before the compile takes place. Mark up both and make the necessary changes to the files.

With this, one can go ahead and compile the program. I had a couple of warnings that were worth ignoring and were not of any concern. The program works fine "out of the box", so to speak.

Next month, I will get into writing the startup.nos file that tells the program what is where and who is whom. This is a worthwhile project for anyone who has just one computer and wants to get the most out of their system for the benefit of themselves and the rest of the local ham community.

73 de **Richard, N6NKO** ■

Packet: n6nko@wb6ymh-2

Internet: richardp%owlsnest@swc.uucp

Claimed Scores for CQ/RTTY WW Contest (1993)

NOTE: These scores gathered by Ron, AB5KD and Jay, WS7I. They are only claimed and have not been verified.

Single Op Asst All Band High Power

CAll	QSOs	Mults	Score
WB7ADV	699	303	356K
N5RZ	499		185K
WA6SDM	373		126K
N0FMR	310	182	84K
KI7FX	133	112	20K

Single Op Un-asst. All Band Hi Power

W3FV	778		666K
K1NG	840	362	595K
WF7B			527k
N2DL	617	291	437K
WX0B	665		300K
N6GG	542	268	276K
K7WUW	367	106	120K

Single Op Un-asst. All Band Low Power

OH3LIN	510	267	338K
AA5AU	582	291	243K

Single Band - HI Power

WA7EGA	671	148	177K 20M
WF5E	396		81K 20M
W2UP			128K 40M
WS7I	450	125	91K

Single Band - Low Power

N6NMY	159		21K 15M
N5NMX	103		5K 80M

Multi/Single

I2EOW	1217		1.3M
JL1ZCG	685	319	614K
HZ1AB	950		
AB5KD	964	375	584K

Unknown Catagory

AB5MJ	340K
WA7FHB	213K
K4RRU	190K
NX7K	158K
NX7K	158K
WA4MME	140K
KF8HR	135K
N1OAZ	132K
NL7DU	59K
AA5VN	5K

Ron, AB5KD, and Jay, WS7I, are colaborating on the above project. Their intent is to give contesters a peek at what the score numbers will look like at the end of a contest. They are asking those who wish to participate, announce their claimed score right after the close of a contest. Contesters using contest software will find this very easy. However, whatever method you use to score with, you are invited to participate. The RDJ will pubish these claimed scores in the next isssue following the contest.

If you wish to participate, join Ron and Jay at the close of each contest to report your claimed score. Ron will be listening on 14.180 SSB +/- and Jay will be listening on 3830 SSB +/-. Simply report your Call, Class (sinlge op etc), wether single or multi op, your number QSOs and claimed score.

LOOKING BACK

24 +/- Years Ago on RJ

- Group pic of Dayton attendees includes W3KV and W8CQ. Most are saying cheese.
- ON4BX tops DX Honor Roll with 70/66. W3KV monitors 14095 daily for callers with DX News.
- W6FFC outlines modifications of 75S1 and 75S3B for RTTY. BFO crystals for both 850 and 170 shift are specified.
- K1PLP gives construction and measuring details for filters using 88 mH toroids.
- WAC certificate Nr. 115 issued to Herb Hoover Jr. W6ZH.
- FG7XT pulls ahead of ON4BX with 89/76. Jean also has WAS on RTTY.
- DL1VR wins VOLTA contest. WB6RXM places 29th.

Submitted by Carl, K6WZ/0

Next Time - 23 years back.

HARDWARE

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

Biography - Mike Candy, KI7FX

Like most amateur radio operators, I developed an interest in things electronic at an early age. When I was about 8 years old, I received an AM transistor radio for Christmas. While tuning around the dial on this marvelous new device late at night, I was fascinated to learn that you could hear broadcast stations from other cities around the country! My interest grew, and soon, with the assistance of my father, we were building an AM crystal set in the basement of our house. I haven't been the same since. When I joined the Air Force in 1974 at age 17, I had the opportunity to meet my first Ham operator - I had never heard of Ham radio before this! In the true tradition of Hams around the world, he loaned me a wonderful Hammerlund receiver to take home and play around with, and I sat up quite a few nights tuning around the bands. I remember wanting to become a ham for most of my adult life after this, but always had some reason for not studying the code and kept putting off the test. My military work put me in touch with digital communications in various different shapes and sizes. As a Digital Communications Operator, I worked with everything from the old Kleinschmitt and ASR-28 TTYs to the latest multiprocessing mainframe systems.

I played around with electronics a lot in the mid 70's and learned a lot from my CB days. Being on the move all the time made it a little inconvenient to find a "regular crowd" of Hams to associate with. Personal electronics were just around the corner, and the 80's dawned a nice diversion for an electronics junkie like me - the computer! I spent many long nights tapping away at BASIC code on the old VIC-20, but there was still something missing - Radio! While stationed overseas, I had the opportunity to meet a couple of Hams who showed me the ropes and let me operate club station DX2F a few times. I had been studying my code and was prepared to take my novice test when a family emergency called me back to the states. Radio was put on hold again it seemed. After a few more years, many more computers and another re-assignment across the country, I met a group of Hams (through my computer BBS) who are probably the nicest people I have ever met. I was challenged to get my license, and decided that this time, I would meet the challenge - Finally, after all those years, I was a Ham! Originally licensed as N7SCX in June 1990, I was soon on the path to upgrade. When I reached Advanced, I figured it was time for a call sign change, and got lucky in August 1992 with the callsign KI7FX. I have not yet upgraded to Extra. I have a lot more to learn about this hobby. It will take a lot of time and effort, but when I feel comfortable with the title Extra Class, I will upgrade - not before. Upgrading is not as important as knowledge and practice. With the great bunch of Hams around here, it won't take long.

Greetings to all RDJ Readers! As we all know, contest season is once again upon us. The CQ/RTTY Journal WW RTTY Contest just wound up for the year, and I am happy to report that I had a great time. This year I used the new Kantronics KAM Plus for HF RTTY and it was an interesting change. More on that a bit later! I think that half the fun of these contests (and preparation for the coming winter season) is getting everything prepared, fine tuned and operating at peak (we hope) efficiency. Just when you think you have it all figured out, Murphy's Law will take over. I certainly didn't plan on replacing two of my computer systems at the last minute. I also didn't plan on replacing my old "reliable" 20m vertical antenna either, but I did. With lots of work to get done and only a week to get it all finished, I figured it would be best to get in gear!

To start my run of bad luck, my trusty Packard Bell 486 computer decided to quit working for the third time in two weeks. It was a wonderful gift when I received it for Christmas last year, but it just wasn't holding up to the stress of a "peripheral crazy" amateur radio operator running a BBS 24 hours a day and multitasking all sorts of other applications! Since it's arrival I have added a CD-Rom drive, a soundblaster card, network card, extra serial cards, and a host of other goodies that apparently overworked the systems (underpowered) power supply. It was time for a new machine, and this time, I made sure that it had a full 230 watt power supply - I am sure the new one will hold up better than the old PB. I will echo my comments from a couple of months ago, and those of other RDJ writers - If you are thinking about getting a new computer, the time is NOW! Prices have gone through the floor for new computer hardware. A complete 386/40 system can cost you as little as $600.00. The most interesting price comparison that I have seen is the difference between the 486 chip and the old reliable 386 CPU. At the wholesale level, the 486-SX/25 CPU is going for about $200.00 while a 386/40 is as low as $75.00. You guessed it, I went for the 386/40 this time, and haven't really noticed a difference in speed between the old 486/25 and the 386/40. The 386/40 seems to run a "bit" faster on some applications because of a new video controller that I added to the collection. Norton Utilities System Info reports the 386/40 at benchmark 40 while the 486SX/25 came in at 54. With the new and faster VGA Windows Accelerator card, MS-Windows finally works well at high resolution (800x600). Pick up a "Computer Shopper" or check with your local computer retailer for bargain prices on the new PC's.

My second run of bad luck came when I realized I was having trouble tuning my 20 meter vertical antenna in the back yard. If you remember from last month, I was having trouble getting the SWR flat on any frequency at 20 meters. This antenna has been a good old standby for me in the last couple of years and I hated to retire the old workhorse. I figured it was time for a change and decided to put a Butternut HF6V in it's place (ground mounted). Since I already had a lot of ground radials buried in the yard, I figured it would be minimal work to get the new antenna up and running. Yep, I figured wrong again. While disassembling the 20 meter vertical, I found that all the neatly buried radial wires were breaking to pieces and coming apart from the aluminum center connecting point. Every single radial wire was corroded and broken. All this walking back and forth over the wire had destroyed it. I remember when a friend (who shall remain nameless) recommended aluminum "electric fence" wire for the radials. Bad move, but ya live and learn, right? With the HF6V installed, and new INSULATED radials laid out, it was time to tune the multibander. Once again I put the AEA SWR-121 (September 1993 RDJ Review) through a test. Can you believe that tuning an antenna for 6 bands can be done in about 15 minutes without any assistance? It's true, and I did it! With only a few hours before the contest was scheduled to start, I had the HF6V tuned and ready to operate. The AEA SWR-121 was an absolute lifesaver. Instead of the old method of transmitting, running out to the antenna, tuning over and over again, I actually stood at the antenna and tuned each band while the SWR-121 was connected and giving me immediate feedback as to it's resonant frequency. Like I said, an absolute lifesaver for me this contest weekend!

Kantronics KAM Plus

Better?

Well, computers repaired, antennas working and the contest just about to

start, it was time to put the new Kantronics KAM Plus to the test. I was a bit reluctant to review the KAM Plus, since I have already mentioned my work with the KAM Upgrade that I installed back in April. I figured that the upgraded KAM would be pretty much the same as the new KAM Plus and I thought it would be a rather uneventful review. I was then told that the new KAM Plus had better HF filtering and was more responsive to weak signals. My ears perked up and I had a sudden change of heart - anything that can help this weak signal, cheap wire and aluminum antenna toting ham shack receive better signals, is definitely worth the effort! Besides, all I had to do to get it operating was unplug the old KAM and plug in the new KAM Plus.

* First Impressions *

What were my first impressions of the new KAM Plus? I dunno, it looked the same as the old one to me. With the exception of a slightly different looking front panel, and a new "mail" led, everything appeared to be exactly the same as the old KAM. The familiar cast aluminum case, the same VHF port, HF port and computer interface connector. But, this is where the similarity ends. It's probably no secret that I am partial to the KAM. I have been using one for quite a few years, and I REALLY like it! I like it's multimode features, it's compact size, it's reliability (I NEVER turn my KAM off), and most of all I like it's performance to dollar ratio (pretty important in my book). It runs with all the common digital software packages and contest software, and it is tight, with no RFI problems. For some reason, the KAM was apparently never as popular as the "the other big guy". I never understood why, but then again I have never owned one of "them". KAM owners, please skip the rest of this part and continue reading in the next paragraph. This part is for "those other mulitmode TNC" owners. Did you know that you can run VHF Packet and HF RTTY (or other digital modes including PACTOR) from the same TNC, at the same time on the same computer and only use one Com port? This means, you can be logged in to the local packet cluster or BBS while running HF Digital on the same screen, using only a single Com port from your computer. If you have been following my writings, you will know how "conservative" I am with serial ports - I hate to waste them on unnecessary connections. Of course you can NOW do this with the "big-900", but it'll cost you a bit more, quite a bit more! I like to get the best use of hardware I/Os for my money and Kantronics satisfies that need with their multi-port concept. Right now, I am logged on to the DX Packet Cluster and working HF RTTY on the same screen. Ask a KAM owner to show you his station some time.

Ok, all you KAM owners, you didn't read that part, right? Now for the good news! Since it was such an easy change to go from the old KAM to the new KAM Plus, I didn't spend any time wiring and soldering cables to get everything connected and running. I was already familiar with the command structure and software to make it work. As I expected, the new KAM Plus uses the same multi-level user interface that I mentioned in the review of the KPC-3 a few months ago. Basically, the KAM Plus, as shipped from the factory, has 30 commands available. This simplifies the operation for new users of Packet and other digital modes. When you are an old pro, or ready to get a little deeper into the commands, you can select the normal command set and have access to over 200 commands. This is an outstanding feature that Kantronics appears to be putting into all of their firmware products which really helps out the new users who are bombarded with too many cryptic commands. The basic "NewUser" command set is a refreshing change for new TNC users. While we are on the subject of information overload, I am pleased to see the new KAM Plus manuals organized in a neat, two volume "Getting Started" and "Reference Manual" set. Kantronics no longer makes a "one manual fits all" book (like the old KAM) and the new manuals are well organized and much easier to work with and use. The index in the back of the Reference Manual is a nice feature for finding information on a specific topic quickly.

* Performance *

All these nice touches don't mean much if the KAM Plus doesn't work any differently than the old KAM though. I got the software started up and and started tuning around the bands to see what was happening before the contest. I faintly heard a few RTTY signals getting ready for the contest. I didn't pay much attention to them at the time, because they were fairly weak and being familiar with the old KAM, I didn't expect to decode them. As I was about to keep tuning, I noticed the screen was actually PRINTING the station. I am so accustomed to the old KAM that I underestimated the difference in the sensitivity of the KAM Plus. I was actually printing a RTTY station that I did not expect to print. Yes, there was a lot of garbage with the print, but that didn't matter, I could SEE his signal. The KAM Plus' bar graph tuning indicators were picking up on the weak signal station and decoding it. This was a definite improvement over what I was accustomed to. With the new KAM Plus ready and the contest about to start, I was glad I decided to give the KAM Plus a second look. When your primary mode is "weak signal" like mine, every little bit helps

* Is the KAM Plus Better than the KAM? *

The KAM Plus audio input sensitivity in the FM mode (for limiting - used in RTTY mode) is rated at 2mv while the KAM is rated at 20mv, a significant difference. The Dynamic range of the KAM Plus is 80dB versus 60dB in the old KAM. The KAM Plus definitely appears to do a better job at decoding weak RTTY signals on HF, although it is (as expected) more susceptible to noise. The upgrade is definitely a worthwhile consideration for this level of HF Digital work.

Kantronics has made a good product even better with the introduction of the KAM Plus. It comes right out of the box with a nice list of standard features including PACTOR, one of the newest digital modes. I am pleased to see that Kantronics is now shipping all of their TNCs with an RS-232 cable which is a much appreciated feature. Although I have a dozen of them in my parts box now, there was a time when I had to scrounge a darned cable up just to get my first KAM up and running. I did notice, however that Kantronic's has gone the way of "other" TNC manufacturers and quit putting the little 12v power transformers in the package, making you search for a power source on your own. Pretty soon I am going to need another RS-20 just to power all the "accessories" around here, but I guess it's better than 20 wall transformers hanging from the wall. Other features of the KAM Plus also include a Software Carrier Detect mode for running open squelch systems and detecting weak signals. Weighing in with 128K RAM and a 1 Megabit EPROM, the KAM Plus is a pretty nice TNC for the budget conscious amateur. I have heard that the 512K RAM upgrade is a pretty pricey modification (chip upgrade) for the KAM and some users are talking about purchasing an off the shelf 512K DRAM chip. I haven't heard how well (if at all) it works, and would be interested to hear your inputs on this.

* CQ CQ CQ *

My mailbox has not been as full as I would like to see it the last few months. I really need your feedback so I can adjust my writings accordingly. I want to know about the things YOU would like to read about in the HARDWARE column each month. What kind of projects are you working on and how is it progressing? What kind of HARDWARE issues would you like to see covered in the RDJ? I am interested in your thoughts on the matter and I am sure other readers are as well. Working together we can develop ideas that will be of value to everyone. I would like to extend a hearty 73 this month to Chris Martin (JA1AKN/KA2CM) who is

stationed in Japan - Hurry back Chris and the "Chief" says HI! Also, thanks to Ian (G4EAN) for your packet message and the kind words. I'll be in touch.

In case any of you are into the "birds" I am in the process of learning about and in the final stages of, assembling a satellite station at my QTH. All the antennas, rotors and cables are in place and the radios are almost ready to go. I am currently able to work AO-21 and should be on the others in the next month or so. Busy, busy, BUSY! That will wrap it up for this month. Stay tuned because next month I am going to find out once and for all what all the fuss is with this PK-232 that just arrived in the mail. My "Think tank II" Landline BBS is still up and running (under MS-Windows, if ya can believe it - multitaksing with HAM Windows!) at (509) 244-3511, 24 hours a day (FidoNet 346/8). My packet address has changed to KI7FX @ WB7NNF.WA.NA - and please drop me a line.

Until next month, Good DX and 73

de **Mike, KI7FX** ■

MSOs

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

Hi Gang! It's hard to believe that another Summer is gone! Twenty-six degrees here in Rapid City on September 13th, which sure seems like a very short Summer to me. I hope this isn't the forewarning of a long, and cold Winter season.

10TH ANNIVERSARY OF THE "MSO COLUMN"

It seems almost impossible that ten years has flown by since December 1983, when I wrote the first of the "MSO" columns. The old adage "Time flies when you're having fun", certainly is true. Those were the "good ol' days" of steam RTTY, when a 60 WPM (45 baud) signal was the standard on most bands, and modes and systems like AMTOR, PACTOR, APLINK, WINLINK, BBS's, etc., were only a gleam in their creators eyes. It was a more relaxed period in our digital evolution, and quite frankly, one that I miss a great deal. Although I certainly do not oppose our remarkable progress in the digital area, I find many enthusiasts today a bit too wrapped up in staking out their ground, trying to make their mark, with a corresponding loss of the "personal" relationships that used to exist when plain old RTTY was the mode of choice.

The past ten years have many grand and eloquent memories for me. I remember Frank, K4KOZ, Clark, W9CD, Jerry, WA1IUF, and many others who were the true pioneers of the digital BBS type systems, struggling with lead-acid batteries as backup power for their memory in their MSO's, and who fought the daily battles with those who thought that BBS type activities should only exist on the VHF bands. I remember my first RTTY QSO with John, TG9VT, whose dedication to his fellow digital enthusiasts can only be described as remarkable. I remember the challenge of being able to keep ahead of the transmit buffer when QSO'ing with Tony, KI4X, when we moved all the way up to 100 WPM, (74 baud). I still think that Tony had a secretary at the keyboard! I remember the very first "RTTY Dinner", held at the Peerless Mill Inn, in Miamisburg, Ohio, which included such notables as Gaylord and Louise Crawley, WB8ICL/WB8JIB, Don, WB8ZTV, Don, K8WZX and his precious wife Ruth. I remember the HAL Communications hospitality suite at the Imperial House North, (now The Radisson), where one could drool over, and actually touch the latest and greatest in digital equipment. And when I really start to dredge up memories of my digital background, I even remember Bill Henry, K9GWT, at the ARRL National Convention in Denver, Colorado, in July 1976, demonstrating the first of the truly video based RTTY systems, (DS-3000). Oh boy.....how things have changed.

We've gone from the Radio Shack Model One computer with 48K of RAM (we thought we really had it made when we moved up from 16K!), with some very crude RTTY and MSO software, and what could be described as very basic demodulators, to the latest 486/66 MHz computers, running AMTOR, PACTOR, CLOVER and Packet modes, all at the same time, (WINLINK)! Four, eight and even 16 megabytes of RAM are not unusual these days, with internal hard drives that NASA would have drooled over just a few years ago. We've gone from a few dedicated MSO operators, providing message storage on the National Autostart Frequency, to a worldwide network of AMTOR, APLINK, CLOVER, PACTOR and packet stations, who provide store and forward operations rivaling many commercial operations. There's no doubt in my mind that amateur radio once again pioneered this field.

But as with all good things, they are eventually bypassed by bigger, newer, faster and more complex ways of doing things, and so it is with the MSO's. It wasn't too many years ago that the National Autostart Frequency on 20 meters had more than a dozen automated systems parked on it, kind of a gathering of persons who enjoyed providing this type of service, enjoyed being in contact with others who shared their interest in digital matters, and who wanted a "home base" for their digital pursuits. There were many years during this period that 14 087 625 Hz literally buzzed with activity during much of the day, and even a period of time when some wanted to limit RTTY ragchewing on this frequency, as it interfered with those

vailed, and the National Autostart Frequency remained as a spot on your dial where both automated service was available, and friends and acquaintances could meet for an interesting and enlightening RTTY QSO. Now, in late 1993, there are only three remaining MSO's on this frequency, those of K4KOZ, K5FL and K0VKH. And, as of January 1st, 1994, I will also no longer provide MSO service.

I've spent the past 40 years trying to blame my idiosyncrasies and strange doings on my wonderful XYL, (it's truly a wonder that she's put up with me all of those years), and I can't quit now. She has decided to retire from her banking position effective December 31st of this year, and as sort of a retirement and a 40th wedding anniversary celebration, we have decided to hook up our seldom used Prowler 5th-wheel RV, and "head South" for an extended period of time. It won't be hard to miss three or four months of Winter in South Dakota, but I will miss my friends on the MSO frequency.

SWAN SONG:

Truthfully, it is time for Frank, Brownie and myself to move on to new fields of endeavor. Traffic on the MSO frequency has dwindled to a trickle, and even though friends and acquaintances do drop by from time to time to visit, most all of us now have AMTOR, CLOVER, PACTOR and packet modes available to us, and do not lack for ways to keep in contact with each other. Secondly, I personally feel that the new FCC rules which dictate "sub-bands" for unattended and semi-automatic digital operations are written more to facilitate the newer modes of operation, which quite frankly have outmoded the MSO's. It's time for us to fold our tents, and steal away into the night, but I must forewarn you, I'm far from giving up entirely.

In case that you may want to keep in contact with some of the old MSO gang, several of us have moved on to the AMTOR and CLOVER modes. Brownie, K5FL, Cliff, NS5G, Keith, KB0HY, and myself now congregate on 30 meters, on 10126 KHz, (mark frequency, 10128.1 KHz carrier), with PAMS, APLINK and in my case, WINLINK up and running. We've more or less "borrowed" this frequency from the APLINK guys, and at present I do not plan on "scanning" any other frequencies. We plan on moving off onto some less used frequency in the near future, where hopefully friends and acquaintances can find us again, if they so choose. Although my computer and amateur radio business interests do dictate that I spend some time at the "salt mine", fishing, camping and travelling will figure prominently in my immediate future, and consequently there will be extended periods when my WINLINK system will be off the air. It will be active when I'm in the Rapid City area, and I hope that everyone will feel free to drop in and say hello! For those of you who prefer the Packet radio mode, my address is: K0VKH @ N7RCL.#WSD.SD.USA.NA.

Finally, it is also time for us to put the "MSO Column" to bed for the last time. Ten years, times ten issues a year, equals a lot of words, experiences, debates, friends, acquaintances, and good times. But technology has passed us by, and it's time to move on to other things. I want to take this opportunity to thank Dale Sinner, W6IWO, owner/publisher of "The RTTY Journal", for his indulgence and understanding, plus the opportunity for me to present my views on many subjects that pertain to digital communications. Dale has taken the RTTY Journal to new heights, has promoted the digital modes extensively, and has served the cause of Amateur Radio, and specifically the digital modes, well. With Dale's continuing indulgence, I may continue "The Hornet's Nest" from time to time, when suitable material is available to me.

To all of my friends and acquaintances I pass along my fondest regards. May life treat you well, and may all of your bauds be good ones. I'll look for you on the digital bands! 73

de Dick, K0VKH ■

CLOVER

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

Leaves are turning and Indian Summer is fading here in Spokane. Many have just concluded the CQWW RTTY contest and conditions are indeed changing. This year I did a single operator 40 meter band operation. This year's CQWW contest was a lot of fun, but it looks like my friend, W2UP, whipped me again from the East Coast. This month the mailbag was pretty heavy. Let's take a look.

THE MAILBAG

John, 5B4YU, who is in Saudi Arabia wrote looking for some information on software for a Heathkit HD-3030, which is the Flesher TU-470 in disguise. I sent him W9CD's fine MATTY disk. Ron, AB5KD, and I have been exchanging info on contesting. Rick, KV9U, wrote a long letter with a bunch of digital questions which I have answered and yes Rick, Jim, N2HOS, does make CLOVER "sound almost to good to be true." CLOVER is that much fun!

Mike, WA6ZTY and I have been exchanging a bunch of packet messages. Mike wrote: "I need to know what audio frequencies the CLOVER mode uses. Am aware that the bandwidth is about 500 Hz, but need to know where that 500Hz is located in the audio spectrum. What are the audio frequencies that the CLOVER board sends and receives from the RF transceiver." The answer to Mike's question is that the CLOVER waveform uses four tone pulses which are spaced in frequency by 125 Hz. The default parameters of CLOVER are for the center frequency to be 2250.0 Hz. The four tone pulses are 2062.5, 2187.5, 2312.5, 2437.5 Hz.

RIG CHOICE

CLOVER uses your rig in the lower SSB position. Having the ability to switch in filters is a very nice feature. The frequency stability of the transceiver should be as high as possible with drift within +- 5 Hz per hour as your goal. Frequency read out to within 1 Hz is desired. Tuning aids such as Oscilloscopes, SPT-1, etc. are not really needed. The software that is included with the CLOVER board (system) has tuning bars, and indicators which are all that you need to get and stay on frequency. In my tests, I have found that being able to be on the same frequency is VERY important. It's my opinion that being able to control AF and RF gains as well as PBT (pass band tuning) is ideal. CLOVER does not use the FSK transmitter feature of many HF transceivers. Probably one of the most important things to know is that heavy ALC operation on CLOVER causes distortion. So it is necessary to be able to adjust transmitter operation for low or no ALC activity when transmitting CLOVER.

The "best" rig to use for CLOVER is always a good question. Many use the Yaesu FT-1000, the Kenwood 950 is a big performer and many of the Icom models meet the challenge. Certainly anyone using the Icom 781 knows that it works well. Most of the late model rigs will probably work fine. The Ten-Tec top line model is

also being used a great deal. An old Drake T4XB would probably not be the first choice of a modern digital operator.

CLOVER uses DSP

This new and exciting mode called CLOVER makes heavy use of DSP (digital signal processing) techniques. This use of modern techniques is also what makes it so different and so unusual. Rather than modifying existing modes, the design was tailored to overcome problems unique to HF radio. Most quality HF radios have 500 Hz filters available as standard equipment, and was part of the design criteria. The CLOVER signal is a steady sequence of four tone pulses at ascending audio frequencies. Each pulse is 32 milliseconds long and they are spaced 8 milliseconds apart when being transmitted. As was noted in the mailbag section of this article the four pulses are also spaced 125 Hz from each other and each is shaped so that they don't overlap in amplitude.

These choices of pulse, frequency, and careful amplitude give us a composite signal that is 500 Hz wide. (This also assumes that you aren't using compression and that you aren't overdriving the ALC) The crosstalk between two CLOVER signals spaced at 500 Hz is less than 50 db. This is the reason that we are now using the middle 500 Hz between some of the 1 Khz spaced CLOVER data channels for places where keyboard to keyboard CLOVER conversations/data interchanges can take place.

CLOVER POWER Pulse power

Unlike most of your other digital systems, CLOVER uses tone pulses. Because the tones, which pulse over time and overlay each other, the peak power of CLOVER is much greater than the average power of other digital systems. This is very similar to what you see in SSB. HAL Communications indicates that "the crest factor of CLOVER is 6 db" higher than average. This is why when running the AUTOPOWER feature of the software, where it reduces your power when conditions are good, it can actually make the power level approach zero. CLOVER is the only digital system and perhaps the only amateur system that really meets the age old rule of "using the minimum" power necessary!

Receiver & CLOVER

This is another place where old methods must fade away. Using fast AGC (automatic gain control) is a definite no-no. Running the ANL (automatic noise limiter) also leads to distortion in the CLOVER system. Any and all of these items appears to interfere with the ability of the on-board DSP unit/units to do their function by creating distortion. Some of the techniques that do seem to work are careful use of filters (down to 500 Hz) and the use of both PBT and the notch filter. The notch filter works very well in defeating CW signals that are in the normal 2.3 passband of your receiver. It has been determined that running similar rigs on both ends of a QSO seems to have some impact on the effectiveness of the throughput. Whenever I hook up with someone running a Yaesu FT-1000 I find that things speed up. Maybe all good digital operators run Yaesu radios?

Your Favorite BBS

If AA4RE software is your favorite BBS system and you want to run CLOVER then you too may be in luck. I have found a version of AA4RE code that is in Beta test that runs CLOVER. It is version 2.22???j and I located in on the Internet. This implementation of 4RE will be tested for an upcoming discussion in the column.

WA7SJN a CLOVER Pioneer

As space is a little tight this month I will delay some of the promised discussion on new features and instead give you a look at one of our prominent West Coast Traffic handlers and his impressions of CLOVER. Meet Bill, WA7SJN, one of the premier traffic men on the "left coast".

This is a combination of messages from Bill and a telephone interview that I conducted for this column. As he replied in a packet message when I asked WA7SJN for his telephone number, "You mentioned interview, which caused a couple of palpitations, hi. Hope you were kidding!" I wasn't !

Bill, How long have you been one of our readers?

"I have been reading the Journal for 20 years now, and somewhere probably have one of the premier collections, hi. Also have a good collection of gear, that I find hard to throw away."

What prompted you to get into CLOVER ?

I started reading about Ray's, (W7GHM) research and it sold me on the mode [CLOVER] before it actually came out. I had been an old time RTTY man for years and wanted to do some traffic handling.

What do you find to be the advantage in using CLOVER on HF over other modes you have tried?

Bill indicated that he has done, RTTY, Packet, and Amtor. "Throughput is dramatic, especially in those conditions of only fair propagation." Bill went on to say that concerning power it is really, "Fun to see the meter only wiggle." This is Bill's first excursion to HF Data and traffic handling. I had thought that he was a HF packet convert. Goes to show you about mis-conceptions.

How does CLOVER stack up in bad HF conditions and in particular on the low bands, 40 and 80 ?

Bill said that he was "just on 40 right now." He runs Hank's, W0RLI program and has only experimented with keyboard to keyboard CLOVER. Bill uses the Kenwood TS-850, using the 2.4 filters and adjusting the slope tuning to minimize interference or other problems. He has been running the 850 continuously for about a year with only one small problem. He purchased the TS-850, primarily for the 1 Hz tuning resolution which is so important in CLOVER. Bill, stated that like many of us the reputation of HAL Communications was an important persuader in getting the PCI-4000 board. By the way this was his first piece of HAL equipment. To give you just a taste of what goes thru a traffic handler's mind and his keyboard, here is a quote from a message I received from WA7SJN. "40M terrible last few days, lots of traffic for CA sticking here, and making me nervous."

Hats off to those handling HF traffic and a big thank you to Bill, WA7SJN, for being my first Guinea Pig for my "interview of the month."

Until next month, keep those letters flowing.

73, de **Jay Ws7i** ■

WS7I@WB7NNF.WA.USA.NA

jayt@comtch.iea.com

FidoNet: 1:346/3.0

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Jay, WS7I, operating as HC5K, during CQ/RTTY contest 1992.

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