RTTY JOURNAL ©

Price $2.00

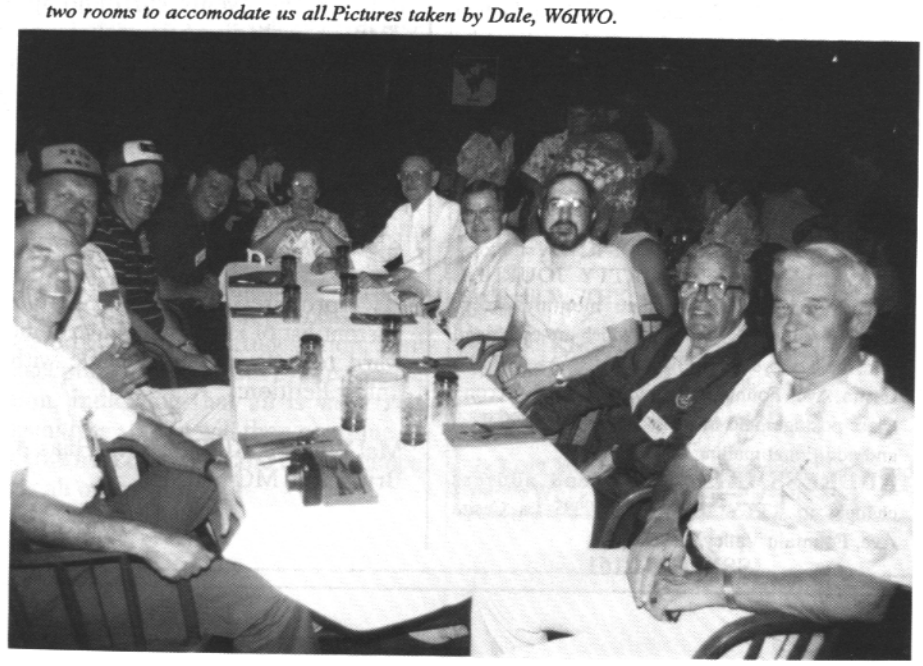
A DEDICATED DIGITAL PUBLICATION

VOLUME 38, NUMBER 4 APRIL 1990

IRDXA Spreads The Word

IN THIS ISSUE

These two pictures were taken at the RTTY dinner in Visalia, CA the weekend of April 6, 1990. Some forty RTTY DXers and their guests were present and as can been seen the restrauant needed two rooms to accomodate us all.Pictures taken by Dale, W6IWO.



NEXT MONTH

BEGINNERS ISSUE

REPORT from IRDXA

CQ/RTTY Journal 1989 Contest results

Get Excited About The Digital Modes

RTTY JOURNAL

Dale S. Sinner, W6IWO
OWNER-EDITOR-PUBLISHER

ALL CORRESPONDENCE TO:
9085 La Casita Ave, Fountain Valley, CA 92708

Tele: (714) 847-5058
FAX (714) 892-2720

RTTY JOURNAL STAFF MEMBERS

Don Royer, WA6PIR **Asst. Editor**

Hal Blegen, WA7EGA Contesting
Cole Ellsworth, W6OXP Connections
Richard Polivka, N6NKO Packet
Eddie Schneider, W6/G0AZT AMTOR
Jay Townsend, WS7I Software Review
Betsy Townsend, WV7Y Awards
John Troost, TG9VT DX News
Dick Uhrmacher, K0VKH MSO's
Roy Gould, KT1N Contest Mgr.
CQ/RTTY JOURNAL Contest

SUBSCRIPTION RATES

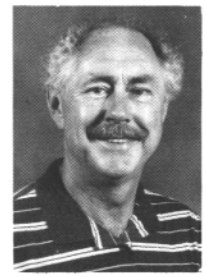
USA $12.50
CANADA/MEXICO ....1st Class $15.00
Foreign Surface $18.00/ AIR $24.00

EXCEPTIONS: Estonia, Latvia, Lithuania, USSR, Asia, Australia, New Zealand, Pacific Islands, Africa (other than North Africa), Indian Ocean Islands and Middle East AIR only $24.00 (surface mail not advised these areas). Cash, check or money order in U.S. funds only with request, no credit cards accepted.

POSTMASTER: The RTTY JOURNAL (USPS 391850) is published monthly except May/Jun and Jul/ Aug issues which are combined for $12.50 per year by RTTY JOURNAL, 9085 La Casita Ave, Fountain Valley, Ca, 92708. Second Class postage paid at Santa Ana, Ca. 92799-9998 and additional mailing offices.

ADDRESS CHANGES: Send address changes to RTTY JOURNAL, 9085 La Casita Ave, Fountain Valley, Ca, 92708

ISSN 0033-7161



HITS & MISSES

Dale Sinner, W6IWO
9085 La Casita Ave. Fountain Valley, CA 92708

Over the weekend of April 6, 1990 I attended the International DX Convention in Visalia, California. The IRDXA (International RTTY DX Association) held a forum on Saturday hosted by Don Simon, W6PQS for the purpose of reporting on their progress and to make announcements of upcoming RTTY DXpeditions. They also were beating the drum for increased membership and support for the association.

The event was kicked off with a no-host dinner on Friday night and about forty RTTYers or propectives attended. It was a great turnout and RTTY was the topic of the evening. (see front cover)

I especially enjoyed being able to attend and renew freindships with some of the RTTY gang and meet others who are Journal readers. I had a nice visit with contesters and DX chasers Rich, N6GG and Chuck, W6JOX just to memtion two. I met a fine group of 'Digitals' from the Bay area who are very active DXers. Other RTTYers included, Dean, WA6PJR, Irv, W6CG, Al, W6MI, (Doc, W7MI, where were you?), etc.

Don Simon, W6PQS as forum moderator allowed me time to bring the group up to date on the events surrounding RM-7248. A lively discussion followed which impressed me very much. Again, in this group, I could not find anyone in favor of RM- 7248. I was assured by some that they would write to the FCC and to the ARRL upon their return home.

RM-7248 Committee

As I promised last month, here is the current list of Hams who have come forward to help in our struggle with this unfair Petition:

Mel Whitten, K0PFX, 3219 Haas Ave T. Bridgeton, MO 63044

Robert McGwier, N4HY 15 Cherry Brook Ln, East Windsor, NJ 08520

Tom Clark, W3IWI 6388 Guilford Rd. Clarksville, MD 21029

Bob Slomka, WD4MNT RR# 2 BOX 1028 Cordele, GA 31015

Travis Braunn, WA5RGU 611 Golf Drive N Apt B-16, Bradenton Beach, FL 34217

Buck Rogers, K4ABT 506 Pheasant Ridge Dr., Warner Robins, GA 31088

Bill Henry, K9GWT c/o HAL Communications Corp. P.O. BOX 365, Urbana, IL 61801

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

Dick Uhrmacher, K9VKH 212 48th St. Rapid City, SD 57702

Steve Waterman, K4CJX 5828 Beauregard Dr., Nashville, TN 37215

Cole Ellsworth, W6OXP 10461 Dewey St Garden Grove, CA 92640

Mike Lamb, N7ML C/O AEA Advanced Electronic Applications P.O. BOX 2160 Lynnwood, WA 98036

Phil Lennan, WV2V Highland Woods Blvd, Highland Mills, NY 10930

I hope many of you will write to these Hams and give them your support. At this time I'm happy to report this list includes Hams from all the Digital modes. They represent a very large segment of these modes which numbers into the six figure category. If you have something to say about RM-7248 feel free to contact any one of these Hams. Flood them with mail.

That's it for this month. Hope to see many of you in Dayton. 73 **de Dale, W6IWO**

AMTOR

Eddie Schneider, W6/G0AZT
1826 Van Ness, San Pablo, CA 94806

Hello fellow Amtorites, I must apologize for not writing an article for the last two months. Since I began my AMTOR column in April 1988, I think I have covered most, if not all, of the important aspects of operating this mode. After a while, one tends to run out of subject material and the fear of boring the readers with repeat articles, becomes a problem, However, from preliminary results of the Reader Survey cards received by the Editor, it appears that there have been many requests for more AMTOR information.

This month I will start off with the basic method of operation of the two modes available in AMTOR, namely FEC (mode-B) and ARQ (mode-A).

FEC stands for Forward Error Correcting. This mode is used to initiate a CQ call, in the hope that someone will "link" with you in ARQ. FEC should also be used if the conditions are not too good, one or both stations have tx/rx switching problems, or if the "distant" station is being worked long path.

FEC does not have a "hand-shake" protocol or error correcting capabilities like ARQ, but FEC, DOES require phasing or synchronizing, hence the reason for periodic "idles", during the CQ call AND during an FEC QSO.

In FEC, each character is sent TWICE, the receive computer picking out the one with the correct 4:3 ratio. The second character is sent 35Oms after the first. The theory being, if one character does not make it, then the other character should! If both characters are "hit" or the 4:3 ratio is incorrect, nothing will be printed.

The new CCIR 625 FEC protocol recommends 16 idle pairs at the beginning of a transmission, to allow the receiving station to synchronize, followed by 4 idle pairs after every 100 characters sent, to enable the receive station to remain in phase with the transmitting station. CCIR 625 is a lot better than the older CCIR 476 protocol, but in my opinion, still inadequate under H.F. conditions.

It appears that the majority of software writers for the TNC manufacturers, are not Amateur radio operators and they therefore adhere to the "minimum" requirements recommended by either CCIR 476 or 625. Noteworthy exceptions are A.E.A.'s MBA-TOR software which has phasing idles after every 18 characters and HAL Communications, who are using 32 idles at the start of an FEC transmission, 8 idles after every 40 characters of text, 8 idles at the end of each line, and idles are inserted whenever the transmitter output empties the TX buffer.

AMTOR THEORY

As you all probably know, AMTOR means "Amateur Teleprinting Over Radio". AMTOR is a derivative of the commercial SITOR, modified for Amateur radio purposed by amongst others, G3PLX (Peter Martinez).

ARQ (Automatic Retransmission Request) Mode, uses a seven bit synchronous code that provides for error checking. Encoding of each character is made of four ONES and three ZEROS, allowing the computer to check the 4:3 ratio required.

If the receive computer detects anything other than the 4:3 ratio, it "queries" the 3 bit group sent by the transmitting station and "asks" for a repeat, the process is then repeated by the transmitting station, until an acceptance code is sent by the receive station, indicating that all is well. The transmitting station will then continue to send the next three bits and the sequence starts all over again.

Transmitting speed, for Amateur use, is normally 100 baud and 170hz shift. Characters are sent in blocks of three by the transmitting station. This takes 210MS, there is then a pause of 240MS, to allow the receive station to check the 4:3 ratio and send back an acknowledgement that all is well.

The overall time for each block plus a reply, takes 450MS, so if your changeover to receive is too LONG, the MINIMUM working distance will INCREASE, making an ARQ link to a "nearby" station, nearly impossible. Under these circumstances, there is some merit in the MASTER delaying the TX timing via the software, However, INCREASING the delay, will REDUCE the MAXIMUM working distance for DX work in ARQ.

Definitions: The MASTER is the station that starts the ARQ link, i.e. types in the Sel-Cal of the station he or she wishes to link with.

The SLAVE is the station that called CQ in FEC, and is awaiting a link in ARQ.

SEL-CALs (CIR 476)

Under CCIR 476, ARQ (mode-A), includes a FOUR LETTER calling code which must be used, to connect with the other station. Your "distinctive" Sel-Cal is usually made up from your callsign. i.e. GOAZT becomes GAZT, WB6AHF becomes WAHF, KN6J would KKNJ. Note that you omit the NUMBER in your callsign and only use a combination of the LETTERS.

Recommended SEL-CAL Selector: (CCIR 476).

If you miss the CQ station's SEL-CAL but copy his full callsign, here's what you do to work out his SEL CAL, provided the station has not adopted a "unique" one:

1x2 call WlDA, drop the # and duplicate the first letter=WWDA

lx3 call W6TEX, drop the #=WTEX

2x1 call KN6J, drop the # and duplicate the first letter=KKNJ

2x2 call AAOAA drop the #=AAAA

2x3 call WA7EGA, drop the second letter and the #=WEGA.

Dead easy isn't it? What about those countries that have a figure at the beginning of their call, no problem, just duplicate the first letter, 5H3ZO = HHZO.

Naturally there are always some exceptions to cope with. All the 9K2-1 and stations like 9K2EC, drop the numbers but instead of duplicating the first letter of their call, they use an N, NKEC. If you discover someone using the same SEL-CAL as you are, you can try changing the number of your call area to a letter:

1 = Q	6 = Y	2 = W	7 = U
3 = E	8 = I	4 = R	9 = O
5 = T	0 = P		

When it comes to call like S79WS (SSWS), 9H1BW (HHBW), 9H4C (OHRC!!), 9Q5BA (NQBA), 9Q5HT (AEZR!!), you're on your own! All I can say is that you have to be alert and copy the "unique" SEL-CAL that some of these DX stations use. There is no hard and fast rule to SEL-CALs. It is up to each individual station to select whatever combination they wish.

SEL-CALs (CCIR 625)

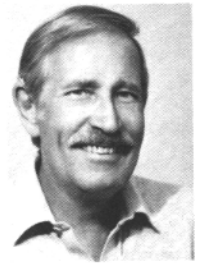
CCIR 625 has provided for a SEVEN LETTER SEL-CAL system which should totally eliminate any duplicate SEL-CALs. However, a CCIR 625 system must still be able to communicate with the older FOUR letter CCIR 476 software, so there is no need to rush out and buy the newer equipment, unless you really want to! To date, I have only seen three stations using the SEVEN letter SEL-CAL and they still have to indicate what their "old" SEL-CAL is, in order to be able to link with the older systems.

There are a few other features incorporated in the newer system but for the time being, I will not discuss them for fear of confusing the newcomer to this great mode of communication.

Next month there will an article on how to get started on AMTOR. Till then, take care, GL and DX. 73

de Eddie, W6/GOAZT

■



DX NEWS

John Troost, TG9VT
444 Brickell Ave, Ste 51-265, Miami, FL 33131-2492

To make room for the "Most Needed Countries on RTTY", I will keep the DX column as short as possible and dispense with my usual stale jokes.

MARCH REVIEW

The big news in March was that Bhutan is finally on the air, and that A51JS has been worked on RTTY. You must understand that this is the first operation in more than a decade, and that lots of formalities have to be gone thru by Jim Smith, VK9NS, to keep his hosts happy and ensure that Amateur Radio will be a normal thing from Bhutan from now on. Also, he is training some local operators and plans to leave some gear there. He will be active, on his lonesome, till Mid April.

A61AD, operated by Don Greenbaum, WB2DND, was active for two days on RTTY from the U.A.E. Unfortunately the propagation was not very favorable those days: he was reported good in Japan, fair in Europe and virtually non-existing in the U.S.: pity as this is the first legal RTTY operation from the U.A.E. Please come and do it again Don, maybe the West Coast will then have some copy on you.

Henry, DJ6JC was very active from Abu Ail as A15AC, most likely the last operation from that rare on for some time, as maintenance of the lighthouse has been contracted to Yemen, effective 1 April.

Specially nice catches for deserving RTTYers were HH2BZ (QSL N1DRS), TJ1MW, J28TY, JY9SR, H18BG, UC1AWW, JX9CAA, 4K2OT, ZS9A, ZS8MI, 8Q7DN, LY2WW, ES7FU, 9J2AL (Sundays on 10 M), TA3D, CE0ZIG (Easter Island), EA9JV, EA9MY, GJ4YMX, 6W6JX, HS1BV, XW8KPL (now and then on Saturdays), BZ4RDX, BY9GA (Z23), CU2CB, 3X1SG, HL1SX, AH9AC, TU2BB, SV5TS, HV3SJ, 9M2AX, AP2BK, KH8/SM7PKK, J73EH, UM8MTF and UH8ABM, UQ2HO, V51NAM (New Prefix for Namibia) T32PG and T32LB (both at the same time from East Kiribati), 5V7DP, SU1HN and too many to list, but, in spite of often poor propagation, you can work them all if you can stay at your gear 25 hours per day (or have a nice packet cluster).

DX COMINGS

First of all, the negative side: LORD HOWE is kaput for this time even though VK3OT agreed to do RTTY but IRDXA could not get gear to him in time.

Then S01EA, WESTERN SAHARA, was without an RTTY operator as EA9JV was not permitted to take leave from his work. But Aure promises to show up from there again and also from 7X, ALGERIA.

Next the TI9, COCOS ISLAND operation has been delayed due to excessive cost of transportation: now possibly till Early July.

In the SOUTHERN SUDAN, seems that Jacky, F2CW is not involved now and the chances of an All Time New One on RTTY are slim at this point, to say the least.

Now for the good stuff; The exiting thing is that the Venezuelan DX Group has firmly committed an ALL DIGITAL EXPEDITION to YV0AA, AVES ISLAND from April 11-15. One of the first, and the FIRST MAJOR DIGITAL EXPEDITIONS ever, if you discount the contest efforts by the USSR stations in Soviet Republics, which were also FIRST EVER. Due to transportation and permit problems the operators include Venezuelans only.

Alex, UL7PCZ of the RL8PYL group is now in Vietnam, and it appears that SPRATLY, 1X0XV, is finally "GO" for Mid April.. IF.. the necessary finances can be arranged in time, About 30% of the $40,000 is required before the trip can begin. Sending money to Vietnam in any shape or form, proved to be illegal. So now, W4FRU has come to the rescue and will receive donations to be forwarded to the USSR. I sent off $100: please try and come up with what you can. If the trip becomes a reality, is now only up to us, plus the generous help of INDEXA, who donated 2 X-Ceivers, 2 Amps, 2 Tribanders, plus $1000. W4FRU is John Parrott, POB 5127, Suffolk, VA 23435. He does not insist on cash, a check will do.

OH2BH, Martti and his group is still on sched for the JARVIS ISLAND operation for 13 April for 9 days. RTTY operator will be Eric Scace, K3NA. Application for separate country status is being submitted, so do not miss this one, even if you have worked Palmyra, as it may turn out to be an All Time New One on RTTY.

Also, the CONWAY REEF trip is still on sched for 8 days in Mid May, so if you did not catch 3D2HL, now is your chance. OH2BH and 7 multi-national operators.

Still no RTTY reports from the crowd on KERGUELEN and CROIZET. Toes and fingernails crossed.

No further information about ANGOLA. This looks a little strange in the Most Needed Country Survey: only 86 percent needed in the U.S. (unless some of the operators are as old as Methuselah, or possibly included SSB/CW Contacts).

IRDXA is contacting VK9EW and VK9WB to try and place RTTY gear at COCOS KEELING. IRDXA's RTTY gear for ZD9BV, TRISTAN DA CUNHA, has been shipped and, thanks to the help of W4FRU, should be on the boat in April. As of this writing, AA6TT (ex KC6EDP is on the way to V29, ANTIGUA, with IRDXA RTTY gear. IRDXA also has received favorable response from 3B9FR on RODRIGUEZ ISLAND (97% needed WW). He will go on RTTY if IRDXA gets him RTTY gear: hence a fait accompli. I would think that the efforts of the IRDXA warrant your financial support: please send any spare (or non spare) money to IRXDA at 356 Hillcrest Ave. El Segundo, CA 90245: please, pretty please!

Also IRDXA has received the Tono from Rod, 5ZABH, which was lent to him by JA1ACB. JA1ACB has now donated it to IRDXA for some of the above ventures, and Rod has bought a Lap-Top Computer with a PK232 to take with him on his trips thru Africa. During his recent trip to Ethiopia Rod tried to connect with ET3PG, but now he is on home-leave and will be back at his base in Kenya about 23 April.

Late word is that Jim Smith, VK9NS will try to activate BANGLADESH when he finished in BHUTAN. He will be joined there by K5VT: but if RTTY will be allowed from there is something else: during the recent S21U operation the Authorities would not permit RTTY as they had no monitoring equipment to check what was coming from those strange black boxes: stay tuned!

VU2JX, JS, ex VU7JX and VU4GDG/JX tells me that the Bangalore DX Foundation will operate from BHUTAN in September. A very major expedition, with big antennas, amplifiers and even Satellite Communications. One complete station will have to be left in Bhutan for trained local operators. They are now awaiting the final permits, but all seems clear. Plans may include the CQ WW RTTY Contest. The trip is expensive contributions are welcome to: BANGALORE DX FOUNDATION, POB 4250, Bangalore 560042, India. Pretty please! You can also send a Bank Transfer to: State Bank of Mysore, First Block, Koramangala, Bangalore 560034, India: "for the account of the Bangalore Dx Foundation", but if you do, please send a copy of the transfer to POB 4250 anyway: JS does not want any money to get "lost", therefore make all checks to "Account of Payee only".

JS also tells me that he has 1000 QSLs not claimed for the March '89 VU7JX operation, mainly from Europe and Japan. The USSR cards were all sent to Box 88 for distribution last June. Those still wanting the QSL for that Rare one please apply to VU2JX before 30 June of this year, as the remaining unused cards will be scrapped after that date.

If you wish to keep current easily and quickly on the fast breaking DX news, you can find the latest in my Aplink BBS, which is now scanning 21,074, 13, 068,14,069 and 14,074. Until the last day of April the Service is available 24 Hours per day (semi attended operation, I have to sleep), but from May to late October, we have to watch out for frequent thunderstorms in the afternoon; once lost a complete station that way. The box will normally be up only from about 2300Z to 1500Z or possibly till 1800Z, depending on the weather. You are welcome the latest DX news The RTTY DX Weekly Notes compiled by VK2SG are always there and updated on Friday Z around 0300.

RAMBLINGS

The ARRL has not even gotten the FCC to agree on the rape of half our RTTY bands and already some unattended HF Packet stations are merrily chirping away in the RTTY QRM on 14,093 Mark. Surely not very efficiently either for them or for the RTTY stations trying to maintain a QSO on that same frequency.

In fact I was sent a note from TI2PAQ, one of the well-known Unattended Packet Stations operating on 21,097, telling us about how much QRM he got from RTTY stations when he was trying to get his earthquake traffic thru recently. He said that he could have moved to the "packet" portion of the band but that would have taken to much time to re-establish a link and thus not practical. He went on to appeal to the ARRL that they please reconsider the proposal for Unattended Packet on .090 to .100 as it would cause so much interference, not only with other packet stations in that segment, but also with the RTTY/AMTOR crowd, who would not be willing to give up that segment, so that the efficiency of unattended HF Packet would be far less then it was now. He requested that the ARRL withdraw it's petition and accommodate unattended operation in the segments now used by HF Packet, because: "our hobby does not obey orders".

This was not written to favor RTTY, but to defend unattended HF packet: so we RTTYers are not the only ones who are skeptical of the ARRL petition.

If you get this JOURNAL in time to act, the FCC has extended the time to which

objections to the ARRL petition may be filed to including April 23: write the Office of the Secretary, FCC, Washington, DC 20554. Refer to RM-724B and send your letter in one original and 11 copies (eleven!). That may prevent the FCC assigning a docket number, but instead return it to the ARRL for further study and backup.

HASTA LUEGO/
ARRIVEDERCI

In the May/June issue of the RTTY JOURNAL, we will try and concentrate on helping beginners: how you do that for DX, I don't know. I thought you were born either with it or without it. But we will give it a fair try.

George, KB2VO is meanwhile recovering from his by-pass surgery and seems to be doing very well: even chases a little DX now and then, so that warms my cold heart.

DX??? Well, if you are born for it, there is plenty coming: GO GET IT, this column surely tells you that is there, even if you worked Mozambique already, and I hope that this helps you to get some of it: if you read it for laughs only, it is a waste of your and my time and of our dear Editor's monthly monetary losses!

Thank all of you wrote or Amtored in the Bits and pieces which is the basis for this Column, as well as those who cared enough to return the "Most Needed RTTY Country" questionnaire. Amongst others, my special appreciation for the efforts and input of JA1ACB, W6PQS and the IRDXA (International RTTY DX Association), VK9NS, VU2JX, UT5RP, OH2BH, YV5KAJ, NT2X, W2JGR, W4FRU, I5FLN, OD5NG, VK2SG, 5Z4BH, AND DJ6JC.

Keep away from the 'STA' boys who exceed granted frequency allocations, and don't give up on those Rare Ones.

May God bless you all and may the DX come the way of the born DXer.

de JOHN, TG9VT
on the Guatemalan Volcanos (and married to one).

■

PACKET

Richard Polivka, N6NKO
7052 S. Friends Ave, Apt J, Whittier, CA 90602

SPEED FREAK

Onward and upwards. The saga of 9600 baud continues in the Los Angeles basin. We still do not have a set frequency for 9600 baud operation. Well, let me pass on some information concerning 9600. Personally, 9600 is great. I modified (a true Ham can't leave ANYTHING stock) the K9NG board of mine to work as a repeater. Well, I tried it in loopback mode where I fed the output of the board back to the input and tried connecting to myself. Well, it did not work. So, out came the scope and a proddin' we went. I found out that the system was trying to lock onto itself, which was correct, but due to delays involved with the receiver and transmitter, the clock was oscillating on the receiver. Once I defeated the rx signal in pin on the 74LS374 chip (pin 18) in the DCD state machine, it worked like a champ! That thing just flew when it came to sending and ack'ing packets. It was a joy to watch. Now, all you have to go is get the K9NG modem kit from TAPR, and buy some parts and build it.

Now, how do you recognize 9600 baud while using a radio to listen to the channels. It is easier to find something that is out of the ordinary. A 9600 baud packet burst sounds like a brief burst of white noise. In some cases it may not last long enough to open up the squelch on your radio but it can be heard on longer transmissions. So, just listen for bursts of white noise that are above the background threshold and you may have stumbled onto a 9600 baud packet channel. Do not try to decode it using a regular packet TNC. The data is buried in a pseudo-random data stream and is sent as FSK and not as AFSK. The average TNC needs to hear discrete tones to decode and not noise. If you want to get on the 9600 baud bandwagon, you will have to get a 9600 baud modem board, and do some surgery to your radio to get in on the action. The radio that you would use for 9600 baud packet is better off being a crystal rig that has a fast T/R turnaround time. Synthesized radios are out for this stuff, their lockup times are way too long. So, listen around, you may just come across a goldmine. It is enjoyable and great to use. The response time is making it worth it. Now to work on a 56kb board.....

TCP/IP

I have had a some requests to explain the autoexec.net file that is used when KA9Q's NET or NOS comes up, so here goes.....

```
1  ax25 mycall n6nko-3
2  hostname n6nko.ampr.org
3  ip address [44.16.0.114]
4  attach asy 0x3f8 4 ax25 com1 4096 256
1200
5  param com1 1 60
6  param com1 2 128
7  param com1 3 15
8  param com1 4 10
9  ip ttl 16
10 tcp mss 216
11 tcp window 432
12 log d:\spool\net.log
13 start ax25
14 start discard
15 start echo
16 start finger
17 start ftp
18 start netrom
19 start rip
20 start smtp
21 start telnet
22 start remote
23 smtp timer 300
24 smtp maxclients 10
25 ax25 digipeat off
26 ax25 heard on
27 ax25 maxframe 1
28 ax25 paclen 255
29 ax25 retry 10
30 ax25 window 2048
31 icmp trace on
32 domain trace on
33 rip trace on
34 tcp trace on
35 mbox on
```

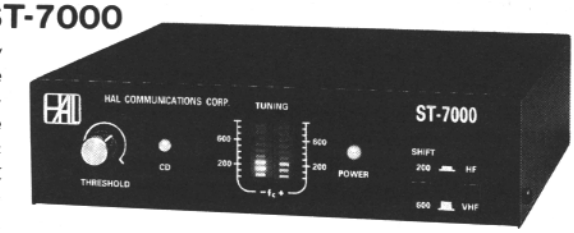
HENRY RADIO IS THE PLACE
. . .THE BEST PLACE
to fill all your data communications needs

The TEMPO MPP1

. . .a unique new mobile data printer, includes a packet controller and a 13.6 VDC printer that interfaces with any mobile radio. in a recent user test it proved to have about twice as much audio level range tolerance as other TNCs. It is also an ideal unit for emergency work and a commercial version is perfect for dispatching service, emergency and police vehicles.

HAL Communications' ST-7000

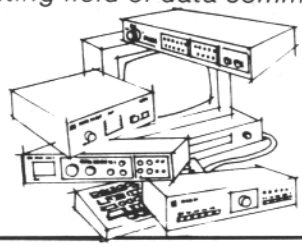
HF-Packet Modem. . .a high performance modem designed specifically for 300 baud HF-Packet. It offers no-compromise performance to assure optimum operation under the most demanding signal conditions. Techniques developed for government and military use are used in the ST-7000. AGC-controlled AM signal processing provides a wide dynamic range. All filters and detectors are optimized for 300 baud HF-Packet. It offers the 200 Hz shift mode and a wider 600 Hz shift mode, each supported by separate 6-pole input filters and a 40 db AGC system.



The PK-232 by AEA

. . .the only controller offering Morse Code, Baudot, ASCII, AMTOR, Packet, and facsimile Transmission & Reception plus the ability to monitor the new Navtex marine weather and navigational system. . .7 modes in one controller. The PK-232 makes any RS-232 compatible computer or terminal the complete amateur digital operating position. All decoding, signal processing and protocol software is on ROM. Only a simple terminal program (like those used with telephone modems) is required to interface the PK-232 with your computer. **Watch for the new and exciting AEA FSTV-430. Have fun on amateur TV!**

Obviously, we can fill in a system that you have already started. Or we can furnish a complete system to fit your needs and budget. For example, here's some suggestions for the amateur just entering the exciting field of data communications, or: for the amateur who wants the best available.



NO. 1 For the fun (and very affordable) mode, VHF Packet, AEA PK-88 with personal mailbox, 8K programmable memory and TCP-1P compatability.
For serious 20 M world-wide DXing on Packet, 200 or 600 Hz shift. . .add the superb HAL ST-7000.

NO. 2. . .top of the line! The HAL ST-8000 or HAL ST-6000 and AEA's PK-232 . . .the winning combination. You can't do better for all-mode, all-band enjoyment of hi-speed data communications.

If you have any questions concerning these units, or would like to discuss your requirements with a knowledgeable specialist, please call or ask for Fred Daukantas, N6SFD. We also carry a large selection of excellent commercial products for data communications and emergency systems as well as a complete inventory of amateur equipment and linear power amplifiers.

HENRY RADIO 61 YEARS OF SERVICE **Henry Radio**

2050 S. BUNDY DR. ● LOS ANGELES, CA 90025 ● (213) 820-1234
Toll free order number: (800) 877-7979 TELEX: 67-3625(Henradio) FAX (213) 826-7790

```
36  route add default com1
37  attach netrom
38  netrom interface com1 #nko3i 192
39  netrom nodetimer 1200
40  netrom obsotimer 3600
41  netrom verbose no
42  trace netrom 111
43  netrom route add #ladpx n6gpp-1 com1
192 ladpx
44  netrom route add #iyk.i k6iyk-3 com1
192 ladpx
45  route add mbx.k6iyk.ampr.org netrom
mbx.k6iyk.ampr.org
46  arp add mbx.k6iyk.ampr.org netrom
k6iyk-3
47  netrom bcnodes com1
```

That is what my autoexec.net looks like. I added the line numbers to help with the following discussion. Time to dive in.

Line 1 has the amateur call and an optional SSID. The usual custom here is that the SSID is set to 3.

Line 2 is the hostname of the system and that is usually the amateur call with ".ampr.org" appended to it. You can also go and specify a uniqueness to the hostname. As an example, with me, 44.16.0.115 is the address for port.n6nko.ampr.org and 44.16.0.115 is the address for test.n6nko.ampr.org.

Line 3 should be self explanatory as to what goes in there.

Line 4 defines the port that I am going to be using to communicate to the TNC. It is set for com1 and 1200 baud operation.

Lines 5 thru 8 set the timing parameters of the TNC.

Line 9 sets the time to live for IP packets to avoid routing loops.

Line 10 and 11 set the window size and maximum segment size for a tcp routed packet and those are basically stock values.

Line 12 tells the program where to put the usage log file for the program. That lets me know who has used the system and done what.

Line 13 through 22 start the various processes that are associated with the program.

Line 23 and line 24 define smtp parameters.

Line 25 through 30 set the ax25 operating parameters.

Line 31 through 34 set on various tracing functions within the program.

Line 35 turns on the ax25 mailbox. It is a simple one but adequate for a message drop.

Line 36 tells the system to route all messages, by default out com1. This can be altered if the need arises, such as a link or a connect to another system on a different port that is not a user port.

Line 37 starts the "fun" stuff. It tells the machine to start up the netrom server.

Line 38 sets the netrom port using the hidden alias "#nko3i" to com1 with a quality factor of 192. The "#" states that the system is a hidden node to the rest of the netrom system. The system will use netrom transport if needed to establish a connect via a netrom node.

Line 39 and 40 set the timers associated with node list housekeeping.

Line 41 inhibits the system from broadcasting the node list that the system maintains. If that was turned on, your system every so often would spit out its node list and everyone would think that you are a full node. If you do not do linking or run as a 24 hour node operation, leave this set to "off".

Line 42 enables netrom tracing.

Line 43 sets the default netrom node to use in netrom transport operation. It reads: netrom route add alias call "alias call" quality alias to use.

Line 44 is the same as the one before it except for the last option where it is set to "ladpx". That tells the netrom transport software that it is to use node "ladpx" to get to the station.

Line 45 and 46 map out the system name to an amateur call to allow use of the netrom transport. They tie into line 44 by mapping a hostname, being mbx.k6iyk.ampr.org, to a amateur call and how to go about getting there.

Line 47 tells the system to send out a nodes broadcast when I come up online to let all the nodes that I am on and available but it does not broadcast my nodes table.

That, in not so much of a nutshell, is my autoexec.net file. I hope that explains how it works. Use it as a "skeleton" and change the appropriate items to fit your need and operation.

TIDBITS

The last time I was to Dayton for the Hamvention, it rained. I have not been there since due to circumstance, and not the weather. I personally wish that I was there for the upcoming convention but I can't make it because of family and work commitments. I will have Dale, W6IWO, go play "bag person" and grab up the brochures for me to look at and drool over while my wallet makes unkind gestures at me pleading famine and a general lack of filling substance.

RM-7248

I am not stirring the noodles here again. As far as I know, the pot is still boiling and I should, in all honesty, throw on another log, but I am not. I have cast down enough bulls on the subject. So, I still think that the bandplan is a joke, from an engineering and operational standpoint. I hope that the proponents of the bandplan get a GOOD ROASTING at the convention. I wish I was going.....

NO CODE

There looks to be a "no-code" license in the offing. I took a straw poll at our shop as to how the hams felt about the proposal. Just about everybody agreed to the no-code proposal. We see the HF bands being relatively safe. The VHF, UHF, and microwave bands are the ones that are going to get nailed. Look at 220. We lost 900 here in Los Angeles because a company put in a request for the spectrum and proved that it could use it more effectively than the current users and they won. As technology improves the response of solid state devices and the prices keep dropping, it will be more worthwhile to utilize the higher frequencies and he who can prove that they can use it to the best will get them. I have a feeling that 1296 is next because 900 MHz business band radios exist. It is a matter of time. What I am getting at is that, HOPEFULLY, the no-code users will populate the higher frequencies and use them and fill them. We need the activity up there BAD! USE IT OR LOSE IT!

Peace, **de Rich, N6NKO**

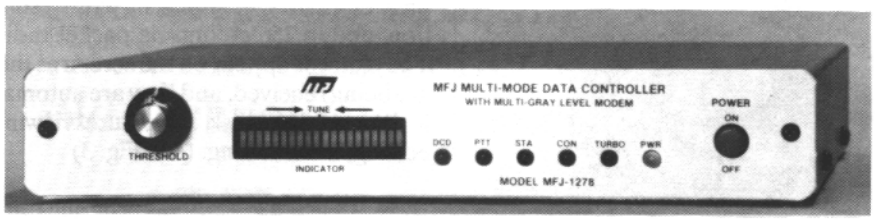
n6nko@n6nko.ampr.org[44.16.0.114]
n6nko@wb6ymh.ca.usa.na

■

DX FLASH

Oscar, EA8RA will activate Gomera Island April 27,28 and 29, mostly RTTY. The call will be EA8RA and he will be operating all bands from his camper. QSL to EA8AZM.

DIGITAL COMMUNICATIONS MOVES INTO THE TWENTY FIRST CENTURY



by Buck Rogers, K4ABT
506 Pheasant Ridge Dr. Warner Robins, GA 31088

At times, there are those of us who discover the novelty of our hobby growing a bit thin from the repetition of day to day operation. If this happens to you, then I have some news that will bring a refreshing difference to your Amateur Radio activities. Although this relief to the "doldrums" is centered around digital communications, you will quickly discover that it offers more than just a change of pace. Digital communications is now at the forefront of Amateur radio.

Digital modes are the AMTOR, PACKET, RTTY, SSTV, FACSIMILE, and even CW comes into that category now. The multi-mode controller has become as much a part of Amateur Radio as the telephone has a way of life. I remember a time when the telephone was considered a luxury, and the government even charged a tax if you possess a telephone. That same attribute has come to the digital amateur. No longer is the multi-mode controller considered a luxury, it has now become a necessity to the ham who wants all his digital modes lumped into one box.

As most of the digital world knows, I eat, sleep, and live PACKET, RTTY, and AMTOR. I even get in a few hours of CW now and then. The system I'm using makes it easy, as you I will see in these next paragraphs.

I've been beta-testing this new and radically different kind of terminal software, called MULTICOM.EXE. Although this terminal software supports other TNCs and Multi-Mode Controllers in all the text modes like AMTOR, CW, PACKET, RTTY, and NavTec, it excels when used in conjunction with the MFJ-1278/TURBO. This is because it supports all the GRAPHICS modes of the NEW REV 9, MFJ-1278/TURBO.

When combining the MULTICOM.EXE and the NEW MFJ-1278/TURBO the user can now transmit and receive Facsimile, modes 1 and 3, SSTV modes 1-5, and Packet Pictures in all modes and levels, that include CGA, EGA, and VGA. There are several supporting utilities included with the three disk set that enable the user to capture CGA, EGA, and VGA 256 color pictures, and convert them to the PACKET PICTURE mode that allows the receiving station to view them on screen as they are received, and while they are painting on the screen, they are automatically saved to disk. The beauty of this Packet Picture format, is that pictures are complete, and error free.

This is only the beginning of this novel system of digital communications. To put is mildly, this is truly one of the easiest terminal software packages that I've ever used.

NEW "BOX", Same name!

Don't "even" begin to compare this new MFJ-1278/TURBO with the Multi-Mode Data Controllers of a year or so, ago. This REV-9 TURBO version of the MFJ-1278 is a very different Multi-Mode Data Controller and it is far superior to any that I've used in a couple of years.

The MFJ-1278 with "TURBO" has the capability to send and receive 8 levels of gray-scale and in both the facsimile 1 or the facsimile 3 modes. For those readers who are not yet into facsimile, the FAX 1 equates to 60 lines per minute, and FAX 3 is 120 lines per minute. Figure 1 is an example of FAX 1, and Figure 2 is the FAX 3 mode.

The difference in these pictures are noted in the quality of the finished photos. It does not require any more fancy gear than the MFJ- 1278 and very easy to use terminal program written especially for this new MFJ-1278/TURBO REV-9, and the PC or clone.

I received word today that MFJ will upgrade REV7 and REV8, adding the Multi-Gray-Level circuit board and new firmware (27C512 EPROM) to bring the earlier REV7 and REV8 into line with the REV9 1278's. The cost of the update is just under 50 bucks, no, not me, as in dollar$.

The terminal program is the results of several years of packet experience, and software writing. Many of the features in

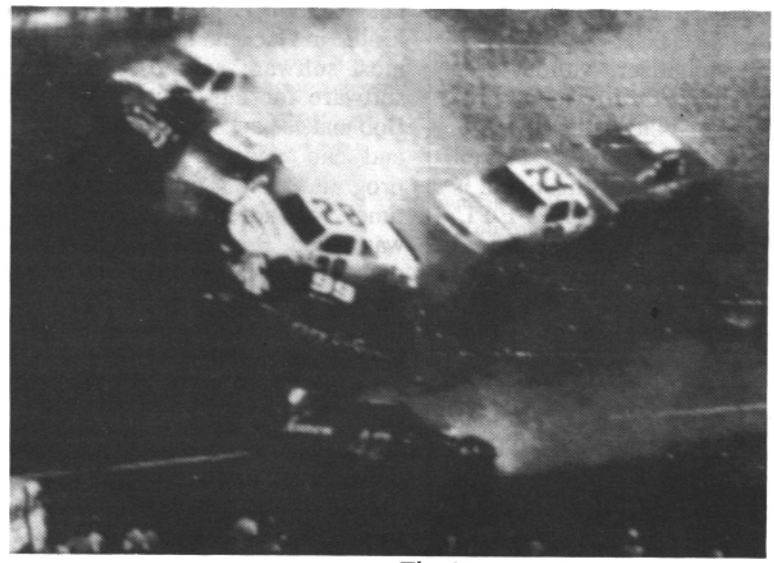


Fig. 1

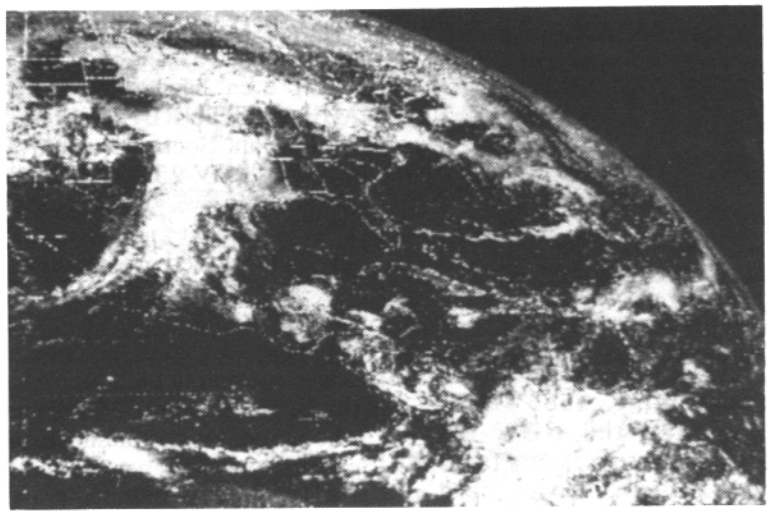


Fig. 2

this program are ideas collected from those who use the digital modes day in and day out.

This is only the beginning of the graphics capabilities that are now included as part of the MFJ-1278/TURBO and the MULTICOM.

Here is another "kicker", these facsimile pictures are not restricted to the ones you receive off-the-air from some of the wire or weather services.

With the MFJ-1292 video digitizer, and related "PICTURE-PERFECT" software, these pictures can be generated right inside your PC or clone. The "PICTURE-PERFECT" software that supports the MFJ-1292 Digitizer can even be accessed while in the MULTICOM program. By pressing the F9 key, you are taken into the "PICTURE-PERFECT" software of the digitizer, without ever leaving the MULTICOM terminal program. With this capability in the MULTICOM program, you have the best of all worlds. The reason I press this point, is because the "PICTURE- PERFECT" software allows the user to save the a screen of video into any one of several formats, and it will even allow storage of the picture in a "RAW" video format for use at a later time.

"RAW" Video allows the user to reload the data to the PICTURE-PERFECT later, and save it out into any of the other different formats; eg: SSTV, FAX, etc..

The formats of this "PICTURE-PERFECT" video digitizing system does not stop at the FAX mode(s). Included in this package is the user capability to save the pictures into several Slow-Scan Television modes, PCX format for use with the PC PAINTBrush drawing software (tm/(c) ZSOFT), and into a special PACKET PICTURE Format of either CGA, EGA, and/or VGA. And that is only for openers.

The hardware and software of the MFJ-1292/"PICTURE-PERFECT" can be a very useful and rewarding add-on to this system, but it is not a requirement.

The MFJ MULTICOM.EXE is written by Bob Slomka WD4MNT, who has a "knack" with software for packet. Bob is a packet radio pioneer who was born near London, England; but spent most of his life in Georgia. He is one of the foremost software composers of terminal software for our digital based hobby. Bob makes packet more than just a "type and send" medium. In 1983, Bob wrote a program that was advanced ahead of its time. This advanced terminal program was called "PACPRO".EXE. It was one of the first terminal programs written for packet that would pass binary and ASCII files. Included in this program was a conversion scheme that enabled the user to convert binary files to ASCII so the files could be uploaded to an "ASCII only" BBS. Later these files could be downloaded and the program could be used to convert the file back to the binary format.

In 1984 Bob developed the now famous Packet Picture Passing technique that enables the PC and clone packeteer to pass error-free pictures in high resolution, and in 256 colors, via packet radio. The pictures appear on the screen as they are being received, and they are automatically saved to disk for future viewing, editing, and sending. (see Fig. 3)

Here is a list of a few of his programs, and maybe one that you will recognize:

PICPRO.EXE	**PACFILE.EXE**
FASTFILE.EXE	**MFJCOM.EXE**
MFJXFER.EXE	**MFJVU.EXE**
BCC.EXE	**BCD.EXE**
MFJPIC.EXE	**PACPRO.EXE**
MFJBCD.EXE	**MFJBCC.EXE**

With all his devotion to build the best packet radio terminal programs, It is no great surprise that Bob would develop the most powerful, and advanced terminal program for packet, to date. MULTICOM incorporates several years of digital communications software technology, and takes advantage of Bobs genius as a master in the field of software writing. When Combined with the MFJ-1278 MULTI-MODE DATA CONTROLLER, this program becomes one of the most powerful "digital cannons" ever released.

As mentioned earlier, Bob has added another touch of his genius by combining the power of his MFJ-1292 PICTURE-PERFECT Video Digitizer software and allowed the user to capture and save a picture in the 8 level facsimile format. The user may then transmit it to another station who is also using the MFJ MULTICOM software.

The MFJ-1278/TURBO and MFJ MULTICOM.EXE may also be enjoyed by every PACKET, RTTY, AMTOR, and CW operator. The program has an "always open" buffer that enables the user to edit, save, print or transmit any portion of the buffer. In addition, there is a built-in text processor with all the just mentioned features.

For the PACKET user who enjoys that extra touch of excitement, try the "AUTO-ROUTER". This is the equiva-

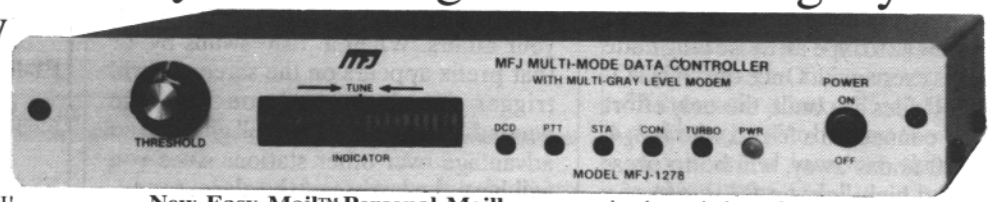
MFJ gives you *all 9* digital modes

and *keeps on* bringing you state-of-the-art advances

. . . while others offer you *some* digital modes using 3 year old technology

MFJ-1278

$279.95



No 3 year old technology at MFJ!

Using the latest advances, MFJ brings you 9 exciting digital modes and *keeps on* bringing you state-of-the-art advances.

You get tons of features other multi-modes just don't have.

Only MFJ gives you *all 9* modes

Count 'em -- you get 9 fun modes -- Packet, AMTOR, RTTY, ASCII, CW, FAX, SSTV, Navtex and full featured Contest Memory Keyer.

You can't get all 9 modes in *any* other multi-mode at *any* price. Nobody gives you modes MFJ-1278 doesn't have.

The best modem you can get

Tests in ***Packet Radio Magazine*** prove the modem used in the MFJ-1278 copies HF packet more accurately than all other modems tested.

MFJ-1278 is the *only* multi-mode with a ***true*** DCD circuit. This reduces sensitivity to noise and dramatically increases completed QSOs.

Exclusive Built in Printer Port

Only the MFJ-1278 has a dedicated printer port that lets you plug in your Epson or IBM compatible printer.

You don't need to buy a silly $40 cable just to plug in your printer.

20 LED Precision Tuning Indicator

MFJ's unequaled tuning indicator makes it really easy to work HF packet. Unlike others, you use it the same for all modes -- not different for each mode. Just tune your radio to center a single LED and *you're precisely tuned in to within 10 Hz* -- and it shows you which way to tune!

New Easy Mail™ Personal Mailbox

You get MFJ's new Easy Mail™ Personal Mailbox with soft-partitioned memory so you and your ham buddies can leave messages for each other 24 hours a day.

Multi-Gray Level FAX/SSTV Modem

You'll see tomorrow's news today when you copy outstanding FAX news photos with crisp clear details. MFJ-1278 is the *only* multi-mode with a built-in multi-gray level modem. It lets you transmit *and* receive multi-gray level FAX/ SSTV pictures with an appropriate terminal program.

technology, independent transmit level for each radio port, random code generator, lithium battery backup, RS-232 *and* TTL serial ports, *standard* 850 Hz RTTY shift, socketed ICs, tune up command, peripheral I/O port, automatic serial numbering, programmable message memories, dual radio ports (*each* HF or VHF), CW key paddle jack, speaker jack that lets you monitor CW sidetone, transmit and receive audio and packet connect bell, ***new*** fully intergrated instruction manual with *Fast Start*™ section and more in a 9½ x 9½ x 1½ inch cabinet.

New MFJ-1278T *Turbo*

with *fast* 2400 baud modem

MFJ-1278T

$359.95

The new MFJ-1278T *Turbo* gives you *fast* 2400 baud packet -- *twice* the baud rate of any other multi-mode. By communicating faster you'll reduce chances for error, lessen congestion and more efficiently utilize our ham frequencies. You'll also get 1200/300 baud for compatibility with older TNCs.

The 2400 baud modem is also available separately. Order MFJ-2400, $79.95, for any MFJ and most other TNCs.

One FREE Upgrade!

When you buy your MFJ-1278 *today*, you don't have to miss new modes and features that come out *tommorow*.

Why? Because your MFJ-1278 comes with a coupon good for one ***free*** eprom upgrade exchange that'll add new features.

Plus More . . .

Plus you get . . . 32K RAM (not 16K), ***free*** AC power supply, Host mode that lets MFJ-1278 serve as a KISS interface or dumb modem, fast throughput anti-collision

Get on the air instantly
Just plug it all in

All you need is an MFJ-1278, your rig, computer and terminal program.

With an MFJ Starter Pack, $24.95, you just plug it all in, wire up your mic connector and you're on the air.

Order MFJ-1284-IBM compatibles (includes Picture Passing); MFJ-1287 -Mac; MFJ-1282 for C-64/128; MFJ-1283 (tape) for VIC-20.

No Matter What™ Guarantee

You get MFJ's one year No Matter What™ Guarantee.

That means we will repair or replace your MFJ multi-mode (at our option) *no matter what* happens to it for a year.

Others give you a *limited* warranty. What do you do when *they* say, "Sorry, your *limited* warranty doesn't cover *that*?"

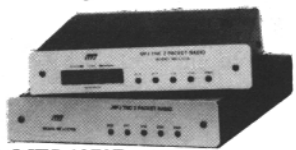
Get 9 new ways of having fun

Don't settle for 3 year old technology.

Choose the only multi-mode that gives you the latest advances and all 9 modes.

Get 9 new ways of having fun *today!*

MFJ Packet Radio



MFJ-1274 **$159.95**

MFJ-1270B **$139.95**

MFJ-1270B super clone of TAPR's TNC-2 gives you more features than *any* other packet controller -- for $139.95

You can double your fun by operating VHF and HF because you get ***high performance*** switchable VHF/HF modems.

You get the Easy Mail™ Personal Mailbox with soft-partitioned memory so you and your ham buddies can leave messages for each other 24 hours a day.

In MFJ's new WeFAX mode you can print full-fledged weather maps to screen or printer and save to disk using an IBM compatible, C-64/128 or Macintosh.

A new KISS interface lets you run TCP/IP. They also come ***NET ROM*** compatible.

You also get 32K RAM and a free 110 VAC power supply (or use 12 VDC).

For dependable HF packet tuning, the MFJ-1274 gives you a high resolution tuning indicator -- and it's only $20 more.

MFJ Video Digitizer

Here's Aimee. This unretouched picture was shot directly from a VGA monitor. We digitized Aimee with a camcorder, MFJ-1292 "Picture Perfect" Video Digitizer and IBM compatible computer.

Create fascinating digitized snapshots to transmit with your MFJ-1278 of *anything* you can point your camcorder at!

The new MFJ-1292 "Picture Perfect" Video Digitizer connects your video camera to your IBM compatible computer so you can capture digitized video snapshots on disks.

You get an easy-to-install plug-in card for your computer, handy contrast and brightness control unit and complete software for only . . . **$199.95.**

You can create your own QSL card from digitized snapshots by using drawing or paint software to add graphics and lettering -- and you can transmit it with included MFJ picture passing software.

You can use your digitized snapshots in any desk-top publishing program that uses the popular PCX format. MFJ-1292 lets you capture pictures in VGA, EGA, CGA, Hercules or Raw Data formats. Get yours today.

MFJ Packet Pictures

Transmit and receive high resolution EGA and CGA color pictures via packet radio with new MFJ picture passing software.

You can set up your own picture bulletin board and exchange pictures with others -- even if you're not there.

MFJ-1288, $9.95, works with virtually any packet controller and IBM compatible computer. It's included ***free*** with MFJ-1284 IBM starter pack and MFJ-1292 Digitizer.

Nearest Dealer/Orders: 800-647-1800

MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
(601) 323-5869; **TELEX:** 53 4590
FAX: (601) 323-6551; Include s/h.

MFJ . . . making quality affordable

lent of the automatic routing that we find in all the NET/ROM and TheNet nodes. All the user has to do is use the text processor (F10) portion of MULTICOM to quickly build a node route listing and save it to the disk with an extension of .RTR. From this moment forth, the user will never have to type all those long node or digi lists ever again. Once the "AUTO-ROUTER" files are built, the only effort to make a connect to a friend who is 3, 4, or even 10 nodes away, will be to press ALT A and high-light an RTR title of a callsign-route file. You may have as many node routes as you like, and from that day forth, your life of node connecting is as easy as pressing "ALT A". When the ALT A keys are executed, a directory of files with only RTR extensions are displayed.

Here is exactly the way an "AUTO-ROUTER" file would appear in the text processor:

AUTO-ROUTER

C ABT8 *;Connects me to ABT8 node at MACON, Ga.*
C GFN5 *;Connects to the next node at Griffin, Ga*
C WGA5 *;Connects to West Ga LAN node*
C N4NAU *;Connects to my Brother in Aniston, Al*

Note: All text to the right of the semicolon is not sent to the AUTO- ROUTER, and thus serves as comment and notation for each command.

Another feature that appeals to me is the AUTO-MONITOR Alarm. This feature enables the user to set a string of letters or characters to "trap" an on-the-air string that is exactly the same. This feature will work with PACKET, RTTY, or AMTOR. To set the "string" or "trap", all the user has to do is press the ALT key and the M key. Then type in the string just as it will appear on the screen when heard by the controller.

As an example, we press ALT"M" and set the string to "CQ", and press (enter) As most of you know, this is the way a "nested" CQ will appear on the screen when someone connects to a node and issues a CQ. With the MCOM ON, the controller sees the callsign and the "greater- than" sign () and the CQ. This will set off the alarm of the AUTO-MONITOR Alarm, and now all you have to do is issue a connect or give a call to the station. Another way to use the AUTO-MONITOR Alarm is when you are on HF AMTOR, RTTY, or PACKET, and you are DX chasing. Set the string to any string of the callsign, or country prefix that you need and go about your affairs. When a "fish" swims by, or that prefix appears on the screen, it will trigger the alarm, and you have the needed DX station. This will give you an advantage over other stations since you will have the benefit of the alarm sounding to let you know the station you need is there, and you get first crack at it because the alarm caught the prefix on the first pass.

This feature has many ways that it can be used, and your imagination becomes your limitation.

These are just a few of the advanced features of this "user easy" program. Just about the time you think you've used all the features in the MULTICOM, or MFJ-1278/TURBO, up pops another one.

Here is another "goodie" that I found gives us total control over the MFJ-1278/TURBO. Press F6 and up pops a menu that enables us to access any one of the nine or more modes (I lost count) of the MFJ-1278/TURBO. It is no longer a memory test when trying to remember each and every one of the commands within the controller. Let's say we want to move from Packet, to RTTY. Simply press F6, and then press F3 (F3 = RTTY on the menu).

For that matter, you can go to any mode you desire from the F6 menu, just press the key associated with the function, and BINGO! you're there.

Here is how the F6, FUNCTION COMMANDS menu will appear on your screen:

FUNCTION COMMANDS

Selected: MULTICOM.FUN

F1-PACKET	F2-AMTOR
F3-RTTY	F4-ASCII
F5-CW MCW	F6-NAVTEX
F7-KEYER	F8-USER
F9-RAD PORT	F10-EDIT LINE

Not only are you able to move from one mode to the other with finger touch ease, but you are also able to move to either of the MFJ-1278 ports with the same menu. In fact, you are now able to move from, not two, but three speeds, with the same ease. The NEW MFJ-1278/TURBO offers the standard 300 (HF) and 1200 (VHF) bauds, and in addition, it offers the new PACKET speed of 2400 bps Phase Shift Keying (PSK).

Time nor space will not permit me to tell you about how much fun digital communications has become since I've discovered this well matched combination. All I can offer further, is to invite you to try them and you will soon discover as I have, that the "type and send" QSO is only the beginning of the fun you can have.

To assist in getting you started with facsimile picture receiving, there is a list of frequencies where FAX transmissions may be found on page 14.

73 **de BucK4ABT**

Fig. 3

RM-7248 Editorial

Temperatures are running mighty high over RM-7248 but we must remain calm and in control.

Buck Rogers, K4ABT
506 Pheasant Ridge Dr. Warner Robins, GA 31088

As many of our Journal readers are aware, RM 7248 is still alive and continues to be a threat to the digital Amateur user. The AMTOR, RTTY, PACKET, and CW modes are existing in the shadow of this docket item that still has many of us in a state of concern as to why the league would make such drastic proposals.

The petition, as written tends to give some of us the feeling that the league has a "death-wish" for the digital modes. It also appears that the league is trying desperately to carry out this death-wish even if it means the demise of the league itself. To add fuel to the idea that they are trying to abolish digital communications, they've just announced that the GATEWAY News Letter is going to cease publication.

This move, by the league, to drop the only source of information from them about digital communications, specifically PACKET communications, is allegedly because of "lack-of-interest, and a poor subscription base". To this I say, "they have tossed out the baby with the washwater".

In truth, the league could have turned this timely news-letter into a full blown magazine that would have created its own support. Given better material, better management, and better promotion to support the magazine, it could have become a powerful asset to the digital ham. But alas, they elected to drop it, and therefore we must look for our news in the RTTY Journal and other publications that continue to support the digital Amateur.

The AMTOR, RTTY, PACKET, and CW users and operators must join together now and unite in such a way as to defeat RM-7248, by submitting our own proposal to the FCC. If this information reaches you in time, please respond with your letter(s) to the FCC, as they (FCC) granted an extension for reply/rebuttal to the RM-7248 through April 23rd. This is still not enough time since our Digital Committee will not have our proposal complete prior to the Dayton HamVention meeting. Because of this untimely expiration of the reply deadline, I am again asking the digital community to respond to the FCC directly. Four copies of your letter will suffice, but ten copies will assure that each commissioner receives his/her own copy. It would also provide easier reading if the lines of text are double-spaced.

It is time for all digital modes to come together and Unite into a wholesome body to defend our precious frequencies and privileges. We must send a strong message to both the league, and the FCC of our needs and numbers. The digital Amateur now numbers well in excess of 100,000 and we will double that size in the next few years, if we are not subdued by an unforeseen complication. Maybe that is the cause of this sudden move by the league. Could it be that we are growing larger than they care to admit? Remember, there is power in numbers.

If It Ain't Broke Don't Fix It

I make no "bones" about it, this is one of those times when the league would have done their job better it they had realized that it was not broke, thus there was no need to fix it, but since they elected to open this can of worms, then we have no alternative but to counter with our own proposal.

We are calling on the digital community to band together and help us build a more common sense approach to the nonsense that has come from the league.

Within the petition there are several statements that are either misinterpreted or blatant irresponsibility on the part of the author(s). Here are a few major items to make note of:

1. The term "automatic control" seems a bit ambiguous, if we consider what can happen to the frequencies where total "Automatic Control" is allowed. This petition goes far beyond the "SKIPNET" idea. (several locations throughout the petition, page 4)

2. On page 7, the league seems to glide smoothly over the issue of "monitoring and enforcement", by saying that potential good outweighs the "narrow risk" of unauthorized use, (unsupervised) use of the network by unlicensed persons.

In the very next paragraph they go on to reinforce the statement by saying "This same rationale is applicable to other digital communications as well as packet radio ....etc"

3. The petition calls for elimination of the 300 baud maximum, and asks that it be replaced with a 2 kHz "MAXIMUM" bandwidth. Give me a break, or at least give me some (more) space (at least 3 kHz). (page 13)

Even Canada has allowed 6 KHz as maximum bandwidth for digital modes. Somehow, I must agree with some comments I've heard on the HF bands lately, "It would seem that the league has a **DEATH-WISH** for amateur radio". Why else would they try to squeeze the digital users out of spectrum. This is a rapidly expanding technology, yet they are oblivious to the needs of the growing numbers within our ranks.

If the manner in which the above paragraph is worded, is to be accepted as gospel, then this could change ALL HF DATA communications, RTTY, AMTOR, etc. It would apply to ALL, and not just the stations that are/would be, under "AUTOMATIC CONTROL" in the segments that are specified in the petition. Somehow, this is counter productive since there are no hard-cut allocations for specific non-voice frequencies! CONFUSING...

4. The BBS forwarding now taking place on 14.103, 14.105, 14.107, 14.109, 14.111, and 14.113 MHz will fall into the "automatic control" category. If

all these BBSes are placed into the same 10 kHz with RTTY, and AMTOR, then the three, Packet, RTTY and AMTOR operations...etc" becomes a big laugh. Add to this, the fact that the problem of many BBSes is not going to lessen, it is going to get worse. Instead of trying to lessen the spectrum for digital modes, the league should be asking for more space. If not acquiring more space, then at least make provisions for reallocation of the voice to digital, instead of the other way around.

If you will listen on any of the above mentioned frequencies, you will find that I'm knowledgeable about this travesty that is about to be bestowed on the digital Amateur.

5. As for the 7035 to 7045 kHz segment of 40 meters, there appears to be a strange disparity there also. This 10 kHz segment is in the most congested portion of the CW band. 7050 to 7100 kHz is not used near as much by CW ops as it is by SSB, RTTY, and PACKET stations. If the "automatic control" packet stations are placed into the proposed segment, there would only be 10 kHz (7025 to 7035 kHz) for the General Class CW band.

6. If "automatic control" happens on 7035 to 7045 kHz, what will be the disposition of the "neat" 5 kHz that sets between 7045 and 7050 kHz? It might be of interest to note, that the league has also moved the W1AW CW bulletin station from the 7080 kHz frequency (it has been there for years) to the odd frequency of 7047.5 kHz. This move just a few months ago...hm ... just a coincidence I guess.

It would make more sense to ask the league to rescind the proposal, and allow the digital users to give comments before they have the FCC bestow such an unjust act on the unsuspecting digital Amateur. If this petition is allowed to remain as written, then we are being placed in a situation that will cause the digital community to be divided, and thus, we will be at one anothers throats, and all because the league "planned it" that way. You might say, the whole thing is a plot to "divide and conquer".

The league should have planned the document more carefully, and at least publicized it in the QST so that comments could have been heard from those who are concerned, and affected by their "cloaked" proposal. It might have even been a benefit to the league if the proposal had been examined and commented on by some of us who are active members of the AMTOR, Packet and RTTY community.

Send your letters and comments to:

Office of the Secretary
FEDERAL COMMUNICATIONS COMMISSION 1919 M Street N.W.
WASHINGTON, D. C. 20554

Remember, this is our hobby, help us preserve it!

HavFun Digitally, **de BucK4ABT**

FAX FORMATS and FREQUENCIES

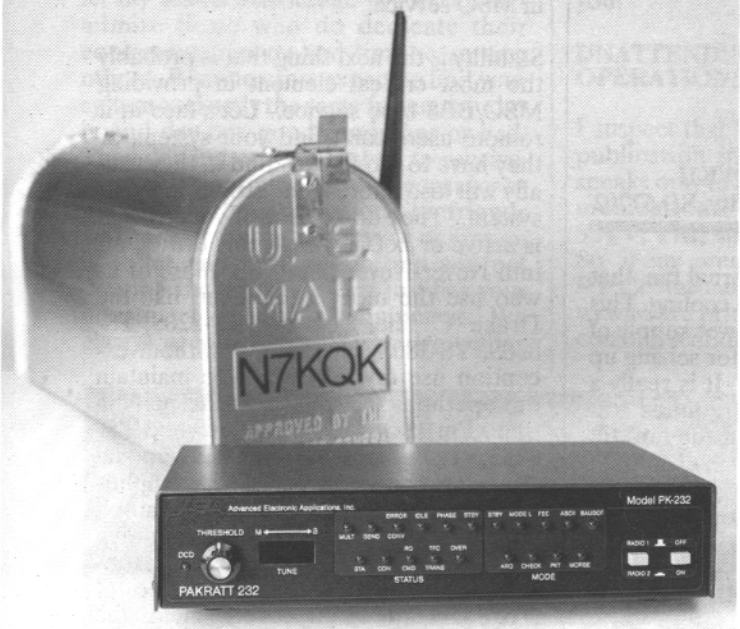
FAXMODE (n)	Lines Per Minute (LPM)	Line Per Second (LPS)	Type of Service
1	60 line/min.	1 line/sec.	Wire Photographs
2	90 line/min.	1.5 line/sec.	
3	120 line/min.	2 line/sec.	Weather FAX
4	240 line/min.	4 line/sec.	Satellite Weather
5	360 line/min.	6 line/sec.	

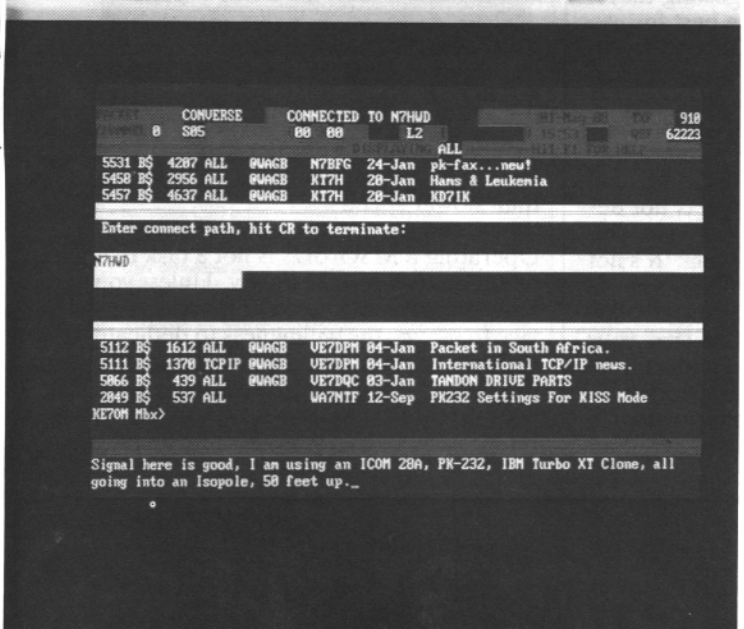
FAX STATION FREQUENCIES

Service	Band	Frequency (KHz)
Weather	USB	3,357.00 4,268.00 4,975.00 6,946.00 10,865.00 12,125.00 20,015
Photographs	LSB	10,680.70 17,673.90 18,434.90, 20,738.00

FREQUENCIES by location	LOCATION
4,271.00 9,890.00 13,510.00	Halifax, Canada
8,502.00 12,750.00	Boston, MA
9,389.50 11,035.00	Brentwood, NY
4,793.50 10,185.00 12,201.00 14,671.50	Washington, DC
9,157.50 17,447.50	Mobile, AL
8,080.00 10854.00 16,410.00	Norfolk, VA
4,802.50 9,440.00 13,862.50	Hawaii
7,770.00 11,090.00 13,627.50	Hawaii
8,459.00	Alaska
4,346.00 8,682.00 12,730.00 17,151.20	San Francisco, CA
8,646.00 17,410.50	San Diego, CA

AEA's NEW PK-232MBX With PakMail™





Now AEA's popular PK-232 multi-mode data controller has new features you've been asking for...PakMail™ Mailbox with selectable third-party traffic, seven-character AMTOR (CCIR R.625) call identity, TDM (Time Division Multiplex) receiving for SWL's, and Prioritized Acknowledgement (ACK) protocol for improved packet performance. Compatible with almost every computer or asynchronous data terminal, you can enjoy the full spectrum of amateur digital communications with AEA's new PK-232MBX.

All Operating Modes. The PK-232MBX includes all authorized amateur digital modes available today...Morse, Baudot, ASCII, AMTOR/SITOR 476 and 625, Packet, WEFAX receive and transmit, as well as commercial standard NAVTEX automated marine information services.

Superior Modem. An eight-pole Chebyshev bandpass filter limiter- discriminator modem improves the signal-to-noise ratio at the detector and virtually eliminates interference from adjacent signals. System performance has been proven superior to that of PLL modems designed for telephone line services.

PakMail.™ PakMail™ mailbox with selective control of third-party traffic is now a standard feature. Your friends can now leave you messages around the clock. Your local full-service BBS can automatically forward your messages directly to your PK-232MBX.

WEFAX Transmission and Reception. AEA brought you the first multi-mode controller to send and receive WEFAX (weather facsimile) charts. The PK-232MBX directly supports the widest range of printers on the market using the optional RS-232/printer cable.

Host Mode. Only AEA provides the type of full-featured Host Mode preferred by many professional programmers for efficient control of the PK-232MBX. AEA's Host Mode programs include PC-Pakratt with FAX for the IBM PC's and compatible MS-DOS computers, COM- Pakratt with FAX for the Commodore C-64 and C-128, and now MacRATT with FAX for the Apple Mac-Intosh.

Two Radio Ports. Independent radio connection ports allow convenient, interchangeable all-mode operation regardless of port selection. You can connect two VHF/UHF radios, an HF and a VHF/UHF radio, or two HF radios, selectable by a front-panel switch.

Signal Analysis. The PK-232MBX's internal software features AEA's exclusive SIAM (Signal Identification and Acquisition Mode). The PK-232MBX automatically identifies Baudot, ASCII, AMTOR/SITOR and TDM signals, then measures signal speed and polarity. A simple "OK" command automatically switches the PK-232MBX to the recognized mode and starts the data display.

PakMail™ Upgrade Kit. The easily-installed PakMail™ upgrade kit includes a plug-in board and new software EPROMs, and is fully compatible with all existing PK-232's. Please contact factory for details.

You Deserve The Original. AEA produced the first multi-mode data controller. The PK-232 continues to be the standard against which all other multi-mode controllers are judged; the choice of critical amateurs, commercial services and government agencies. Don't settle for less than the best.

AEA Brings You A Better Experience.

Advanced Electronic Applications, Inc.
2006-196th St. SW/P.O. Box 2160
Lynnwood, WA 98036
206-775-7373

MSO'S

Dick Uhrmacher, K9VKH
212 48th St, Rapid City, SD 57702

Hi Gang! I'm just back from a wonderful two weeks in Florida, visiting friends and relatives alike. Sure nice to get close to some "surf and sand" again, and we had a very nice, but too short, vacation. Needless to say I have a thousand things to catch up on, but I did want to start off this months column and thank each and every one of you who have written to me. The ol' mailbag had lots of goodies in it in the past 30 days, and I hope to provide some answers.

First of all, I would like to apologize for a slight technical error I made back in the May/June 1989 MSO Column, where I stated that the TS-440S digital display reflects the "mark frequency". It most certainly reflects the "carrier frequency", and not the mark. There's many a slip between the brain and the word processor, and I'm glad there's folks out there keeping me honest. And, with each and every transceiver seemingly being configured to some other standard for the digital readout, it's a bit tough just keeping things straight. But be assured, if you tune your TS-440S to 14 087 750 Hertz, you'll find the National Autostart Frequency. The Kenwood TS-830S also reads the Carrier frequency, and while in the "FSK" mode, the TS-940S reads the Space frequency. Thanks to Steve Jarrett, K4FJ, of Arlington, VA, for bringing that error to my attention.

For those of you who may be thinking of using a Kenwood TS- 440S on RTTY, AMTOR, etc., be not afraid! It works very nicely, and seems to hold up under the continuous duty requirements of RTTY very well. I've used mine on RTTY as backup for my TS-940S several times, and have had no problems. There is a tiny bit of warm-up drift, about forty (40) Hertz, but after the transceiver has been on for about one hour, it is very stable. If you are going to use it to work one of your favorite MSO's, AMTOR BBS's, etc., let the transceiver warm up, tune it to the station you want to use, and "memorize" that frequency in one of the 100 memories. You'll be able to come back to it each and every time. One word of caution. If you are using the Kenwood matching power supply, model PS-50, note that it has a small internal fan, that cycles on and off to provide cooling. This fan, (like the one on the power supply of the TS-940S), is notorious for seizing up due to lack of lubrication. It is really a poorly designed fan, and requires frequent lubrication. I loosen the fan, tilt the shaft upward, and let a small amount of very light weight oil drip down the shaft. Seems to work for about six months, and then I must do it again.

GENERAL MSO INFORMATION

Dennis Kwasny, WA8ZRK, of Dearborn, MI, asks several questions about MSO's, and hopefully I can answer a few in this column. Dennis is planning on setting up a MSO, utilizing the HAL MPT-3100 Message Processing Terminal system, (Old Faithful rides again!), and a Drake "C" line rig. His first question is, "Is this equipment adequate"? The HAL MPT3100 system is probably the best dedicated RTTY/MSO system ever devised. There are many of them still in service, including seven that I can think of on the National Autostart Frequency on 20 Meters. Note that I specified "dedicated" systems, as the new computer based systems certainly do provide a lot of user flexibility. The MPT3100 will chug along day to day, with little attention, and provide outstanding MSO service. After all, the letters MSO stand for Message Storage Operation, an integral part of the MPT3100!

I'm a little bit leery of suggesting that a Drake "C" line rig is not the best for use on RTTY, as the ink will hardly be dry on this page when I'll receive voluminous piles of letters, testifying to the fact that Drake "C" line equipment is the best thing on RTTY since sliced bread! However, I think that particularly the final amplifier section of that rig was not designed with continuous duty in mind, and heat build-up may be a problem. It's not unusual in MSO service to have several users in a row read files of 4000 to 5000 bytes in length. That means that your transmitter must be able to endure very lengthy key-down conditions, which generates lots of heat! If, (and that's a mighty big "if"), you can cool the final amplifier section of the Drake "C" line well enough, (and still maintain transmitter frequency stability), then it will probably work well in MSO service.

Stability is the next thing that is probably the most critical element in providing MSO/BBS type service. Let's face it, if remote users can't find your system, or they have to "go fish" to find it, they usually will lose interest and stop using your system. They don't know if your system is active or not, or has simply drifted off into Never-Never land! So, those of us who use the older equipment, like the Drake "C" line, Kenwood TS-820S, TS-830S, TS-180S, etc., almost without exception use crystal control to maintain our operating frequency. At this point in time, I'm using an older Kenwood TS-820S, crystal controlled on the National Autostart Frequency. The final amplifiers are 6146's, at about 60 watts output, air cooled by a continuously operating fan. (When installing the crystal, I inserted it into a one inch square piece of styrofoam, which effectively shields the crystal from air currents, heat, etc., and this certainly improved the stability of my MSO. I turn the filaments of the final amplifiers off at night when my MSO is off the air, but leave the "power switch" turned on, and my MSO stays within about 10 Hertz of the National Autostart Frequency. So, it's certainly possible to use the older equipment in MSO/BBS service, but allowances must be made to insure that frequency stability is maintained.

Dennis is also interested in find a list of MSO's currently operating. There used to be such a list floating around on the bands, but I haven't seen it recently. However, if you can find one system operating on a band, that system operator will most likely be familiar with other systems operating on that same band. Anyone out there have such a list? If so, drop it to me in the mail, either direct or to the RTTY Journal, and I'll certainly incorporate it in my column.

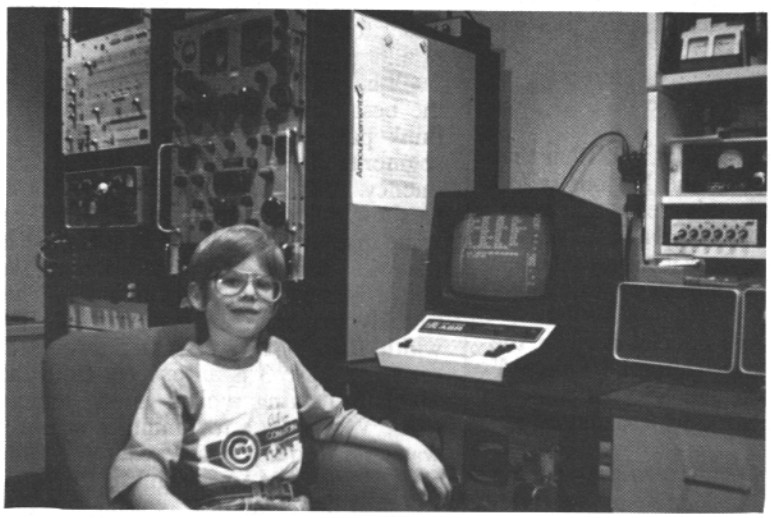
Most of the MSO's and BBS's on 20 Meters do operate at 74 baud, (100 WPM), Baudot. Many years ago we were at 45 baud, but found that 74 baud certainly speeds the flow of traffic, and does not have any more difficulties with data loss than slower speeds.

Operating a MSO/BBS is not a task that one should undertake lightly. Unless you have the personal desire to provide service to others, the willingness to dedicate expensive equipment to MSO service, the time to not only monitor your equipment and the traffic that flows through it, but to also act as a good host by helping

others to understand and utilize your system, then it's probably better that you stay a user, rather than a SYSOP. Don't let my words discourage you at all, as I admire those who do dedicate their equipment, money and time to serving others. Remote users expect to find your system at exactly the same frequency, day in and day out, good conditions or bad. They depend on your system to receive, store and transmit what they consider as important communications to friends and acquaintances, and if your operation is a "hit and miss" affair, you will not develop the user base that justifies your investment in time and equipment. We always need individuals who are willing to help others by providing services like MSO's and BBS's. Give it your best shot, and it will be a rewarding experience for you!

UNATTENDED, DIGITAL OPERATIONS

I suspect that The RTTY Journal is the publication in the United States that speaks only to the subject of digital communications. No phone, SSB, AM, SSTV, FM, satellites, etc, ad nauseum. So, if my premise is correct, then The RTTY Journal must be reaching those of us who are primarily interested in digital communications. Right? And, it goes without saying that the ARRL's petition concerning unattended, digital operations most certainly affects each and every one of us. I would like to ask two questions of those of you interested in digital communications, and hope that you'll take the time to set down and drop me a short letter, post card, message in one of the MSO's, etc. If the FCC authorized unattended, digital operations tomorrow, substantially as it was laid out in the ARRL's petition to the FCC, would you seriously consider operating such a system? Secondly, if the FCC were to authorize unattended, digital operations, WITHOUT REGARD TO FREQUENCY, (although obviously within the current digital frequency authorizations), would you seriously consider operating such a system? Here's your chance to provide some meaningful input, so drop me a line!



John Roman, KB0FTH, age 9, operating 10 Mtr RTTY. Welcome to RTTY John!

THE YOUNGER, THE BETTER!

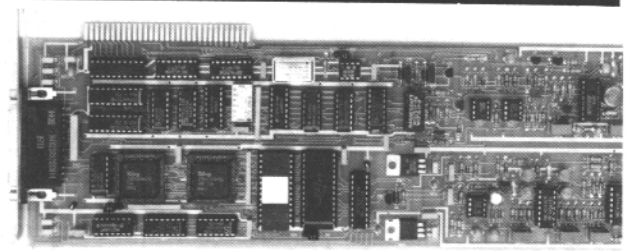
It's seldom that I get to provide a picture along with the MSO Column, but I'm happy to be able to introduce you to John Roman, KB0FTH, from Rapid City, South Dakota. John, at the ripe old age of nine years, is active on RTTY and CW on 10 Meters, and enjoys meeting new friends. As you can see from the picture, John has a nice array of equipment to use, and likes to monitor the MSO's. Who says RTTY is an "old persons" mode! Give John a shout the next time you see him on the air.

That's it for this month Gang! Spring is just around the corner, and that means Dayton. Got your bags packed? --73--

de Dick, K0VKH

■

PCI-3000 Review



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

This month we will be devoting most of this column to a review of the new HAL PCI-3000. Next issue will be the combined May/June issue and I hope to devote most if not all of my space in that issue to basic digital communications introductory material, explanations of common acronyms and other digital-radio related words and phrases. Many of you readers have written asking what this "Techno-babble" language means as well as asking for introductory material on the various phases of digital radio. It took your letters to make us realize that we have many hams who are new to digital communications and find that much of our "lingo" sounds like Greek to them.

HAL COMMUNICATIONS PCI-3000 USER'S REVIEW

The new HAL PC-AMTOR, also known as the PCI-3000 Multi-Mode HF Data Modem is really impressive, especially the man/machine interface. HAL has obviously listened to their customer's sug-

gestions in this regard. This review covers the installation and use of PC-AMTOR and the installation and use of the optional Spectra-Tune Tuning Indicator (SPT-2) accessory.

PC-AMTOR is a full length IBM PC compatible card with many innovations in both hardware and firmware (firmware is a software program that is burned into a PROM (Programmable Read Only Memory)) and then plugged into a socket on the card to provide operational instructions to the CPU (Central Processing Unit or microprocessor IC (Integrated Circuit - hey!, this is getting ridiculous). Included with the card are the PC-AMTOR Software floppy disk, the PC-AMTOR Reference Manual and the Operator' Guide. The Operator's Guide consists of 39 pages and a loose "Quick Look" Instructions card. The Reference Manual consists of 120 pages including a 7-page INDEX (!!!) which references to both the Reference Manual and the Operator's Guide.

PC-AMTOR is optimized for AMTOR operation but also provides excellent support for RTTY (both Baudot and ASCII) and CW. Being optimized, it has provision for 170 Hz shift only but will copy 200 Hz shift with no problem (See Figure 3).

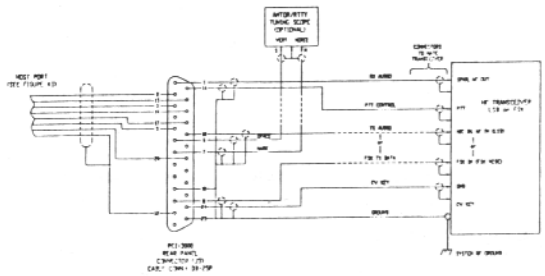


Fig 1

INSTALLATION OF THE PC-AMTOR CARD

The Reference Manual provides complete step-by-step instructions for installing the PC-AMTOR card in your IBM-PC or close compatible personal computer. The computer must provide a full-length card clearance as the card is about 14 inches long. The Tandy 1000 series PC and most "lap-top" PC's do not have a full length card slot. However most "XT", "AT", and PC-386 model computers in standard desk size cabinets should work fine. The PC-AMTOR software will require a minimum of 512 K of RAM (Random Access Memory) in the computer. A minimum of two floppy disk drives or one floppy disk drive and one hard disk drive are required on the computer. Software is normally supplied on a 5-1/4 inch floppy disk, but 3.5 inch 720 K floppy disks are available. Installation of the PC-AMTOR software is eased by the inclusion of an "Install" file on the floppy disk. This will lead you by the hand during the software installation process.

CRT Monitor support is comprehensive and includes "Hercules compatible" monochrome, "CGA" color, "EGA" color, or "VGA" color. Text and background colors may be set with the configuration program. PC-AMTOR uses a standard parallel printer device connected to "LPT1" printer port on the PC.

One nice feature of PC-AMTOR is that the card address to the PC bus is I/O mapped. Basically, this means that use of the card does not take up a serial port in the computer nor does it require the use of a "standard" I/O address or interrupt.

Moreover, if some special card in the computer is already using the "shipped" I/O port address, the address may be changed on the card to some unused address.

The rear-facing bracket on the PC-AMTOR card contains a single DB25-S connector through which all external (to the computer) connections are made. These connections are shown in the diagram labeled Figure 1. Be careful when connecting directly to this connector as it is not wired in the standard RS-232 fashion, even though it contains several RS-232-level signals. The Reference manual mentions that connections to external devices such as the transceiver are greatly simplified by using the SPT-2 Spectra-Scan tuning indicator. System interconnections using the SPT-2 are illustrated in Figure 2.

In addition to being a display device, the SPT-2 gives the user a "junction box" for interconnection to the rest of the radio system. This is really handy because the very small area of the PC card bracket allows limited connector space. HAL furnishes a shielded interconnect cable for the SPT-2 to PC-AMTOR card connection. This cable is included in the SPT-2 package along with a 22-page instruction manual. Complete schematics are furnished for both the PC-AMTOR card and the SPT-2.

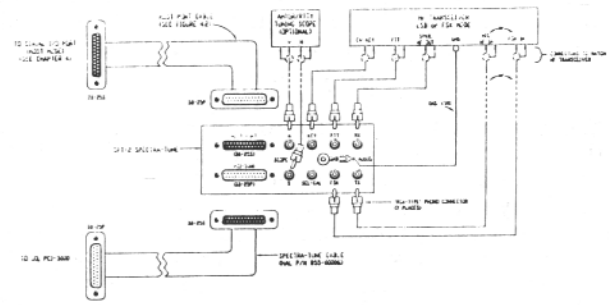


Fig. 2

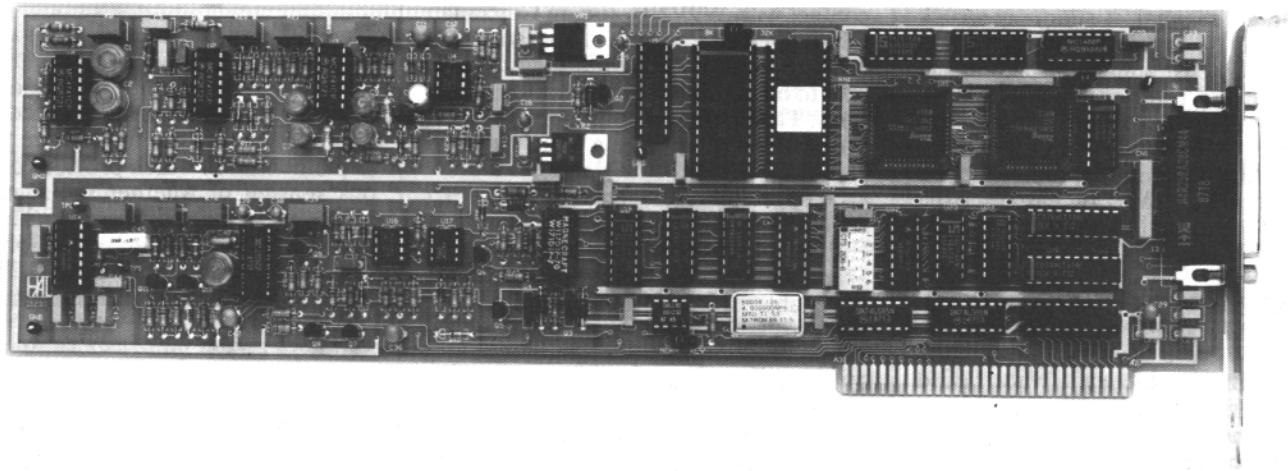
The SPT-2 tuning indicator uses the block LED approach to display, having a 30-segment LED bargraph. I have never been a fan of bargraphs as tuning indicators after having been spoiled rotten by oscillograph displays. In spite of this bias, I will have to admit the SPT-2 display is the best of it's type that I have used. I think part of this is due to having 15 segments on each side of center frequency. Also, the display does not seem to show quite as much "noise trash" as some displays do. But the best feature is that the display has calibration marks above the segments to aid in tuning. This quickly provides an estimate of shift width, flaky FSK, etc, as well as correct tuning. Figure 3 is an excerpt from the manual showing typical tuning indications. With only a few minutes of use, I was able to quickly and accurately tune RTTY and AMTOR signals. In fact it was just about as fast as using a scope indicator.

The SPT-2 provides space for mounting the FIL-1 audio filter accessory. The FIL-1 provides a bandpass filter with a center frequency 2210 Hz with a 6-dB bandwidth of 500 Hz. This filter is especially useful with rigs that use AFSK in the Lower Sideband mode using the normal SSB IF filter or with rigs that have provisions for FSK but do not have a narrow filter installed.

The SPT-2 is also directly compatible with the HAL PCI-2000 except that PCI-2000 will not control automatic scale and mode switching in the SPT-2.

During my installation of the PC-AMTOR card and SPT-2 I had very little problem. The problems I did have were attributable to either not carefully reading the manual or not knowing the actual current configuration of my transceiver. Installing the card and the SPT-2 was a piece of cake! Installing the PC-AMTOR software only took a few minutes and the display came up just like it shows in the manual. But, when I checked my FSK shift, the transmitted signal was shifting "upside down"! Now the PC-AMTOR

A Winning Combination . . .
The PCI-3000 and SPT-2 from HAL!



The HAL PCI-3000/PC-AMTOR system is designed to put your PC on the HF bands with outstanding performance at an affordable price. Amtor allows you to get through when other methods fail. If you've ever been DX-ing with someone on Amtor when 20 meters dies out in the evening, you know what we mean. Things may slow down, but you can usually keep up the QSO!

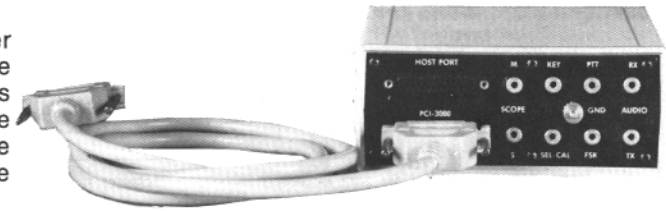
The PCI-3000 doesn't limit you to Amtor. You also get high-performance Baudot and ASCII RTTY, CW, and Search Mode. Search Mode lets you simply tune in the signal—we take it from there. The PCI-3000 automatically finds the correct code, speed, and polarity. No more guessing!

If you want to communicate on HF, do it right with the PCI-3000! Call HAL Communications—your AMTOR source—and put your PC on the air today!

SPT-2 Spectra-Tune:

For ease of tuning your PCI-3000, add the SPT-2 Spectra-Tune. The Spectra-Tune lets you tune in CW and RTTY signals quickly and accurately with a calibrated linear 30-segment bar graph. The bar graph represents a 600 Hz range of the audio spectrum, centered at 2210 Hz for RTTY and AMTOR, and 800 Hz for CW. Calibrated marks indicate the proper frequency for AMTOR, RTTY, and CW tuning.

A cable is included with the SPT-2 for providing power and control from the PCI-3000. The rear panel of the SPT-2 provides convenient "RCA" phono connectors for all radio connections. This avoids having to make radio connections directly to the PCI-3000. Enhance your PCI-3000 system with the SPT-2 Spectra-Tune Today!



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

PCI-3000/PC-AMTOR with software **$395.**
SPT-2 Spectra-Tune with cable **$169.**
FIL-1 Amtor/RTTY filter (installs in SPT-2) **$69.**

(Low tone export models available.)

card has a jumper to select normal or reverse FSK keying and I had it set to Reverse because the manual stated that for ICOM rigs (mine is an IC-751) use the reverse position. So for a while I was quite puzzled. Never doubting for a minute that HAL had the correct information in their manual, it suddenly struck me that the IC-751 had an internal and very tiny switch to allow reversing the polarity of the transmitted FSK signal. And I recalled that I had probably set that switch to "Normal" when I was using the rig with a different demodulator. So I pulled the PC-AMTOR card, set the jumper to "Normal" and sure enough, now my shift was of correct polarity.

OPERATING THE PC-AMTOR/SPT-2 COMBINATION

The only other problem was when I tried to use the rig on AMTOR, I could not raise anyone. Then I discovered I had failed to program my own SELCAL with WOXP. Once that was done, and it was easy to do with the pull-down menu, I was able to make my first AMTOR contact. Yes, dear readers, I have a confession to make. In spite of years of copying AMTOR, I had never made a two-way AMTOR QSO!

My first ever AMTOR QSO was with KG7BG Jim in Glendale Arizona on 20 meters and it was quite a thrill. The click clack of the transceiver in ARQ mode was a bit disconcerting at first but everything went well with excellent reports. I used the default delay settings and had no problem. The PC-AMTOR "Hot Keys" made life simple in the fast lane and I was able to learn their use in a few minutes of operation. Then I switched over to Baudot RTTY and continued the QSO with Arizona. The switch over was easy and fast using the F1 key to select the new mode. When I got confused, all I had to do was ask for help via the ALT-H key combination and a help window opened on the screen. Hitting ESC key got me back to the split screen transmit/receive text. The same evening I made a RTTY contact with W9VNE, Jim, in Cincinnati Ohio with the same ease of operation and good reports. By this time I was usually able to hit the right keys for various functions. The operation of the PC-AMTOR does indeed seem to be a "quick study".

One of the cleverest features in the PC-AMTOR is the "Print Squelch" used for RTTY operation. This is a keyboard programmable print squelch control that is adjustable to keep from printing "noise hits" on the screen and yet let a real RTTY signal print properly. This is a 1990 version of the old "Mark Hold" and digital autostart circuits of many years past. The circuit uses an "integrated circuit potentiometer" to allow software to set the squelch level. Being able to easily control the level allows you to turn down the print squelch when trying to copy that weak DX signal.

Another clever feature "Search" will analyze the signal (after it is properly tuned in) and automatically determine if it is AMTOR ARQ, AMTOR FEC, AMTOR SEL-FEC, BAUDOT RTTY, ASCII RTTY or CW. Best of all, this then sets the correct speed and polarity and starts printing on the screen! Sounds like a great implementation of artificial intelligence to me.

HOST PORT

The PCI-3000 includes a special "Host Port" which allows use of software other than that provided by HAL Communications to control the PCI-3000 hardware. Such software includes "APLink" and various "mailbox" (BBS) programs. (Might be an opportunity for you readers who do programming).

SOFTWARE UART

The PCI-3000 does not use a hardware (IC) UART (Universal Asynchronous Receiver Transmitter) for decoding the received signal. Instead, it uses the Z80 microprocessor and a Software UART implementation which provides continuous sensing of whether the signal is a Mark or a Space instead of the single sample "in the center of the bit time" sensing of the hardware UART. This is a boon when operating in noisy conditions.

SUMMATION

There are so many features available in the PC-AMTOR that it would take all the space in this issue to cover them properly. Control of the program is through pull-down menus or "windows" where you can set parameters and change calls/message very quickly without disturbing the basic program operation. Function key F1 will immediately get you into the command mode for selecting the operational mode, speed, diddle, etc while the PC-AMTOR continues to copy. The command mode items appear in the center status lines that divide the split screen. Seems to me the ease of change coupled with the pull-down menu windows would make it a great multi-mode contest machine. AMTOR to RTTY with only a couple of keystrokes! I tried very hard to find something to nit-pick and so far the only thing was on page 2-12 of the Reference Manual concerning SELCAL output signal from the SPT-2 had a note referencing Appendix A. In Appendix A, it references itself. It should have referenced page 5-7 of the technical description section. The proper page was easy to find as all I had to do was look in the Index! Just one of many reasons why the Index is so valuable and why I keep harping on the subject.

I am really impressed with the entire system and hate to have to return it, but that's life. Once you use this Gem, it quickly becomes indispensable. Let's see, if I sell the family dog or the family parrot, I might be able to come up with the $395 for the PC-AMTOR and $170 or so for the SPT-2.

However, the XYL might not go for this process. Sigh --- 73 **de Cole W6OXP**

■

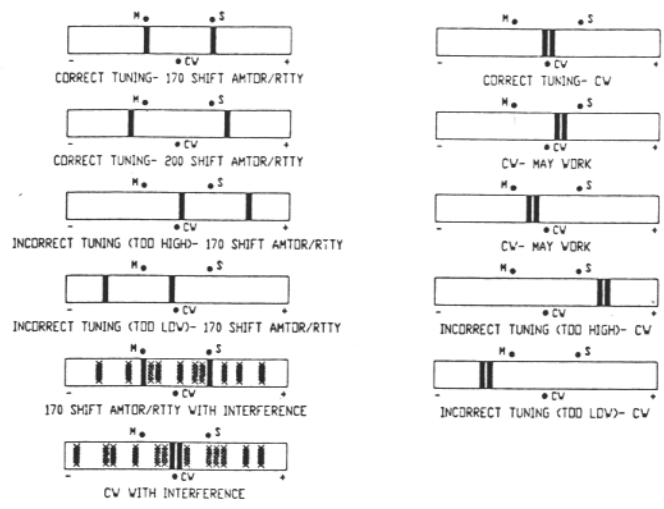


Fig. 3

CONTESTING

Hal Blegen, WA7EGA
2021 E. Smythe Rd. Spangle, WA 99031

CONFLAGRATION

Some of the major fires in my mail sack, last week, were caused by the helpful suggestions I received in reference to my February column on Amplifier-Meltdown-Syndrome as caused by various antenna switching schemes. In fact, the last time I was responsible for this much unbridled enthusiasm was shortly after I inadvertently hammered a copper rod through the below-ground family room of a hornet's nest. This time it was Craig, NX1G over at HAM RADIO MAGAZINE that came boiling out the hole.

"Hmmm," he buzzed, "I've been running a QSK-1500 for three years now with nary a problem." He even sent me a copy of my column (in case I hadn't read it) so I wouldn't be confused by what I had said. Craig is apparently quite taken with DEO, which he said was the basis for the circuit in the new Alpha amplifiers. He wrote, "Their QSK unit is a derivative of the DEO design and should work well". In closing, he advised me to give up RTTY and become a QRP CW op. (I actually collected a chunk of 1st place wallpaper for a QRP, CW Sweepstakes effort a couple of years ago so the idea may have merit!!)

I am sure that pin diode antenna switching in general and the QSK- 1500 in particular has a lot of satisfied users out there, but if you run key-down at anything approaching a KW, read the fine print on everything that plan to plug into the antenna jack (caveat AMP- tor).

Apparently there is no simple solution to bullet-proof, high power diode switching. Ray at ETO Corp explained that the system built into the Alpha 86A and 87A amplifiers is a totally original circuit developed by ETO using micro-processor control for keying and SWR protection. They guarantee the diodes in the Alpha for 1500 watts at up to 2:1 SWR with no duty cycle restriction and insist that they are fully protected against "common antenna failures such as balun flashover or trap destruction..." --(which is engineer talk meaning CHEAP ANTENNA PARTS). Ray tells the true story of new-Alpha-owner, Reginald Barnsnozzer of Paradise, PA who sneezed into his D-104 during a DX pileup and blew the driven element off of his tri-bander! These guys UNDERSTAND high power! (I'm not making this up, I just changed old, Barney's name a bit to avoid undue embarrassment.) Apparently the one key to the successful use of pin diode antenna switching is a FAST, high-SWR shutdown circuit.

Dean, WA6PJR says he uses a NYE VIKING SWR bridge which contains an automatic high-SWR shutdown circuit ($300). The shutoff point is user selectable and will dump the exciter in a few milliseconds. He explained, "Any tank circuit arc is reflected in the SWR. Bingo, it's off!" When I talked to NYE VIKING, they pegged the shutoff time at 5 milliseconds which is probably too slow to save a pin diode but would certainly prevent damage to the final jugs.

Of course, the best way to handle an arcing amp is to eliminate the cause. Dean said he was plagued by a re-occurring arc on his DRAKE L4B. After getting no-joy from extensive realignment of the antenna relay (he was positive that it wasn't a contact timing problem), he said that he stumbled on article by Rich Measures, AG6K (QST, OCT 1988), about VHF parasitics in HF amplifiers. A $16 kit (from Rich) cured the problem. Thanks for the info, Dean.

NO SURPRISES

The BARTG served up excellent conditions and some exciting DX activity (i.e. 5Z4, JY9, TJ, ZB, ZC) for the first RTTY contest during the declining side of the sun cycle 22.

Operators in the northern hemisphere, especially those in the higher latitudes, should view the declining side of the cycle with promise. For the next few years, the solar activity level, while sufficient to maintain transcontinental, ten meter propagation, will also present a curve that is generally expected to be smoother and more predictable.

The key to contesting from northern climes is the Boulder K-index (given by WWV at 18 minutes after the hour). In quick-and-dirty terms, the K number, based on measurements taken during the previous four hours, will indicate the degree that polar signals will be attenuated. High numbers spell trouble. With a K of 2 or below you can assume normal polar DX propagation on both on 21 and 28 Mhz. As the K climbs, northern-bearing paths on the higher bands will be lost completely and on 14 Mhz, flutter and phase distortion will increase until signals are virtually uncopyable --a point hammered home on Sunday morning during BARTG when a solar flare pushed the K up to 5 and the A into double digits. The A- index is roughly a 24 hour summation of the K. By comparing the A to the K, you can determine whether conditions are improving or deteriorating.

Since ten meter polar propagation is usually the first to fall victim to unsettled conditions, the general rule for contesting is to always work the highest band that is open. After Sunday's flare, I logged only six QSOs on ten meters .

During disturbances, I have found that improved signal paths sometimes exist by pointing as much as 45 degrees south of the normal, northern headings. Signals are weaker but the improvement in multipath distortion at least allows copy that is impossible on the "normal" heading. If you are running an amplifier, an unlikely trick to improve multipath distortion is to REDUCE power! Once you have made contact and have a clear frequency, weak but readable beats S9 with no copy.

From a tactical standpoint, an end-of-contest solar flare is actually not all bad. Contest activity hangs around with the DX and if DX can still be heard on 28 Mhz, nobody changes bands. One of the best things that can happen to a North American contest station is a DX propagation collapse late on Sunday morning when a lot of new stations show up that have not been working the contest. When the highest band open is 20 meters and DX is difficult at best, they will wander up and down the band working the USA contest stations which does wonders for your QSO totals. Nearly half my 20-meter QSOs were worked after 1600Z on Sunday.

From a quick look at the numbers copied on the air during this year's BARTG, I predict that a score of at least one million will be needed for a trip to the single-op winner's circle and something in the range of 1.4 million will win the multi-single class. Congrats to all. **Hal, WA7EGA**

MOST NEEDED COUNTRY SURVEY

In the January edition of the RTTY JOURNAL, we published a Questionnaire, asking you list your "Most Wanted Countries on "RTTY".

The response has been quite gratifying for a first time effort of this survey, which to my knowledge, has never been made before for RTTY, but is run by other Publications yearly for "All Time New Ones". It is of course no wonder that many of the Countries, needed by 100% of the respondents, coincide with those, most needed on all other modes. But that is where the similarity ends. You will note that very many countries, quite common on other modes, are rare on RTTY.

We received about 60 replies from North America, 21 from Japan, 6 from Australia and New Zealand and 13 from Europe. Replies were received from such outstanding RTTY DXers as JA1ACB (310 worked) and 15FLN (302 worked), but unfortunately we had no response from some of the U.S. top DXers, like W1DA and W4JXM, which might have modified the totals somewhat.

Some of the responses surely included Modes, other then RTTY, as some countries were listed as worked, which have never been on RTTY to date. I had to adjust such reports to what I believed reflected only RTTY. The most accurately detailed reports were those from Japan.

We will run the same survey again next year, but in a little different format to ensure more accurate reporting and a greater response.

To those of you who listed a favorite Needed Country, and it is not reflected in the survey percentages, sorry, but I could not list such a country if you were the only one of the respondents who submitted it.

Some of the results of this Survey may appear distorted, but my friendly D-Base III Plus could only work with data actually submitted: but next year will be better and I will use a different Survey form. But thanks Guys and Gals for your help.

This Survey was inspired by Several D-Expetitioneers, but particularly by DJ6JC, Henry, now just leaving Abu Ail. Let us hope that it will result in some Expeditions the countries listed as rare and semi-rare. Gl, and 73

de John, TG9VT

Percent of Respondents Needing These Countries **Survey Date 28 Feb 1990**

Ctry.		N. Am.	Asia	Ocan.	Eur.	Tot
1S	Spratly	100	99	100	100	100
3B7	St &Brandon&Agalega	100	100	100	100	100
4J	Malyi Vysotskij IS.	100	100	100	100	100
4W	Yemen	100	100	100	100	100
5A	Libya	100	100	100	100	100
70	S Yemen	100	100	100	100	100
A5	Bhutan	100	100	100	100	100
CE0X	SanFelix	100	99	100	100	100
FR/G	Glorioso	100	100	100	100	100
FR/J	Europa,JuandeNova	100	100	99	100	100
FR/T	Tromelin Is	100	100	100	100	100
HK0T	Malpelo	100	100	100	100	100
S2	Bangladesh	100	100	100	100	100
ST0	SouthernSudan	100	100	100	100	100
SV/A	MtAt hos	100	100	100	100	100
AP8S	Sandwich Is	100	100	100	100	100
XZ	Burma	100	100	100	100	100
YV0	Aves Is	100	100	100	100	100
ZA	Albania	100	100	100	100	100
7Q	Malawi	100	100	100	93	99
VP8S	Georgia Is	100	94	100	100	99
EP	Iran	100	97	100	93	97
3B9	Rodrigues	97	98	100	93	97
A6	U.A.E.	97	100	100	90	97
C9	Mozambique	96	97	100	93	97
CE0Z	Juan Fernandez	97	97	100	93	97
VP8	S Shetland	100	97	67	93	97
YA	Afganistan	99	94	95	93	97
ZD9	Tristan Da Cunha	99	96	92	93	97
ZS9	Walvis Bay	99	96	95	87	97
9U	Burundi	100	92	82	93	96
VK2L	Lord Howe Is	100	79	67	100	93
XU	Khmer Rep (Cambodia)	97	100	33	93	93
ET	Ethiopia	93	88	100	93	92
VK0H	Heard Is	97	79	91	93	92
D2	Angola	86	97	67	95	91
KH5K	Kingman Reef	90	88	100	93	91
5R	Malagasy Rep	93	79	67	93	89

Ctry		N.Am.	Asia	Ocan.	Eur	Tot
A7X	Qatar	90	88	100	77	89
TI9	Cocos Is	83	97	100	93	89
KH5	Palmyra Is	85	100	100	75	88
KP1	Navassa Is	90	91	67	83	88
TN	Congo	97	79	67	77	88
FH	Mayotte	90	70	100	93	87
9G	Ghana	83	97	100	60	85
9N	Nepal	100	55	65	70	85
VP8	S Orkney Is	83	92	67	93	85
XW	Laos	80	88	100	93	85
FB8X	Kerguelen Is	87	70	67	93	83
T5	Somalia	83	91	67	68	83
VQ9	Chagos	77	97	67	93	83
ZL8	Kermadec Is	87	70	67	93	83
3V	Tunisia	80	97	67	60	81
KH1	Baker & Howland	73	100	100	77	81
3B8	Mauritius	80	75	91	75	79
CY9	St Paul Is	73	88	100	60	77
ZK3	Tokelaus	87	43	67	93	77
CY	Sable Is	70	97	67	77	76
3D6AO	Swaziland	70	88	67	77	75
5X	Uganda	73	91	67	60	75
Z21	Zimbabwe	77	79	67	60	75
JX	Jan Mayen Is	82	79	67	27	74
KP5	Desecheo	67	91	67	77	73
VK9Z	Willis Is	83	52	33	77	73
3Y	Peter 1 Island	67	77	67	83	71
YN	Nicaragua	53	97	67	93	69
XT	Upper Volta	67	79	33	43	65
TT	Chad Rep	50	97	67	67	64
5U	Niger Rep	57	61	33	77	59
3Y	Bouvet Is	60	34	100	60	57
H4	Solomon Is	63	24	33	93	57
UP	Lithuania	57	70	33	43	57
ZS2	Marion & P.E. Is	60	34	67	60	55
4K2	Franz Josef Land	47	60	33	60	51
JD	Ogasawara	53	11	10	76	45

CLASSIFIED AD DEPARTMENT

First 30 words $5.00, additional words 5 cents each. Cash with ad. Deadline for ads is 1st of month of publication. (Example - Ad arrives by 1st of September will be run in the September issue)

RTTY-PC Communications software makes operating RTTY and ASCII a pleasure! Advanced, high-performance program works with your IBM PC-XT-AT-PS/2 or clone, interface, and transceiver. Very easy to use, yet multi-featured and powerful! Features instant help screen, twelve 1K message buffers, 16K QSO buffer, printer and disk I/O, one key message insertion, and many other features. Easily change/view messages while receiving. User-customizable colors, screen split ratio, and other parameters. Requires minimum DOS 2.0, 256K, RS-232. SPECIAL INTRODUCTORY PRICE $24.95. Please add $3.00 S/H. Write or call for FREE BROCHURE. Manual is on disk; printed manual available for $5.00. Specify disk size & format when ordering; add $5.00 for 1.44 meg disk. ORDERS: CALL TOLL-FREE 1-800-522-6790 VISA/MC accepted. For brochure or info call (419) 278-6790. Comtech Research, 5220 Milton Rd, Dept 2, Custar, OH 43511

HAM RADIO Magazine -- The no nonsense "State of the Art" technical magazine. Subscribe now and see for yourself. One year $22.95 USA, $31.00 Canada and Foreign surface, $37.00 AIR to Europe, Africa, Japan areas. Contact: HAM Publishing Group, Greenville, NH 03048

BACK ISSUES: A duplicate of any back issue of the RTTY Journal may be obtained from Red Wilson, WB0ESF, 4011 Clearview Dr, Cedar Falls, IA 50613, $1.50 PPD & SASE. Reprints of both UART articles $2.00 PPD.

FOR SALE: Info-Tech 500 RTTY and CW gear with keyboard, manual, and monitor. Excellent condition, $400.00. George, WD4FNX, 900-2021 US 41 N., Brooksville, FL 34601

FOR SALE: Info-Tech 500 RTTY and CW gear with Keyboard, manual, and monitor. Excellent condition, $400.00. George Fenning, WD4FNX, 900-2021 US 41 N., Brookville, FL. 34601

HENRY RADIO -- Your Data Communications Place is overstocked with used equipment. We have HAL DS3100's, MPT/MSO's, Demodulators, and the latest NEW items in stock, (ST-8000, DS-3200, ST-7000, etc). Complete line of Advanced Electronics Applications (AEA), used CP-100 and NEW and used ATU-1000, as well as the PK-232 ALL MODE CONTROLLER. Call Henry Radio at (213) 820-1234 in Los Angeles or (800) 877-7979 outside California. Ask for Fred, N6SFD.

HAM SOFTWARE IBM/COMPATIBLES 10 full disks software for Ham radio. Only $26.95. Includes Packet software, formulas, antenna calculations, RTTY, Baudot terminal, Morse code programs and more, 10 disks $26.95. MC/VISA/Discover. de N5ABV EAPCO/R, BOX 14, Keller, TX, 76248-0014 (817) 498-4242 or 1-800-869-7208

NEWS - NEWS - NEWS -- NEWS
Amateur Radio's Newspaper "WORLDRADIO". One year subscription is $12.00.
Contact: WORLDRADIO, P.O. BOX 189490, Sacramento, CA 95818

IBM-PC RADIO COMMUNICATIONS SOFTWARE: Choose the version that's right for you! CompRtty II/PK for the PK-232; or original CompRtty II for RTTY/CW with standard TU's, and all modes with KAM or MFJ-1278. Numerous features including: adjustable split screen display, break-in buffer, file transfer, 24 programmable messages. CompRtty II/PK uses Host mode for complete control of PK-232, including new mailboxe feature! Complete, printed manual. Ideal for MARS, traffic handling, RTTY pictures. $65.00 either version, $95.00 for both. Mention RTTY Journal and take $5.00 off. Send Call letters (including MARS) with order. David A. Rice, KC2HO, 144 N. Putt Corners Rd, New Paltz, NY 12561

WANTED: Back issues of RTTY Journal, RTTY (Florida), ARTS (New York) and other teletype publications and a gasoline or diesel generator 50 to 100 KW. Orville Magoon, K6DZN, Guenoc Winery, P.O. BOX 279, Middletown, CA 95461

DIALTA AMATEUR RADIO SUPPLY Specializing in Digital equipment for over 12 years. Authorized dealer for "HAL Communications Equipment." We also buy and sell used Digital equipment. Call Dick, K0VKH, at (605) 343-6127, or drop us a line at 212 S. 48th St, Rapid City, SD 57702

FOR SALE: HAL ST-8000 $1895.00 W8WYK (608) 276-9279

FOR SALE: Cleaning out the garage, so Teletype Model 28 stuff must go. Floor model KSR-28 with 60-67-100 WPM gear shift, Paper Winder, and spare typing unit, Model 28 Tape Distributor (TD), all working condition. Many model 28 parts, and 22 different Model 28 manuals for KSR, ASR and specials. Include mostly working reperfs, TDs, re-inkers, tool box with scales and special TTY tools. Pick up ONLY. You must take it all for $140.00. Five and quarter high Rack mount TTL-2 demodulator with 2" scope, 850 and 170 Hz shifts. with documentation. Built by Engineer and looks it, $35.00. No shipping, bring truck, pick-up or large station wagon. Cole, W6OXP (714) 534-6511 nites or (714) 863-1900 X 2517 weekdays.

RTTY JOURNAL

9085 La Casita Ave.
Fountain Valley, CA 92708

SECOND CLASS
POSTAGE PAID
SANTA ANA, CA
92799-9998