RTTY JOURNAL ©

Price $2.00

A DEDICATED DIGITAL PUBLICATION Since 1953 VOLUME 38, NUMBER 6 JULY/AUGUST 1990

DAYTON "D.D." FORUM DRAWS BIG CROWD

IN THIS ISSUE

DIGITAL MODES ARE MORE FUN! Use Then Often!

Dayton "Digital Digest" forum panelists. L. to R. John Gates, N7BTI, (AEA), Craig Martin, KR6T, (Kenwood), Bill Henry, K9GWT, (HAL), Sid Kitrell, W0LYM/4, (Ten Tec), Dale Sinner, W6IWO (Moderator), Buck Rogers, K4ABT, (Columnist CQ Mag.), John Troost, TG9VT, (Columnist RTTY Journal), Vic Poor, W5SMM, (Author of APlink), & Bill Snyder, W0LHS, (Columnist World Radio mag.) Dayton 1990

Dayton "Digtial Digest" forum audience. This was the largest group for this forum in the last four years. Many thanks to all who attened and particpated Dayton 1990

RTTY JOURNAL

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FOREIGN ...Surface $18.00/Air $24.00

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POSTMASTER:
The RTTY JOURNAL (USPS 391850) is published monthly, except combined May/June and July/August issues, for $12.50 per year, by RTTY JOURNAL, 9085 La Casita Avenue, Fountain Valley, CA 92708. Second Class postage paid at Santa Ana, CA 92799-9998 and additional mailing offices.

ADDRESS CHANGES:
Please send all address changes to: RTTY JOURNAL, 9085 La Casita Avenue, Fountain Valley, CA 92708.

ISSN 0033-7161

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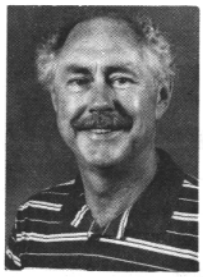
HITS & MISSES



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READER SURVEY CARD

A few months back a reader survey card was included with each Journal mailed to the U.S. readership. The response was very good, with nearly 500 cards returned to the Journal. About 50% of the cards returned were from hams with less than 5 years experience in the digital modes. The other half ranged from 5 years to over 35 years experience in the digital modes.

The cards were tabulated into a number of categories and the results were sent to all the columnists. From these results, we all hope to better serve you, the reader. There were no real surprises in the survey, I'm happy to report, and most of you indicated that all the columnists were doing a very good job.

Chasing DX and Ragchewing were the most popular in the "Primary activity" category. Over 50% operated HF RTTY most often, with AMTOR running about 18%. HF Packet had a poor following of only 4% while VHF Packet popularity ran 15%.

Your column interests ran quite high in the areas of technical articles, with DX information running a close second. You also indicated a high interest in equipment and software reviews. All the other categories enjoyed a lesser degree of interest.

I'm sure, over the next few issues you will see some changes within each column which will reflect your interests. A special thanks to everyone who returned the card. Even though we all learned from the survey, we still encourage you to write. Each columnist wants, needs and thrives on your input, so when you have something to say or share, write to us and we'll take it from there.

DAYTON 1990

Throughout this issue, I have scattered pictures from Dayton 1990. The RTTY dinner each year at Dayton is the highlight of the Hamvention for many of us. Over seventy were present at this gala affair and the comraderie was running very high. Many thanks go to Bob Foster, WB7QWG who was our host again this year. Our meal was really outstanding as was the service. Bob also lined up Vic Poor, W5SMM, as guest speaker. Vic gave us an excellent presentation of his latest version of APlink. The program included a 35 MM slide presentation, with Vic doing the narration. It was very professional and quite easy to follow and understand. Thanks to Vic Poor for a fine program.

As always, the RTTY Journal sponsored a hospitality suite. The suite was co-hosted this year by HAL Communications Corp. & TEN-TEC Corp. Many thanks to both for their support. Both Friday and Saturday nights, the hospitality suite was packed with Digital enthusiasts. It was a special time to visit with Digital friends you had not seen for a while or maybe had never met. Where space has permitted I have included some pictures from the hospitality suite.

If you have never been to Dayton, the pictures show you a little of what it is all about for our group. Why not start making plans now to join us next year.

The Digital Digest Forum was very well attended this year and the program worked quite well. A panel discussion was held during the first hour and the second hour was devoted to an open discussion of the now withdrawn RM 7248. Audience participation included elements from all the digital modes, and the input gained will ultimately aid the Special Committee in the future. Many thanks to all who attended and a special thanks to all the panelists.

SAN DIEGO ARRL CONVENTION

For those in the immediate area, I hope this isssue reaches you before the San Diego ARRL Convention August 24 thru 26 at the Town and Country Hotel in San Diego. There will be a Digital Digest forum on Saturday morning at 9:00 A.M. It will be a 2 hour session with the first hour featuring Bill Henry, K9GWT, speaking on computers and RFI. You won't want to miss this special part of the forum. During the second hour, Cole Ellsworth, W6OXP, will be discussing RS-232 as it applies to Ham radio. Both of these topics will be helpful to those in the Digtial modes. Try to be there for both sessions.

That's all for this month. 73 de **Dale, W6IWO**

SOFTWARE

Jay Townsend, WS7I
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Mystery of software installation

How do I get the program on the diskette, just received, up and running on a DOS computer. Assuming that you have a hard disk (this may be a BIG assumption) the following steps USUALLY work.

Put the floppy diskette in a drive and do a directory of what is on the disk. You do this using the DOS command DIR A: for example. Depending on the diskette, you should find something like the following:

Commercial Software -- Programs ending in .COM or .EXE

Shareware -- File with extensions of .PAK .ARC or .ZIP

Pirated Software -- You're on your own. I don't help pirates!

In the first case, you will often find either a program or a batch file (ending in .BAT), with the word INSTALL as the first part of the file extension. Usually you move to the floppy disk by typing in A: and then type the word **INSTALL** or perhaps **INSTALL C:** this will activate the installation program and the files will create a directory and install onto your hard disk. If in doubt, use the DOS command COPY and copy the Install.bat file to the printer and see what functions are going to occur. Those of you not familiar with the DOS (Disk Operating System), BUY the Manual ! Then READ it.

Most shareware files have been compressed to take up less space for shipment. You will find two types of compressed shareware files; those that are self unarchiving and those that require an un-archiving tool. Self exploding files usually come with the file extension of .EXE; this, when typed in, automatically extracts the files. The other type of compressed files have an extension like: .PAK .ARC .ZIP. These require a program that is usually included on the diskette: like PKARC.EXE PAK.EXE or LHARC.EXE to act upon the file and unpack and explode the files.

This second type of archive is best copied to the hard disk before you perform the file operations. So create an area on your hard disk using the DOS command MD \RTTY then change into that area with command CD \RTTY. Then you just copy the stuff on the floppy with COPY A:*.* or something similar, depending upon its location. Then using the un-archive program you would explode the files like the following example.

On a floppy you receive you do a DIR and see that there are two files PAK.EXE and RTTY.PAK; this should indicate that you need to make a directory to receive the file, do so by the command MD \RTTY, then CD \RTTY (both while on hard disk C:). Then copy A:*.* that will copy the two files into area RTTY on C: drive. Then you just type in PAK, (this will usually get you the instructions on how this command works) in the case of PAK it will give a list of additional commands. Most (including PAK) work like this: PAK E RTTY. Notice the spaces between program and modifiers. This will extract (thus the E) the files in the archive RTTY. You should then see a list of the files coming out as they are unpacked.

On DOS computers three types of file extensions indicate commands that will execute upon entering just the name with no extensions. These are .EXE, .COM, .BAT that are Execute, Command, and Batch programs, respectively. After your archive has been exploded try typing in any of these to get a program to work. Most often you will find the name of the main program works in firing up the software.

Look further for files called READ.ME, READTHIS.NOW, README and those ending in .DOC which are the instructions to most shareware products. Print all of these files to your printer with Command PRINT zzz.xxx where the lower case letters are the name of the files to be printed.

Most of the mystery of the microcomputer can be found in the archived files that move around via modems. They are compressed to make transfer more accurate and cheaper since a space saving of 85 to 90 percent is not uncommon for text files. The DOS guru who works the magic on his keyboard is usually the guy who has some experience with modems and archives. Hope these little hints help !

LAST MONTH'S PROMISE

I know that I promised a list of RTTY software this month, but alas the list is not nearly complete. We need a lot more input from those of you who are holding this stuff before I can print up what's available, new and old. Send in the details to me PLEASE !!

MY MAILBAG

This month's mailbag had a bunch of good stuff in it. Many thanks to Les, WF5E, for his comments on Lap-Link, K1EA CT and others. Rich, N6GG, dropped me a long letter and his thoughts will be incorporated in our software project. WB7VMY had some questions and will answer those soon. Have one bit of advertisement for Mictronics Inc. at 1931, Pompano St. Springfield, OH 45506. They offer Shareware Software for IBM PC's, Apple, Atari, C64, C128 A List for a couple of bucks. Got this down from a BBS. Haven't tried them, but looked good to me.

GI4AHP has a disk full of computer control software on the way. Which reminds me, I haven't heard from the software guru with whom I was working. Will follow up with another letter and see if he is still interested or not. So I may be looking for Pascal control routines for RTTY timing. Any help out there?

HAL PCI-3000 SYSTEM

Had the opportunity to try the Hal Communications PCI3000 board which Cole reviewed for you (April 1990 RTTY Journal). And boy was I surprised !! Just Love it. The software which comes with the PCI3000 had only one problem. It won't run at all without the board, so I couldn't test the colors on my VGA system at work; too bad for me, I guess. But the software works very much like previous versions of the DSRTTY program with the addition of pull down menus....just handles it fine. Now AMTOR is twice as much fun as the AEA MBA-TOR program.

All those software features I want for contesting are certainly not in this program. Think that HAL needs to add these and suppose that, as demand grows for Digital Contesting, they would probably be able to handle some software enhancements for specialty things like contesting. Buy one and ask them for it !!

SPT-2 is the number for one of the handiest devices I have ever used. Looks a lot like the Secret Black Box that we use for Digital control to make sure only one signal can be on the air at a time for MULTI-SINGLE. Great device !! This little piece of hardware simply takes the pain out of interfacing. Fact is, I am going to have to own one of these. The digital LED read-out works...I mean WORKS !! I can tune it in a jiffy as well as any scope! I have an old Flesher TU470 on one side of the shack,

that has a RS232 connector for inputs, and outputs and I have blown up two Commodores by messing around. The SPT-2 would surely make it all easy and eliminate those problems, with the addition of filtering and a tuning device. Very, very handy to have for a digital man.

HERE AT HOME

Some have been asking about my station. Current configuration is 2 complete digital stations. ICOM 751A, Drake L7 Amp, IBM Clone, HAL ST6000 on one side. The other is ICOM 751, Henry 2K-3 Amp, Flesher TU470, Commodore C64. I also have an old Johnson T-bolt pair of 4-400's with a huge power supply that I contest with. Antennas are KLM KT34XA tribander at 20 Meters high, 40 & 80 wires at about 40 feet and a Butternut Vertical in the winter time which is ground mounted. Not enough antennas, need more !!

73 de Jay,WS7I ■

MSO'S

Dick Uhrmacher, K0VKH
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Rapid City, SD 57702

Hi Gang! I hope that Summer is treating you all well, and that Mother Nature is cooperating. With the floods, tornados and other severe weather around it can be a trying time! The HF amateur bands haven't been all that hot in the past couple of months, with lots of QSB and QRN. For being so close to the sun spot cycle peak, the bands have really not been that good. MSO activity typically is somewhat less during the Summer months, as more important items, like burning steaks on the grill, drowning worms, and frying ones skin to a "medium well done" condition, prevail!

WB8ICL/WB8JIB RTTY MSO AND AMTOR MSO TO QRT

It is with a great amount of sadness that I must report that Gaylord Crawley, WB8ICL, will close both his MSO on the National Autostart Frequency, and his HF AMTOR MSO as well, effective June 15th, 1990. As many of you know, Gaylord was one of the very first SYSOP's to start and maintain an automated system on the National Autostart Frequency, in the late 1970's. Gaylord has provided nothing less than outstanding automated services throughout the years, and has upgraded and improved his systems as technology advanced. His dedication in providing these systems has been first rate, and remote users could always depend on his MSO being there when needed.

Gaylord and Louise have been my personal friends for many years, and we wish them health, happiness and good times in the future. As many of you may know, Gaylord has experienced a life threatening health problem recently, and we pray that he continues to improve every day. Gaylord tells me that he will be checking into the various MSO's from time to time, to pick up messages listed for him. He suggests that the K0VKH or K5FL MSO's on the National Autostart Frequency, be used to store traffic for him. And Gaylord, there will always be a place for you on the National Autostart Frequency, so if you should get tired of "the good life", don't hesitate to fire your system up again! God speed and good luck to both Gaylord and Louise!

DAYTON HAMVENTION, 1990

The 1990 Dayton HAMVENTION was lots of fun again this year. I certainly enjoyed seeing many of my friends there, and only wish that we could have had more time to visit. It seems that we no more than arrive in Dayton, before it's time to start back for home again.

The annual "RTTY Dinner" was nothing less than outstanding this year. Bob Foster, WB7QWG, should be congratulated for another superior effort in providing a wonderful evening for the RTTY Gang! The food, atmosphere, social activities and fellowship were top notch! I did a rough count of those attending, and came up with 84! My, I can distinctly remember the first RTTY Dinner, circa 1979, where about a dozen of us had a wonderful evening at The Peerless Mill Inn, near Dayton. Where have all of those years gone??

Vic Poor, W5SMM, provided an excellent talk on his AMTOR/APLINK software, which is gaining popularity every day. Informal information is that Vic Poor will soon be Beta Testing his APLINK software that will run on an IBM PC bus structure, utilizing the HAL Communications PCI-3000 System, instead of using the PCI-3000 "host port." As soon as I hear that the software is available, I'll include a note here in the MSO Column. The Digital Digest forum held during the HAMVENTION was a spirited one this year! The ARRL's petition concerning "unattended digital operations" was the main focus, and some insight was gained. I distinctly smelled tar and feathers, although Dale, W6IWO, kept a fire extinguisher handy. I'll have more comments concerning this petition later on in this column.

ARRL WITHDRAWS "UNATTENDED DIGITAL OPERATIONS" PETITION:

As many of you may know, the ARRL took action on April 19, 1990, to request that their petition concerning unattended digital operations, (RM7248), be withdrawn without prejudice. Information obtained from the FCC indicated that there was virtually no support, Amateur Radio wide, for this frivolous petition. In fact, it appears that all of the comments received by the FCC were decidedly against this petition. Even though the ARRL has asked that this request for rule making be withdrawn, I'm still concerned that the League's attitude towards RTTY, AMTOR and CW still reflects a general lack of knowledge of how these digital systems co- exist, how they function, what purpose they serve, and most importantly, how many folks are using them! For example, in his letter to the Chief of the FCC Private Radio Bureau, Christopher D. Imlay, General Counsel to the ARRL, states: "The petition was the result of experience gathered pursuant to Special Temporary Authorization granted by the Private Radio Bureau, and twice renewed."

It was more than obvious that the Leagues petition was formulated and submitted to the FCC without any evaluation, consultation, or for that matter, any consideration for automated RTTY, AMTOR or CW systems that have been providing service to amateur radio for decades! The basis for their petition was only the STA, packet radio oriented information, which totally ignored other digital modes, long standing agreements on frequency allocations, (namely the Gentleman's Agreements on digital operations), and time proven frequency segregation. Is it a wonder that there was total rejection of this unworthy petition? Now that this petition has been withdrawn, it is time to move on, and time to formulate new plans and ways of enhancing our different modes of digital communications.

As I said some time ago when this controversy first arose, I was not so much against "unattended" digital operations, as I was against the way the ARRL single-mindedly formulated and filed a petition on this subject, without having all of the facts at hand. There is certainly a place for unattended digital operations, and amateur radio has the talent, desire and technology to provide routine, day-to-day automated services, without disenfranchising those who have no interest in these services. So, where do we go from here?

Several thoughts come to mind, and opinions being what they are, here's mine: First of all, we need to impress on the American Radio Relay League that they are elected and paid to represent all of us, not just one narrow segment of the digital community. RTTY, AMTOR and CW enthusiasts must insist that they be adequately represented on the ARRL's Digital Committee, not as step children, but as full fledged members with just as many rights as other digital enthusiasts.

The ARRL must improve the sensitivity, interest and cooperation of their officials, particularly the Division Directors, when controversial items are reported to them. I, for one, wrote to my Division Director about RM7248, and was totally ignored. I didn't expect that he would necessarily agree with me on the subject, but common courtesy would have dictated that he at least acknowledge that he received my letter.

We need a well thought out, comprehensive study of just how we utilize the frequency authorizations allocated to the various digital modes. It is imperative that all digital modes be included, that historical agreements be included, and that information gathered made available on a wide basis. The ARRL's obvious attempt to ram-rod RM7248 through the FCC, without allowing for sufficient time for study, was very transparent. We need a change in the way we think about amateur radio in general at the ARRL. We need someone with intestinal fortitude, (guts!!!), to stand up for the United States, amateur radio, frequency allocations, etc. For example, there has been a continuing attempt by the ARRL to align our frequency allocations for digital modes, with other Regions in our hemisphere. I think that we should lead the way in establishing these allocations, and let the rest of the world either follow along, or go their own way. Why do we have to sacrifice our authorizations to accommodate others? With the burgeoning use of the digital modes, why would we allow another downward expansion of the Phone segment on 20 meters, when we are already crowded in the digital segments? Is there some conspiracy to divide and conquer? There's certainly enough room for packet, RTTY, AMTOR and CW modes on 20 meters, if we're allowed to utilize what we are now authorized, and not have to worry about further encroachments by Phone interests. (For example, let's designate the area between 14101 to 14125 KHz as an area where unattended digital activities may take place, and let the SYSOP's work out the details.)

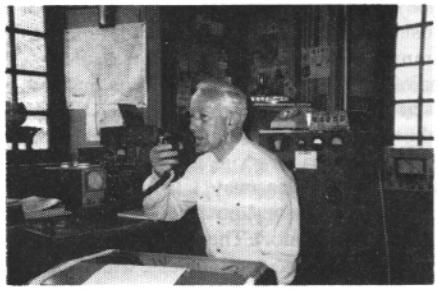
And finally, we need to talk among ourselves about these problem areas. We must not allow one organization or group to speak for all of us, unless there has been prior agreement on the subject at hand. Back door approaches to subjects as vital as frequency allocations are inexcusable, and must not be allowed to happen.

MSO GRAB BAG:

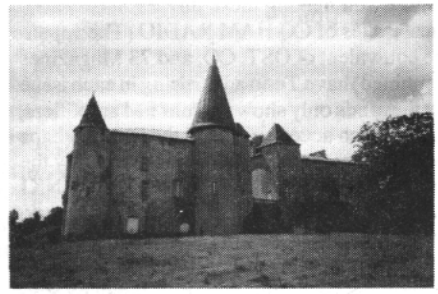
Al Kaiser, N1API, has a new 55 foot tower at his QTH, and would like some signal reports from around the world. He's sure booming into western South Dakota! --- Frank Bascomb, K4KOZ, has a new 386 based computer at his QTH. He's still using the time proven HAL MPT3100 system, but can he resist putting that new machine to work on RTTY and AMTOR? Stay tuned! --- Congratulations to Jay Roman, KB0ATQ, on his recent upgrade to his amateur radio license. Jay now has his MSO on the National Autostart Frequency, (14 085 625 Hz Mark), and plans on having a second MSO (utilizing the HAL RMX-3100 system) on 10 meters.

That's it for this month. The fish are biting, my lawn needs mowing, and the garden needs weeding. With all of the Summer activities, I hope to see you on the MSO's. --73--

de Dick, K0VKH ■

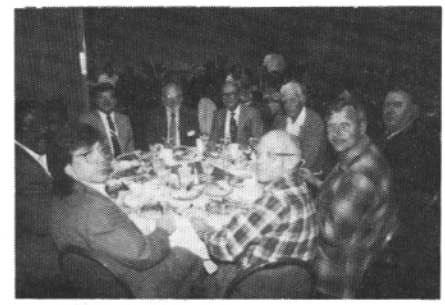


Jean, F8XT operating from his shack. His teletype machine is in front of him even though he is shown here with a microphone in his hand. Jean is a very famous DXer with 280 RTTY confirmed and 286 worked.

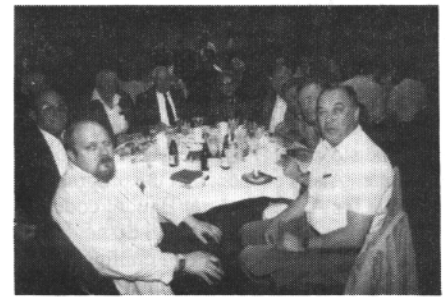


Jean's station is located under the antennas which are above the square tower. Jean occupies only the left part of the castle while the remainder is empty of even furniture. Only tourists see the right section. Jean likes it here because he has no neighbors and therefore no TVI, etc. This is just what every Ham "Knight" needs!

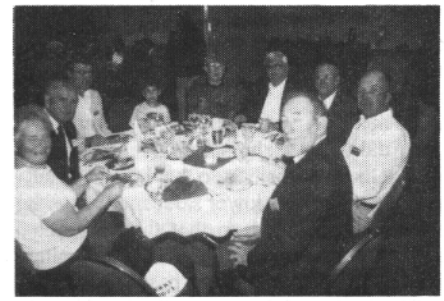
RTTY Dinner pictures from Dayton 1990



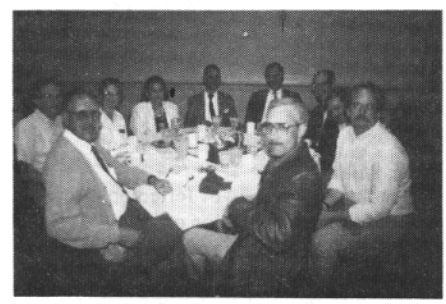
Center L. to R. Doug, James & Sara Cathcart, Ken, KS9I, Bob, KC9UU, Humberto, HI2HP, Paul, AH6D, Noel, KE5BK, Larry, WA6JYJ, Art, N5AEN. RTTY dinner Dayton 1990



Center L. to R. Werner, DJ2HZ, Albert, UL2HBA, Bill, K9GWT, Bill, W0LHS, Bob, W0HAH, Nellie, XE1CI, Arthur, XE1LL, Bob, W0TLX, Craig, K0AZB, Horst, DK1NH. RTTY dinner Dayton 1990



L. to R. Helen, WB1AOB, Johnny, W1JY, David, KB1PJ, Carl, (Harmonic), Gerry, XYL, "Doc", KD9BS, Les, WF5E, Ed, AA4TH, Jerry, NO2T. RTTY dinner Dayton 1990



L. to R. Dick, K0VKH, Jay, WB8ZTY, Joan, WD8JIH, Genoreva, HI3ADJ, Radhames, HI3ADI, Steve, K4CJX, Mel, K0PFX, Curt, W0SN, Jay, KB0ATQ, Rich, KC0KT. RTTY dinner Dayton 1990

CONNECTIONS

Cole Ellsworth, W6OXP
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Greetings. This is being written during the first week of July and it is WARM. Hope all of you readers are having a nice summer. I expect to be at the ARRL Southwestern Division Convention in San Diego during the last week of August and hope to see some of you there.

WE HAVE MAIL

Jules Freundlich W2JGR, 17 Nassau Blvd., Malverne, NY 11565 is looking for a RTTY Terminal Program for the Tandy 102 that will go down to 45 Baud. The terminal program in the Tandy only goes down to 75 baud which means the slowest RTTY speed is 100 words per minute. Also I suspect that the program in the 102 is for ASCII and not Baudot code. I may be wrong on that count, as I do not have a Tandy 102. Perhaps you can configure the program for either ASCII or Baudot. So, does anyone run Baudot RTTY at 60 WPM in the Tandy 102? If you do, or if you know of the correct program for 45 Baud RTTY, please let Jules know.

MAY/JUNE ISSUE REVISITED

One of our readers wrote asking about my modification to my Collins 75S-3 receiver for RTTY reception allowing use of narrow filters. As he mentioned, the mode switch position for CW is actually an upper sideband crystal. What I did was cut the jumpers on the mode switch at the CW position so that I could install a new crystal cut for lower sideband, but with the frequency shifted so that the beat note would be 2125 or 2295 Hz with the incoming RTTY signal centered in the passband of the 500 Hz IF filter. I do not recall what the xtal frequency was, but if one has a 75S-3 schematic with the xtal frequencies noted, it would be easy to calculate the new xtal frequency required for RTTY. I did not do anything to the 32S-3 transmitter because I did not use it in the transceive mode. Without trying it, I don't know if the transmit and receive frequencies would be the same if used in the transceive mode.

MORE MAIL

Walt Heeney, N8LJM, 1414 Jefferson, Akron, OH 44313 needs information on using his Realistic TX 100 transceiver on RTTY. He needs info on an economical interface for the TX-100 and either a Commodore C64 or a IBM clone PC. He is also interested in packet but that would require a packet TNC or multimode controller. AEA makes a PK-64 multimode controller that could be used for both packet and RTTY. Walt also mentioned he heard that one could use certain telephone data modems for RTTY. That is true; at one time the Hayes modem company included a chapter on using the modem for RTTY (The Hayes Smartmodem 300 and Hayes Smartmodem 1200) However, I do not recall the details. I would expect you would have to set your terminal/computer to 45 Baud to make things work correctly.

NEWCOMER'S CORNER

Lets talk about some names and abbreviations that one sees in this publication. A reader asks: "What is a Tono?" Tono is the name of a Japanese electronics manufacturer. Some years ago this firm made several different models of an "Integrated RTTY Terminal" complete with keyboard and display in a very compact package. I think some of the model numbers were "Theta 7000" and "Theta 5000E" and "TONO EXL 5000E." I hope I am not confusing vendors and models. To operate RTTY, all one had to do was to connect it to a transceiver. These little boxes were especially favored by RTTY DX Expeditions. I believe that Gin, JA1ACB, has furnished a number of these units to rare RTTY DX locations and expeditions. The TONO EXL 5000E sold for about $600 new and I have seen it advertised in the RTTY JOURNAL last year for $300, used,from a private owner. I do not know if Tono is still making these tiny terminals. The latest issues of CQ HAM RADIO (The Japanese equivalent of QST, CQ, and 73 Magazines combined) have Tono advertising in each issue but these ads only show vhf/uhf FM amplifiers, phone patch accessories and the like. Perhaps there is more than one Tono company? By the way, the company name (TONO DENKI KABUSHIKI KAISHA) literally translates to English as "Eastern Plain Electric Co., Ltd." So there is your answer to "What is a Tono." These units were imported from Japan by several firms. I believe that Amateur Wholesale Electronics, originally in Florida and now in Georgia was one importer. I also seem to recall that Henry Radio sold these units. Anyone know for sure, please drop me a line and I will publish it in this column. Are these Tono terminals still available? What is the going price for a used one? Who has them for sale? Inquiring minds want to know.

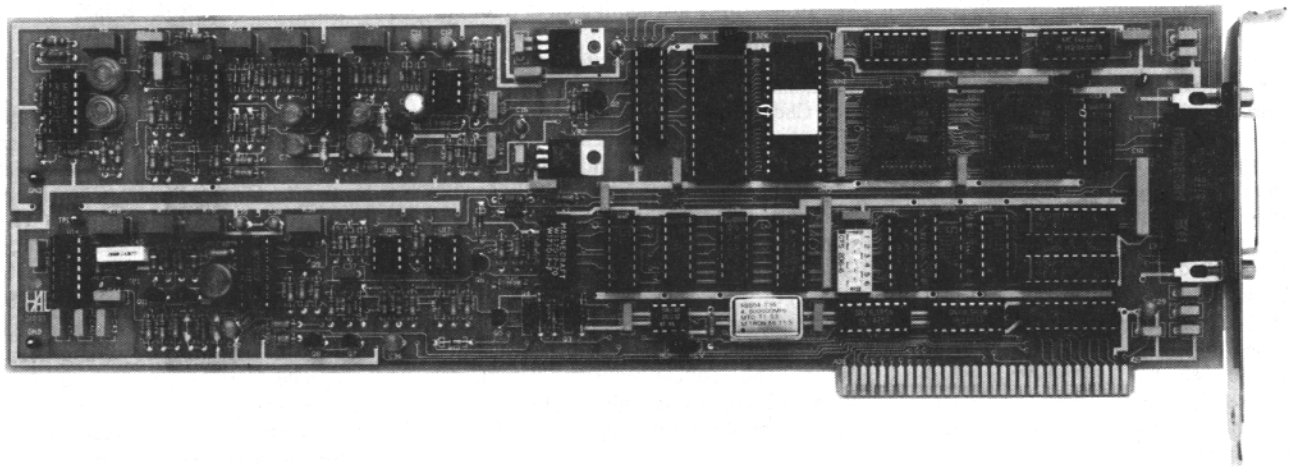
PREVIOUSLY OWNED GEAR

Readers have asked about where to find used RTTY terminal units, computer interfaces and the like. Henry Radio, Amateur Electronic Supply, Ross Distributing and I am sure many other firms carry used equipment. All the above-mentioned firms advertise in QST. Henry Radio also advertises in the RTTY JOURNAL and Fred, N6SFD, is the fellow to talk to about digital radio gear. Another RTTY JOURNAL advertiser, Dialta Amateur Radio Supply in Rapid City SD (605)343-6127, probably has used digital radio gear as well as computers for sale and Dick, K0VKH, can tell you what the gear does, etc. When you talk to a dealer about digital radio gear, first thing to do is ask for the fellow who is the resident expert on RTTY, Packet, Amtor and the like. Now it is possible that some salesmen do not know much about the equipment, especially if he is not a digital type. So how do you know what you have, how do you know if it works properly? The answer is you don't know. BUT, there is a way. Try to beg or borrow a copy of the manual - this should give you some idea of what it does, what other equipment is needed, etc. Then ask the firm to sell it to you on a thirty day trial period. Be sure you get such a commitment in writing! Most reputable firms will give some sort of warranty on used gear but if it is sold "as is" be very sure you get a written 30 day return promise or don't buy it. If the dealer will let you try it, you will have to pay shipping if you return it and also may have to pay a restocking fee which can be as high as 20%. All of this procedure works much better if you can personally visit the store and check out the gear while the owner checks you out as a reliable customer. These things work both ways you know!

DUMB TERMINALS

Several readers have asked "What is a dumb terminal?" "How does it differ from a smart terminal?" Well, back in the old days, (circa 1975!) you used a "CRT Terminal" to talk to a computer or a modem. This CRT Terminal usually consisted of a CRT (Cathode Ray Tube) display, a keyboard, and some sort of housing. This CRT Terminal was used to communicate with a computer, usually a "mainframe" (Mainframes are large business or scientific computers frequently used by several people at the same time.) They might be placed in the same room as the computer or they might be miles away, talking to the computer through wireline MODEMs (MODulator/DEModulator). These CRT "dumb" terminals were used to communicate with the first personal computers which did not have built-in displays or keyboards such as the early CP/M machines. Most of these terminals used 7-bit ASCII (American Standard Code for Information Interchange) or 8-bit EBCDIC (Extended Binary Coded Decimal Information Code used by IBM These terminals had electronic circuits that converted the key pushes to the

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!

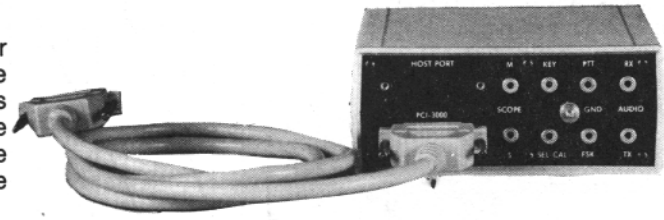
The PCI-3000 doesn't limit you to Amtor. You also get high-performance Baudot and ASCII RTTY, CW, and Search Mode. Search Mode lets you simply tune in the signal—we take it from there. The PCI-3000 automatically finds the correct code, speed, and polarity. No more guessing!

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.)

CIRCLE 58 ON READER SERVICE CARD

transmitted (and received) data to the computer. That was all it could do. If you wanted to change the data rate, you had to move jumpers or set dip switches. Same thing if your terminal could change from 7 to 8-bit codes - you had to manually change things. If you wanted it to do something slightly different, you were out of luck, unless you designed a different circuit. As a rule, these terminals did not contain a microprocessor. The biggest integrated circuit chip on the unit was a UART chip (Universal Asynchronous Receiver-Transmitter). With the advent of microprocessors, "smarts" were added allowing easy change of code parameters, transmission parameters, error checking, etc. All of which could be controlled from the keyboard. However these smart terminals were not produced in quantity because personal computers (PCs) such as the IBM PC and it's many clones arrived on the scene that had this smart capability plus ease of program loading and change. For not much more in cost, you could have a complete computer.

Now when some of the multi-mode controllers and packet TNC's came out, you could connect your computer via an RS-232 cable to the controller or TNC. Now you could load and run a specially designed program into your computer to conveniently operate the equipment. Some of these programs had a "dumb terminal" mode where the computer would act just like a CRT terminal. Why would one want to use the dumb terminal mode instead of the "smart" mode with all its bells and whistles and user-friendly interaction? It seems that some of these programs were not able to handle everything the multi-mode controller or TNC was capable of doing. However, in the dumb terminal mode, you could send commands and do things that the program author either did not include or could not include in the smart program. More importantly perhaps, you could use that old, cheapy, 3rd hand dumb terminal to talk to your TNC without tying up your computer. If you do find a used dumb terminal, try to make sure that it speaks ASCII because all TNCs and multi-mode controllers speak ASCII. All personal computers input and output ASCII (although the Commodore has it's own special version of ASCII) code. Almost all older IBM CRT terminals speak EBCDIC and it is not worth the effort to try to convert them to ASCII even if they are free.

KANTRONICS KAM-2 RECEIVE FILTERS

As promised in our May/June issue, here is an article by Jim Sladek WB4UBD, 215 Delaney Drive, Suffolk, VA 23434, on a modification to the KAM multi-mode controller.

Submitted by James Sladek WB4UBD

The Kantronics KAM-2 receive bandpass filter is built around the MF-10 Dual Switched Capacitor Filter. To achieve the programmable wide bandpass filter characteristics, three MF-10 packages are configured in three cascaded sections forming a six pole 1 db Chebyshev high pass filter followed by three additional cascaded sections forming a six pole 1 db Chebyshev low pass filter. A fourth MF-10 package is used for mark and space filter in two pole Butterworth bandpass configurations. The filter cutoff frequencies are varied for different shifts by the mark and space clock signals generated by the KAM processor. In the case of 170 shift RTTY, clock signals (f2 and f1) of 99.634 and 122.883 KHz result in high and low pass filter cutoff frequencies of approximately 2000 and 2450 Hertz respectively. The resultant overall filter effect is shown in Figure 1 with high pass, low pass, and mark/space filter curves superimposed.

The design bandwidth of the KAM-2 filters are too wide, however, for today's crowded band conditions. Fortunately, the filter cutoff frequencies can be easily changed without having to alter the KAM programming. A recalculation of the resistor values used to define the MF-10 parameters for high and low pass filter cutoff frequencies of 2125 and 2295 Hertz respectively result in the new bandpass curve also shown in Figure 1.

This tightening of overall bandwidth can be easily achieved with resistor values changed to the following:

R35 - 2.87K	R36 - 1.07K	R42- 2.49K
R49 - 4.75K	R51 - 8.45K	R52 - 73.2K
R60 - 2.49K	R61 - 1.05K	R63 - 4.7K
R64 - 73.2K	R65 - 8.45K	

Note: All resistors except R63 are 1% metal film

After this change is made, all "hf" modes will operate with reduced receive filter bandwidth. This reduction only presents a minor difficulty in that the CW bandwidth (CWB n) entry must be offset by 90 Hertz; such as , "CWB 190" is entered for CW bandwidth of 100 Hz.

Other bandwidth configurations can be readily constructed using the published design formulas for the MF-10 filter packages and the appropriate filter design characteristics (fo and Q) for the cascaded filter sections. Alteration of the mark/space filter characteristics does not appear to be necessary since the "inner slopes" of these filters are used only to determine the transition between mark and space signals within the overall receive passband.

Thank you Jim, for a very interesting modification. Jim mentioned that the modification made quite a bit of difference at his station. Until the September issue, very 73

de Cole W6OXP ■

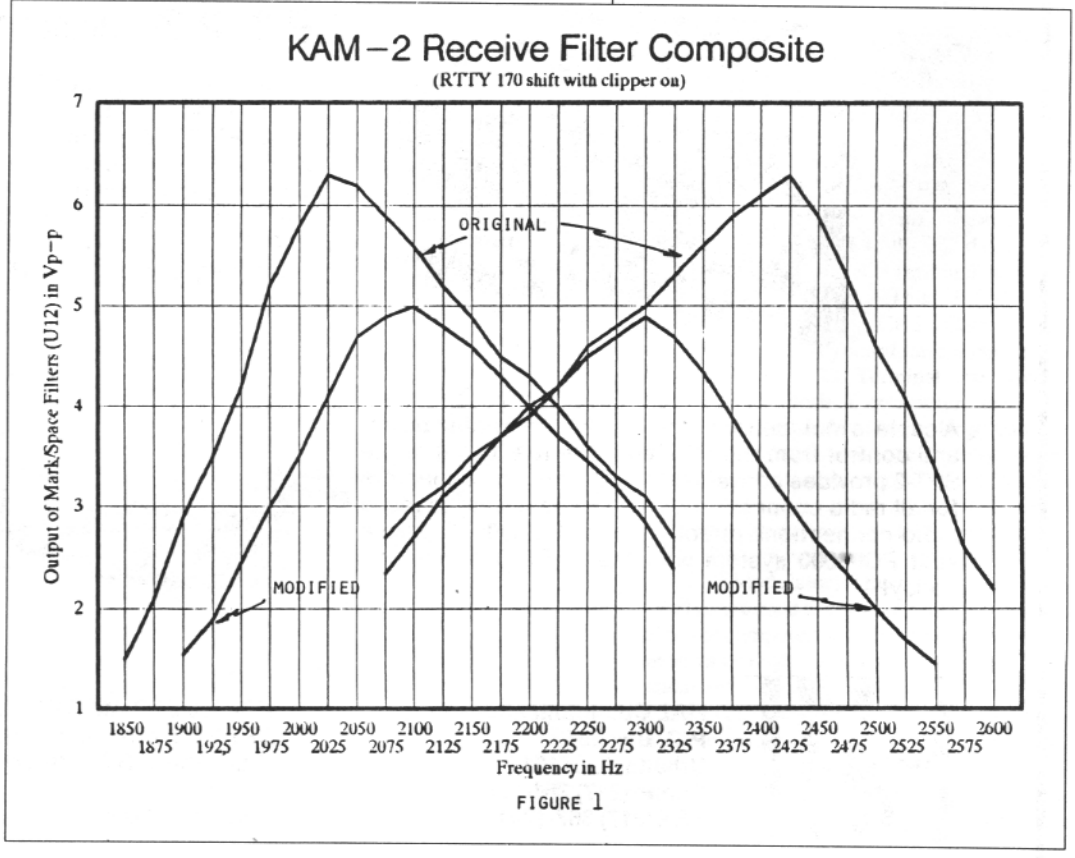


FIGURE 1

• *This story submitted by:*

Gintas Sakenas, LY2BKW
P.O. BOX 2237 Vilnius
232050 Lithuania

Subject: long ago promised story

If someone asked me a couple of months ago what thing RTTY is like, I would possibly shrug my shoulders without having any idea of what did those "pesky" strings of coded signals served for, nor how were they formed out. Nor had I touched a true computer ever before.

In fall 1989, during one of my frequent contacts with Dan, N6CGB he asked me if there was any station in Lithuania able to give him a new one on RTTY. I knew LY1BYL, the club station of Vilnius State University being equipped with a large and noisy machine, called teletypeprinter, and the gang there was operating this mode time to time. However I could not get in touch with them and was forced to disappoint Dan. But glimmer of hope flashed when it became clear that LY2WW club station (which I have a good fortune to be one of the operators at) was gonna obtain a computer soon. Don was set at easy for a moment, but he continued asking me persistently about the progress in adding a new mode here, offering his help, if necessary, with both hardware and software. Most luckily a new ZX-Spectrum 48k clone took its place on the operating table at LY2WW soon. Eimas, LY-SWL made all necessary connections. A set of popular HAM programs was obtained and by end of January this year all RTTY gear had been installed. I got ready for my first ever RTTY QSO.

And here the inimitable in its charm moment comes. Choose twenty for the best band to start from. Load buffers. Monitor the band for a while. Conditions seem to be decent. Find clear spot and, following ARRL Operating Manual recommendations, decide to call CQ. Beam towards north-west...Wires around-I'm like in a cobweb. Press footswitch and go ahead with a 4 or 5 CQs. Listen carefully. Nothing... Try it one more time. Now cannot decode a trill few hundered cycles below my freq. Should I QRZ? Unexpectedly the screen displays: LY2WW De WB8RHX... Back sweats, eye-glasses get damp... Keyboard does not seem to have enough letters...

After 20 minutes or so QSO is completed. GOAZT, WA4WIP, NN2G and twelve more would call with Dan N6CGB among them. After all is completed I find myself on 50 Bauds. Gee, its just for me, say number one typist. May fellow DX'ers forgive me, but because of the great excitement I could not resist having some rag-chew even though my typing was extremely poor. I was not able to work everbody, I had been called by, of course. Could I ever guess Lithuania was of such big demand in the RTTY world?

Because of the computer problems LY2WW kept silent until early March. I could nevertheless stay hunger of some patient DXers when we got these problems solved. I am still showing up occationally, mostly on 20 meters, but not as often as I wish to. I became fond of RTTY mode, but circumstances do not allow me to play it that often. Here is an advantage being a "rare" one, though. Up to 80 or so DXCC countries were made within the first two weeks of operating new mode. Although DXCC itself did not seem to be a goal, but you wouldn't need to do much search and pounce to make your first hundred. Here I feel myself highly favored against others.

Lets take a closer look at the station which I happened to make it from. LY2WW belongs to newly formed VINGIS Radio Club at one of the factories in Vilnius. It occupies a room on the top floor of the 14-story "skyscraper". Petras LY2BBB, the chief, united a group of enthusiasts some 20 years ago and under his versatile guidance the crew has attained a certain succes in HF Contesting and DXing. Thanks to his good intercourse with factorie's authorities, quite a nice set of commercial navy equipment was obtained. Oleg, LY-SWL, the most experenced technician I ever knew, has made it fit for HAM radio. The station now consists of four operating seats, each equipped with a receiver. Their VFOs get to a single TX/PA which is coupled to a variety of antennas. One of the serious obstacles currently is the industrial background noise which we face everytime while on the air. We have plenty of plants and high-voltage power lines in surrounding areas down here in the valley, that make bands sound like a croaking frog. Even good antennas will not help. A decision to move the station out of industrial "hell" was made several years ago and it's gonna happen soon.

If you ever manage to catch LY1BYL, by the way, you know it is the same station, the same equipment, just with a different callsign. Eimas preferes using it. Give him a shout and say HI for me.

Before ending it up I would like to thank all you buddies, who helped me getting in love with RTTY. You Dan N6CGB, Dean WA6PJR, Irv W6GC, Don W6POS, Jules W2JGR and many others without whose efforts and persistence popularizing RTTY among HAMS, I would never know what RTTY tastes like. My apologies go to all suffering from my poor typing. I still have too many things to learn, I look forward to getting on AMTOR and HF Packet soon. See you all then...

73 de Gintas ■

Ed: We had hoped to have some pictures but Gintas informed us that they may be a long time in the coming. When and if we do get them, we will publish them promptly.

ZS9A

Ian N. Sutherland
P.O. BOX 2327
9190 Walvis Island
Rep. of South Africa

A letter to John Troost, TG9VT

Dear John,

My apologies for not replying sooner, but other things have cropped up which have kept me busy.

With other matters on the go arranging sked times is rather difficult. In addition to my sked on 21065-21080 KHz at 1630z on Saturdays I will also be on the same frequency at 1200z on Saturdays beaming JA and VK. (This will begin on 10 June).

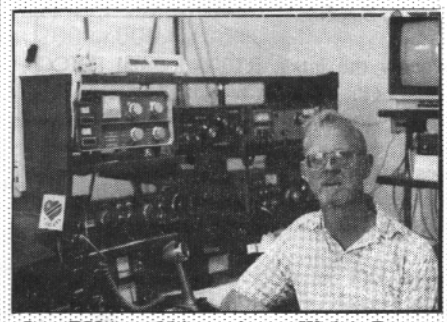
I was a professional radio operator for 25 years stationed at various coast stations in South Africa and in Nambia I was head of the Radio Regulatory Dept. for 20 years before I retired to Walvis Bay.

My RTTY activities as a radio amateur started about 1970 using first a Creed teleprinter and then a Siemens teleprinter (horrible noisy things!). In about 1982 I acquired a Telereader CWR 685E, which I still use and have added a G3PLX Amtor Kit, which is coupled to the Telereader. I also have a PK232 MM Data Controller which I use for HF packet and sometimes use it for Baudot as well.

I have enclosed a photograph of myself and operating desk.

73 to you all over there,

Ian Sutherland
ZS9A V51C



Ian, ZS9A and his station at Walvis Bay

AWARDS

Betsy Townsend, WV7Y
P.O. BOX 644
Spokane, WA 99210

AWARDS

Since my last column I've received many updates from hams showing their current RTTY DXCC counts. My thanks to all for keeping me abreast of their totals. Where are the rest of you?

Before we get to the new listing I'd like to take a moment to answer a question from Peter Styles, VK3EBP, who writes: "Could you advise me on whether or not the RTTY Journal still awards a plaque for having worked One Hundred Countries?" Unfortunately, Peter, the answer is "no." This may be something to consider for the future, though.

One final note before we list the DXCC ranking, Valery, RA9YD writes to say that starting March 1, 1990, USSR amateurs received permission to operate packet radio, and also amateurs holding their extra class license can operate RTTY. This should open the door for increased digital communications, according to Valery.

Valery belongs to a club called Advanced Communications DX Association (ACDXA). The ACDXA is currently looking for support for DXpeditions to rare DX countries. They also have an awards program, offering the following: All Soviet Nationalities Award ASNA), ACDXA (proving QSOs with five ACDXA members), Soviet Cities Award (SCA), Good Neighbor Award (GONA), the "Ninety Degree Line." U-RTTY (proving QSOs with all ITU zones within the USSR) and finally the ACDXA Supertrophy. I will send information on these awards to anyone sending me an S.A.S.E.

And now the latest RTTY Journal DXCC awards! Let's start with Worked All States. We had only one this time, with Bob Canning, **G0ARF**, winning the honors. Worked All Zones had three successful applicants: Robert Bates, **KA9PJZ**; Marion Wayne Wilson, **N3UN**; and Ikusuke Miyazaki, **JA6TMU**.

Worked All Continents had four new awards: Martin Fernberg, **WB6ZHN**; Lee Craner, **WB6SSW**; Sigfus Jonsson, **LA0BX**; and Denis Mahoney, **VE6ZX**. Congratulations to all!

Finally, there were five new DXCCs awarded: Marion Wayne Wilson, **N3UN**; Nels Wasson, **VE6CNV**; Tapani Juhola, **OH2LU**; Robert Bates, **KA9PJZ**; and Liam Currain, **EI3GC**.

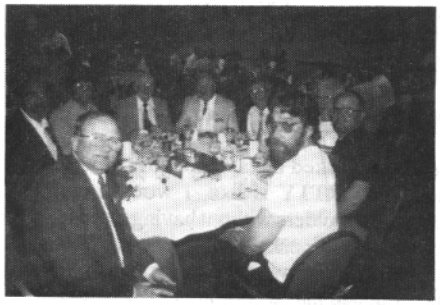
Here is the latest RTTY Journal DXCC ranking:

CALL	CONFIRMED	WORKED
JA1ACB	303	310
I5FLN	292	
TG9VT	260	269
K6WZ	258	269
W0HAH	250	
WA6PIR	249	253
W6JOX	242	252
I5IGQ	240	259
I5ICY	240	257
W2JGR	228	234
I5WT	226	
I8AA	225	
W0LHS	218	230
N3UN	218	229
JA3EOP	216	
OH2LU	214	229
W3KV	210	
K7BV	210	
KA9PJZ	204	216
WS7I	202	212
ON4BX	200	
W2LFL	200	
JA1DSI	200	
F5JA	180	
CT1AUR	173	199
WB4UBD	163	185
G0ATX	161	189
W1ACB	159	174
W3FV	150	
W8JUN	150	
W1GKJ	150	
ON4CK	150	
WA3IKK	150	
W3DJZ	150	

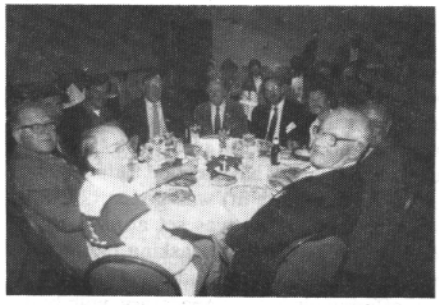
That's all for this time. My congratulations to all, and I hope to hear from more of you, either for awards or to update me with your new totals. 73 and 88s

de Betsy, WV7Y ■

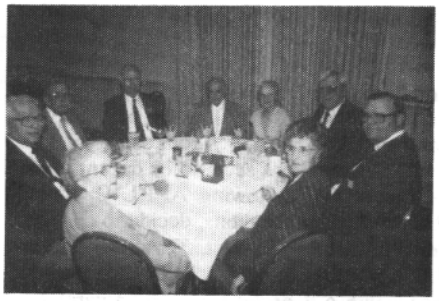
• MORE DAYTON PICTURES



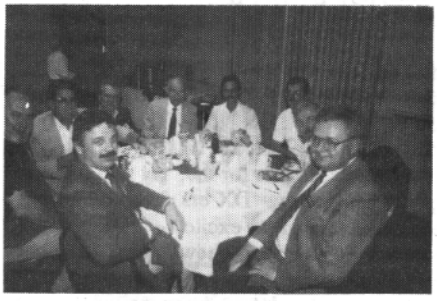
Far L. to R. Frank, WA1URA/7, Bob, WB7QWG, John, VE3JWB, Ray, VE3UR, Bob, VE3JAN, Wayne, NZ4W, Kevin, WA2ISC, Chuck, KB2DIO, Chris, KB2IDX. RTTY dinner Dayton 1990



Center L. to R. Joe, W3HNK, Clark, W9CD, Rich, AC2P, Lou, NN2G, Frank, N2FF, Jules, W2JGR, Ted, W2FG, Harry, NA2K, John, TG9VT, Jim, N2HOS. RTTY dinner Dayton 1990



Center L. to R. Ruth, XYL, Don, K8WZX, Al, W8PBX, Vic, W5SMM, Frank, W00X, Dorthy, KA0VEX, Larry, KA0JRQ, Gaylord, WB8ICL, Louise, WB8JIB. RTTY dinner Dayton 1990



Center L. to R. Larry, WA7SYV, John, W3KV, Harry, W3GU, Barry, W3FV, Dewey, W8GE, Denis, KB9CHF, Bob, WA9AKT, Ed, WA2WLB, Phil, K7PB. RTTY dinner Dayton 1990

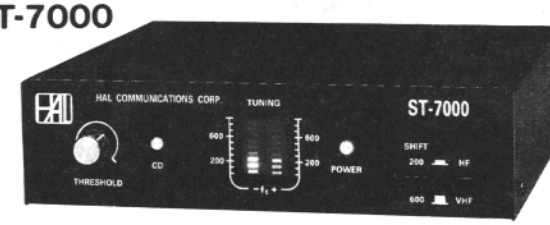
HENRY RADIO IS THE PLACE
. . .THE BEST PLACE
to fill all your data communications needs

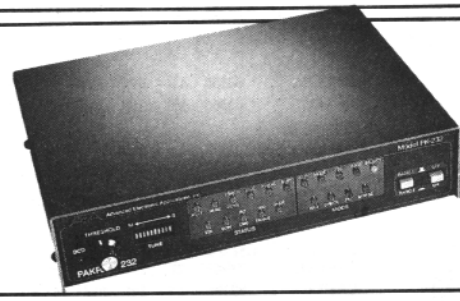
The TEMPO MPP1

. . .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.

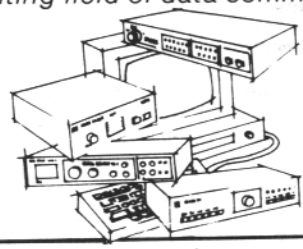




The PK-232 by AEA

. . .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.

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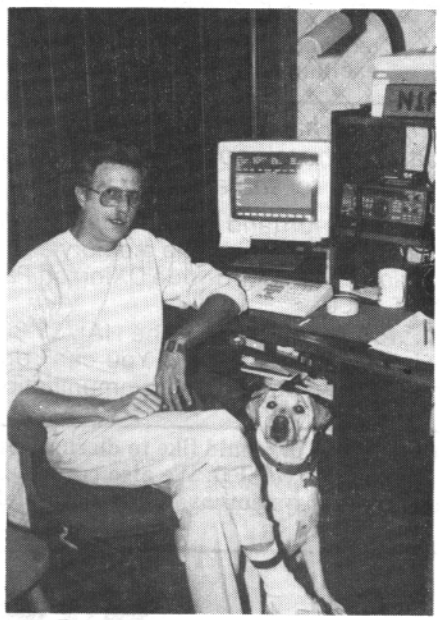
1989 CQ WW RTTY CONTEST RESULTS

Number groups after call letters denote following:

Final Score, Band (AB = all), Number of QSOs, Points, Zones, Countries and State/Canadian Provinces. Winners are in Bold Face.

CLASS AB - SINGLE OPERATORS

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
UNITED STATES							
W2FG	**572684**	**AB**	**644**	**1582**	**82**	**181**	**99**
W3FV	**517816**	**AB**	**558**	**1532**	**71**	**173**	**94**
W3LPL	504340	AB	605	1510	68	169	97
K8NN/0	**421032**	**AB**	**604**	**1324**	**72**	**140**	**106**
NT0V	377917	AB	552	1231	64	136	107
N6GG	**335223**	**AB**	**412**	**1071**	**74**	**134**	**105**
K0LUZ/4	**333756**	**AB**	**495**	**1143**	**63**	**144**	**85**
K6WZ/0	269352	AB	468	1032	58	128	75
AB4ES	267282	AB	471	958	69	137	3
KG5EG	**243810**	**AB**	**452**	**903**	**58**	**113**	**99**
NC7K	**238276**	**AB**	**427**	**839**	**67**	**102**	**115**
K0BJ	224504	AB	381	844	64	114	88
N2FF	187137	AB	327	783	65	121	53
NO2T	184460	AB	319	802	59	124	47
NB2P	**143136**	**14**	**431**	**1008**	**31**	**69**	**42**
K1EVU	**142285**	**AB**	**308**	**715**	**43**	**99**	**57**
KE0KB	**138205**	**21**	**468**	**1055**	**26**	**65**	**40**
N2WK	120652	AB	222	556	57	117	43
AA4JN	117066	AB	255	537	50	100	68
NJ0M	**111144**	**14**	**428**	**842**	**27**	**58**	**47**
W1BIH	110547	AB	198	519	43	94	76
NT3B	109368	AB	253	651	45	83	40
NK2D	108810	AB	231	585	50	101	35
KI4MI	97110	AB	213	498	44	102	49
W8CNL/4	96480	AB	190	480	54	111	36
W1BYH	95760	AB	191	456	54	112	44
W2KHQ	95749	AB	208	529	47	98	36
N3UN	**95542**	**14**	**310**	**713**	**26**	**65**	**43**
WF5E	**89516**	**14**	**321**	**644**	**30**	**62**	**47**
KC2FD	83160	14	344	693	25	54	41
W9KDX	**82698**	**AB**	**195**	**537**	**43**	**95**	**16**
NM3U	81158	AB	181	434	52	93	42
W1IHN	78864	AB	187	496	45	95	19
K9CW	71734	AB	162	403	55	90	33
N8CWE	71145	AB	243	459	37	68	50
KO4J	70794	AB	189	437	40	81	41
W8LNK	**67989**	**AB**	**161**	**393**	**46**	**94**	**33**
N1FIO	67500	AB	158	375	32	112	36
WA3ZKZ	63840	AB	162	380	47	84	37
NX7K	63036	AB	156	412	45	83	25
AB8K	**62800**	**28**	**240**	**628**	**22**	**60**	**18**
W6/G0AZT	**60723**	**21**	**262**	**519**	**24**	**54**	**39**
WB8YJF	59625	AB	148	375	53	77	29
KA5YSY	**58681**	**21**	**274**	**581**	**18**	**45**	**38**
N8ABW	57761	28	243	649	23	51	15
K8AC	55735	AB	152	355	45	72	40
WA4SSB	53856	AB	168	408	34	68	30
W2FCR	**53833**	**21**	**211**	**533**	**22**	**56**	**23**
W6JOX	51450	AB	153	350	40	69	38
W4TOY	49731	AB	137	363	43	80	14
K7OXB	49404	AB	122	358	43	90	5
KE5BK	46460	21	203	460	22	50	29
WB2IVO	**46458**	**28**	**196**	**522**	**22**	**54**	**13**
WA6SDM	46306	AB	153	274	48	53	68
W1HFN	45430	AB	133	295	45	68	41
W8PBX	41422	AB	131	278	42	64	43
N2LT	41230	AB	114	310	40	80	13
WA4MCZ	40896	AB	113	284	48	73	23
K4JYS	**40590**	**21**	**163**	**410**	**22**	**54**	**23**
NI5M	37323	AB	104	261	47	61	35
AA5AU	**36105**	**28**	**184**	**415**	**20**	**47**	**20**
KE0Y	34580	AB	120	260	42	62	29
NA4M/5	34028	21	184	362	21	36	37
WJ7S	**33712**	**14**	**158**	**344**	**24**	**38**	**36**
W3KV	32487	AB	97	273	39	75	5
W4KQS	32258	AB	110	254	35	61	31
W6IWO	29025	AB	105	225	27	69	33
WB6ZHN	28829	AB	104	227	40	56	31
N8JNB	26035	AB	100	205	32	41	54
WA6UFY	25842	AB	109	219	37	45	36
W9CD	21780	AB	74	198	43	58	9
NA2Q	19320	AB	85	184	30	49	26
KM1D	**18834**	**28**	**98**	**258**	**18**	**43**	**12**
K4IBP	**16929**	**14**	**95**	**209**	**21**	**38**	**22**
W3HXI	**16549**	**21**	**96**	**247**	**18**	**41**	**8**
K9JNB/7	14700	AB	69	175	21	48	15
KK8I	14028	AB	57	167	28	54	2
KA0SIX	10726	21	102	173	12	24	26
KD3KW	**10004**	**28**	**62**	**164**	**15**	**36**	**10**
N1FTD	9331	28	83	217	11	23	9
KQ3G	9288	AB	52	129	29	32	11
AJ9C	8960	AB	62	140	26	31	7
KL7TF/4	7938	21	62	147	14	28	12
KD2BW	7370	21	55	134	13	32	10
W8AKS/6	5850	21	49	117	16	25	9
KD3KW	**5508**	**7**	**66**	**102**	**10**	**15**	**29**
KE2NK	5304	14	54	104	14	19	18
W4DEC	5170	21	53	110	10	23	14
WB5LYT	**4312**	**7**	**82**	**98**	**9**	**9**	**26**
NE1I	4128	AB	29	86	17	29	2
NR1J	**2958**	**14**	**34**	**102**	**9**	**20**	**0**
N5OVV	2272	28	27	71	8	19	5
W1UDB	2200	AB	28	50	15	16	13
AB4LX	**1932**	**28**	**24**	**69**	**11**	**17**	**0**
NW0F	**1416**	**28**	**20**	**59**	**8**	**16**	**0**

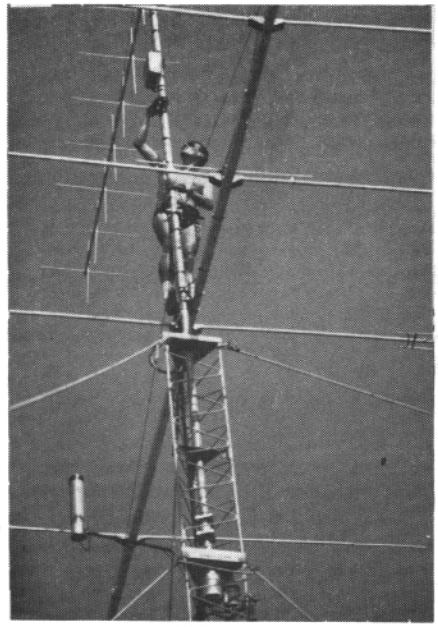


Roland, N1FTD with his DX hound

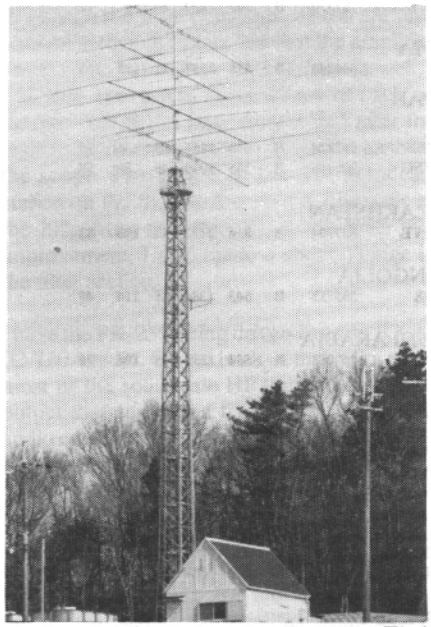
CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
ALASKA							
NL7RA	**35070**	**AB**	**136**	**334**	**27**	**31**	**47**
KL7PG	21520	AB	101	69	18	38	24
CANADA							
VY9CC	**217330**	**AB**	**401**	**1055**	**38**	**105**	**63**
VE2JR	**74100**	**AB**	**174**	**475**	**40**	**86**	**30**
VE2QQ	67497	AB	162	447	40	81	30
VE6CNV	67392	AB	179	432	40	64	52
VE2KRR	38870	AB	122	299	33	55	42
VO1EE	**29718**	**AB**	**88**	**254**	**32**	**59**	**26**
VE7CQD	**25476**	**AB**	**130**	**193**	**36**	**50**	**46**
VE3JAN	**22440**	**14**	**103**	**264**	**21**	**36**	**28**
VE7BDQ	13944	AB	66	166	24	38	22
VE1CEL	**11644**	**AB**	**64**	**164**	**20**	**34**	**17**
COSTA RICA							
TE2M	**68775**	**21**	**369**	**917**	**23**	**52**	**0**
GUATEMALA							
TG9VT	**1038015**	**AB**	**1029**	**2563**	**78**	**173**	**154**
HONDURAS							
JA6WFM/HR2328860		**AB**	**530**	**1260**	**40**	**95**	**126**
MEXICO							
XE3EB	**32301**	**14**	**130**	**333**	**18**	**48**	**31**
PANAMA							
HP1KZ	**68150**	**AB**	**191**	**470**	**32**	**64**	**49**
HP1AC	63360	AB	189	480	32	57	43
TRINIDAD							
9Y4DG	**411482**	**AB**	**500**	**1454**	**53**	**121**	**109**
AFRICA							
CANARY ISLANDS							
EA8AKQ	**74942**	**21**	**237**	**707**	**25**	**43**	**38**
EA8RA	**73200**	**14**	**305**	**915**	**16**	**30**	**34**
ASIA							
ASIATIC RUSSIA							
RW9C	**756756**	**AB**	**733**	**2079**	**78**	**186**	**100**
UW9CY	269696	AB	421	1204	51	115	58
UV9UWW	174522	AB	369	986	48	81	48
UV9CC	100928	AB	236	664	37	88	27
UA9FAR	41832	14	184	498	19	46	19
UA0JV	21663	AB	99	249	30	35	22
UA9FAL	15045	AB	90	255	24	31	4
INDIA							
VU2SJV	**91314**	**AB**	**191**	**534**	**47**	**98**	**26**
JAPAN							
JH1QDB	**421670**	**AB**	**517**	**1490**	**69**	**136**	**78**
JA1BWA	377160	AB	455	1347	71	130	79
JF4GJB	126260	AB	204	590	60	107	47
JH1LBR	**107133**	**28**	**298**	**871**	**28**	**58**	**37**
JR1IJV	105288	28	294	856	27	59	37
JA6WW	103016	AB	211	652	49	74	35
JR2CFD	76464	28	226	648	28	59	31
JA2NNF	67155	AB	149	407	57	86	22
JA3EOP	**49541**	**21**	**162**	**463**	**27**	**48**	**32**
JA3EVZ	49060	21	160	446	27	50	33

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
JA1AYC	43416	AB	113	324	43	61	30
JI1MNT	20293	AB	77	223	34	50	7
JA7KM	9828	AB	54	156	23	33	7
JA7MJ	7672	AB	49	137	20	31	5
JA3BSH	3420	AB	28	76	18	21	6
JP1ODJ	3306	21	33	87	14	24	0
JA1EUL	2135	AB	22	61	13	21	1
JA1WYQ	2074	AB	21	61	15	19	0
JA3BCT	1600	AB	20	50	15	17	0
JH8QBY	**570**	**14**	**11**	**30**	**8**	**9**	**2**
EUROPE							
AUSTRIA							
OE2XTL	**173055**	**AB**	**289**	**695**	**68**	**131**	**50**
OE1WWL	**5405**	**21**	**42**	**115**	**15**	**14**	**18**
OE1TKW	4644	AB	33	86	19	23	12
BULGARIA							
LZ2KIM	**300288**	**AB**	**445**	**1173**	**55**	**105**	**96**
LZ1KDP	**197127**	**14**	**524**	**1341**	**29**	**67**	**51**
LZ1IA	27060	AB	102	246	36	57	17
LZ1BJ	2176	AB	23	64	12	14	8
CORSICA							
TK/OE3CHC	**17202**	**AB**	**69**	**183**	**32**	**36**	**26**
CHECHOSLOVAKIA							
OK2FD	**743175**	**AB**	**671**	**1835**	**83**	**178**	**144**
OK2BXW	**13260**	**14**	**99**	**255**	**17**	**33**	**2**
OK1AMS	9288	14	70	172	12	29	13
OK3KSK	946	14	18	43	11	7	4
DENMARK							
OZ1FGS	**246848**	**AB**	**391**	**1102**	**55**	**84**	**85**
OZ8RO	131454	AB	231	603	58	109	51
EAST GERMANY							
Y27AO/A	**129117**	**AB**	**259**	**669**	**51**	**89**	**53**
Y24MN/A	126800	AB	249	634	58	100	42
Y48YN	115200	AB	224	576	54	96	50
Y24UD	**82764**	**AB**	**196**	**484**	**53**	**87**	**31**
Y23IL	55568	AB	150	368	47	81	23
Y23LG	51606	AB	136	366	39	59	43
Y48VN	30012	AB	92	246	39	54	29
Y43GO	27068	AB	104	268	31	39	31
Y24MK	19694	AB	79	229	27	30	29
Y22GC	16560	AB	70	184	27	41	22
Y51RF	11502	AB	67	162	24	35	12
Y24MB	**8964**	**14**	**73**	**166**	**14**	**34**	**6**
Y22HF	8515	AB	48	131	24	29	12
Y23VB	**7152**	**21**	**56**	**149**	**15**	**22**	**11**
Y24VF	6760	AB	46	130	19	19	14
Y32WF	6262	AB	38	101	20	26	16
Y51XO	5040	AB	39	105	20	24	4
Y23ZL	4224	AB	40	96	13	23	8
Y21GO	4059	14	42	99	11	24	6
Y25KO	3913	14	38	91	11	25	7
Y24UD	2320	28	27	80	10	10	9
Y32ZA	2196	AB	26	61	12	17	7
Y21WI	1836	AB	20	51	14	18	4
Y32XF	1519	AB	20	49	12	17	2
Y22SA	252	AB	9	18	5	9	0
Y26EH	**60**	**3.5**	**5**	**10**	**2**	**4**	**0**
ENGLAND							
G0ATX	**404982**	**AB**	**490**	**1341**	**69**	**13**	**102**
G4SKA	**172235**	**14**	**516**	**1295**	**26**	**58**	**49**
G4UZN	**48960**	**28**	**176**	**510**	**21**	**38**	**37**
G4BWP	25056	AB	82	232	34	43	31
ESTONIA							
UR2FU	**47880**	**AB**	**227**	**399**	**30**	**68**	**22**
EUROPEAN RUSSIA							
RA3DX	**115322**	**AB**	**251**	**529**	**57**	**127**	**34**
UA4HBW	75780	AB	238	421	62	79	39
UA3TN	60840	AB	162	390	48	85	23
RW3DX	**50456**	**14**	**236**	**476**	**22**	**56**	**28**
RA3UC	29148	14	146	347	21	51	12
RA1AW	**4218**	**21**	**51**	**114**	**12**	**21**	**4**

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
FINLAND							
OH2LU	**251312**	**AB**	**342**	**904**	**64**	**129**	**85**
OH2DW	53935	AB	126	335	46	90	25
FRANCE							
FD1LVW	**343980**	**AB**	**468**	**1323**	**53**	**93**	**114**
F6FNL	280280	AB	412	1078	64	121	75
FF1NZH	**149028**	**21**	**406**	**1129**	**28**	**54**	**50**
F6BVB	142545	AB	249	645	58	109	54
F6GVK	4400	AB	45	110	13	25	2



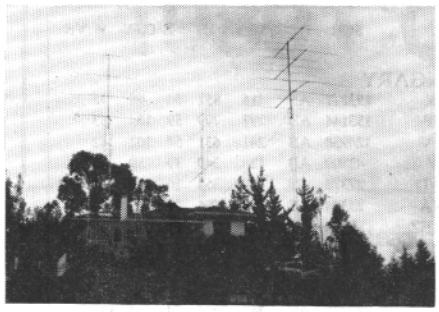
IK5CKL checking antennas before the start of Contest. Took 7th place in World All Band.



JJ3YBB Club House and antennas. Their score of 517,085 netted them 9th place in the Multi-op All Band class.

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
HUNGARY							
HA6PX	**193177**	**AB**	**316**	**851**	**54**	**98**	**75**
HA5CP	153144	AB	277	709	59	104	53
HA6VV	124938	AB	241	631	54	102	42
HA0IV	42500	AB	128	340	39	59	27
HA1WD	27378	28	124	351	16	30	32
HA6NA	25344	AB	96	256	27	42	30
HA5AEZ	9152	28	61	176	15	18	19
HA0ML	**6854**	**21**	**58**	**149**	**12**	**21**	**13**
ITALY							
IK5CKL	**682746**	**AB**	**747**	**2014**	**74**	**154**	**111**
IK1DFH	149838	AB	270	678	63	107	51
I3MIQ	115083	AB	238	693	39	76	46
I2TQU	100464	AB	216	546	53	112	19
I0ZSG	**82482**	**14**	**274**	**699**	**22**	**51**	**45**
I4XQG	55042	AB	142	377	43	61	42
IV3AVQ	**54324**	**21**	**182**	**503**	**24**	**42**	**42**
I4IBR	35179	AB	108	277	45	58	24
IK0CNA	33300	AB	123	333	28	70	2
IK0CNA	**22268**	**28**	**103**	**293**	**20**	**54**	**2**
I6KYL	**17484**	**AB**	**72**	**186**	**31**	**45**	**18**
IK6NAQ	14141	AB	70	179	23	35	21
IK2IKW	6649	AB	49	109	24	35	2
IO0KHP	**1638**	**7**	**32**	**63**	**6**	**18**	**2**
LICHTENSTEIN							
HB0/HB9NL	**343676**	**AB**	**419**	**1138**	**63**	**127**	**112**
NETHERLANDS							
PA3DBS	**255793**	**AB**	**413**	**1117**	**50**	**89**	**90**
NORWAY							
LA7AJ	**314916**	**AB**	**409**	**1141**	**64**	**143**	**69**
POLAND							
SP9BCH	**98940**	**AB**	**243**	**582**	**47**	**97**	**26**
SP6AOI/A	**60168**	**21**	**206**	**552**	**23**	**43**	**43**
SP2UUU	28946	21	123	353	23	30	29
SP3XR	**18040**	**14**	**146**	**328**	**12**	**36**	**7**
SP3IBM	16055	AB	66	169	36	48	11
SP3AMZ	13936	21	97	268	14	21	17
SP3BGD	13090	21	97	170	20	35	22
SP4KEV	6116	14	62	139	9	31	4
SP3SUN	**4864**	**3.5**	**78**	**152**	**5**	**27**	**0**
SP3RBT	3375	AB	31	75	19	22	4
SP9AUV	684	14	16	36	7	10	2
SP3SBO	**18**	**7**	**3**	**6**	**1**	**2**	**0**
PORTUGAL							
CR7CKP	**29866**	**AB**	**120**	**274**	**32**	**59**	**18**
ROMANIA							
YO2IS	**250470**	**AB**	**406**	**1089**	**57**	**102**	**71**
YO6JN	**32172**	**14**	**155**	**383**	**19**	**47**	**18**
YO6CFB	**14322**	**21**	**96**	**231**	**17**	**34**	**11**
SAN MARINO							
T77C	**875350**	**AB**	**947**	**2501**	**63**	**152**	**135**
SPAIN							
EA5FKI	**33573**	**28**	**126**	**361**	**22**	**36**	**35**
EA1AW	**22088**	**AB**	**98**	**251**	**28**	**37**	**23**
EA1BIM	**16827**	**14**	**100**	**237**	**15**	**42**	**14**
EA1JO	11264	AB	52	128	41	33	14
EA3CZM	8008	AB	54	143	22	30	4
EA7BBK	4872	AB	32	87	23	23	10
EA3FNI	**2470**	**21**	**28**	**65**	**12**	**22**	**4**
EA1ZL	2030	AB	34	70	8	21	0
EA1YW	1416	21	25	59	5	11	8
SWEDEN							
SM4CMG	**643566**	**AB**	**597**	**1617**	**86**	**191**	**121**
SM5FUG	469686	AB	544	1477	73	148	97
SM4AAY	110230	AB	267	730	38	55	58
SM7BGE	18601	AB	83	209	30	45	14
SM3DXC	**5152**	**21**	**65**	**161**	**11**	**21**	**0**
SM5PPS	**3535**	**28**	**37**	**101**	**11**	**14**	**10**

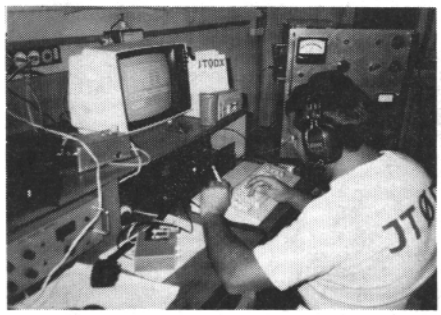
1989 CQ WW RTTY CONTEST RESULTS (Continued)



Antennas at HC5K station where Jules, W2JGR operated as HD5Z taking 3rd place All Bnad single Op with a score of 776,195.

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
SWITZERLAND							
HB9CAL	**379755**	**AB**	**510**	**1455**	**53**	**88**	**120**
HB9DCW	167881	AB	318	827	51	90	62
HB9DCQ	**46865**	**7**	**224**	**515**	**19**	**49**	**23**
HB9FMF	16296	AB	75	168	33	46	18
UKRAINE							
RB5TW	**5616**	**28**	**52**	**144**	**14**	**23**	**2**
WALES							
GW0ANA	**88938**	**AB**	**202**	**486**	**49**	**110**	**24**
WEST GERMANY							
DJ6JC	**387900**	**AB**	**470**	**1293**	**71**	**126**	**103**
DL4MCF	257535	AB	335	873	70	150	75
DF3CB	244268	AB	299	773	83	164	69
DF1IK/P	82336	AB	185	496	46	64	56
DJ3IW	**66930**	**28**	**204**	**582**	**26**	**48**	**41**
DJ2YE	**15745**	**14**	**100**	**235**	**17**	**41**	**9**
DF9IZ/P	13650	AB	67	175	26	38	14
DF0DG	6741	AB	43	107	26	24	13
DK5KJ	3483	AB	33	81	16	22	5
DF2EY	1225	14	22	49	8	15	2
DF5BX	**480**	**3.5**	**16**	**30**	**5**	**11**	**0**
YUGOSLAVIA							
YU3EA	**401367**	**AB**	**591**	**1191**	**80**	**189**	**68**
YU2W	**246272**	**14**	**598**	**1664**	**30**	**64**	**54**
OCEANIA							
AUSTRALIA							
VK2BQS	**18423**	**14**	**93**	**267**	**18**	**28**	**23**
VK3EBP	17860	14	82	235	19	37	20
INDONESIA							
YB5QZ	**7344**	**AB**	**38**	**108**	**30**	**34**	**4**
MARSHALL ISLANDS							
KX6OI	**99568**	**AB**	**264**	**784**	**37**	**64**	**26**
KX6OI	**49572**	**28**	**206**	**612**	**18**	**37**	**26**
NEW ZEALAND							
ZL2AKI	**41285**	**AB**	**125**	**359**	**35**	**50**	**30**
PHILIPPINES							
KE9A/DU3	**242786**	**AB**	**367**	**1042**	**65**	**109**	**59**
DU9LMT	**3450**	**21**	**46**	**138**	**8**	**16**	**1**
SOUTH AMERICA							
ARGENTINA							
LU9DBK	**149058**	**AB**	**285**	**819**	**45**	**68**	**69**
BRAZIL							
PY4VD	**39144**	**28**	**159**	**466**	**18**	**34**	**32**
CHILE							
CE6EZ	**122512**	**21**	**337**	**988**	**23**	**54**	**47**
CE6GEE	**31195**	**14**	**130**	**367**	**22**	**36**	**27**
CE3BFZ	**28900**	**AB**	**103**	**289**	**32**	**47**	**21**

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
COLOMBIA							
5K1R	**725620**	**AB**	**865**	**2555**	**51**	**117**	**116**
HK4BHA	**44589**	**21**	**171**	**501**	**17**	**44**	**28**
HK4EGW	**17812**	**14**	**84**	**244**	**16**	**36**	**21**
HK4NTY	7956	21	57	153	16	28	8
HK4FXF	570	21	13	30	7	8	4
EASTER ISLAND							
CE0ZIG	**71412**	**AB**	**202**	**541**	**34**	**56**	**42**
ECUADOR							
HD5Z	**776195**	**AB**	**794**	**2345**	**65**	**121**	**145**
URUGUAY							
CX5AE	**73290**	**21**	**239**	**698**	**23**	**45**	**37**
VENEZUELA							
4M5RY	**176880**	**14**	**451**	**1340**	**25**	**67**	**40**
KF5YE/YV5	**159639**	**21**	**423**	**1257**	**22**	**60**	**45**
YV6PM	**95550**	**28**	**306**	**910**	**17**	**47**	**41**



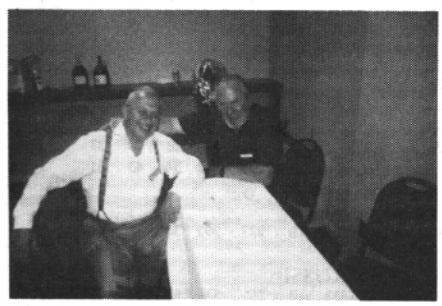
HA0MM operating JT0DX from Mogolia nets 543 QSO's for a total score of 301,712.

CLASS B - MULTI OPERATORS

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
ASIA							
ASIATIC RUSSIA							
UZ9CZM	**34006**	**B**	**113**	**347**	**31**	**63**	**4**
UZ9CWA/A	27550	B	105	290	28	52	15
INDIA							
AT0J	**1006343**	**B**	**895**	**2587**	**92**	**195**	**102**
JAPAN							
JJ3YBB	**517824**	**B**	**633**	**1856**	**69**	**136**	**74**
JA1YFG	205446	B	366	1059	48	88	58
KAZAKHSTAN							
RL8PYL	**829704**	**B**	**814**	**2292**	**82**	**198**	**82**
MONGOLIA							
JT0DX	**301712**	**B**	**543**	**1384**	**55**	**114**	**49**
SAUDI ARABIA							
HZ1AB	**362065**	**B**	**554**	**1595**	**49**	**108**	**70**
EUROPE							
BULGARIA							
LZ9A	**1399032**	**B**	**1161**	**3048**	**90**	**221**	**148**
LZ1KAA	1074264	B	966	2633	81	183	144
CZECHOSLOVAKIA							
OK1KSL	**178190**	**B**	**321**	**865**	**55**	**93**	**58**
OK3RJB	129156	B	269	687	50	84	54
ENGLAND							
G0CWC/A	**48125**	**B**	**154**	**385**	**30**	**51**	**44**
EUROPEAN RUSSIA							
UZ3AYR	**534130**	**B**	**677**	**1723**	**71**	**148**	**91**

CALL	SCR	CL	QSO's	PTS	Z	CTY	W/VE
FRANCE							
FF6KRJ	**16037**	**B**	**79**	**203**	**26**	**34**	**19**
KALINGRAD							
UZ3DWH	**227755**	**B**	**438**	**1111**	**49**	**96**	**60**
LATVIA							
UQ0GZW	**1726108**	**B**	**1461**	**3802**	**93**	**211**	**150**
MOLDAVIA							
UO4OWQ	**375500**	**B**	**601**	**1502**	**58**	**124**	**68**
NORWAY							
LA3T	**174724**	**B**	**325**	**836**	**52**	**98**	**59**
POLAND							
SP3BLD	**49528**	**B**	**127**	**328**	**50**	**66**	**35**
SP1PBW	21854	B	77	223	25	30	43
SP9KVF	7682	B	71	167	14	27	5
SPAIN							
EA2UAD	**43053**	**B**	**131**	**339**	**33**	**47**	**47**
EA3RCL	7056	B	58	126	14	31	11
UKRAINE							
UB4LWC	**66960**	**B**	**202**	**496**	**37**	**77**	**21**
UB4IZA	12369	B	97	217	15	35	7
WEST GERMANY							
DL0GK	**654080**	**B**	**731**	**2044**	**67**	**137**	**116**
YUGOSLAVIA							
YT3T	**907882**	**B**	**871**	**2434**	**79**	**155**	**139**
NORTH AMERICA							
CANADA							
VE7ZZZ	**477085**	**B**	**647**	**1505**	**65**	**119**	**133**
UNITED STATES							
KY1F	**77216**	**B**	**206**	**508**	**39**	**76**	**37**
KC1BS	25990	B	90	226	37	62	16
OCEANIA							
AUSTRALIA							
VK2RT	**126629**	**B**	**309**	**911**	**43**	**66**	**30**
SOUTH AMERICA							
GALAPAGOS							
HD8EX	**2290860**	**B**	**1697**	**4895**	**89**	**212**	**167**

CHECKLOGS: Our thanks to the following stations who sent in checklogs: VE7DTA, SP2ZCD, SM6EZI, OH2BGD, HK6HFY, I2HWI, LA0BX, YO5BLA, SM6APB OZ7FN, Y43XN SP4KM, SM5EIT.



L to R. Arthur, XE1LL and John, W2KV. RTTY Hospitality suite. Dayton 1990

PACKET

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

WANT SOME HASH!!!!!

Well, I have some prime, grade AA computer hash available for the taking if anyone wants it (I would rather have corned beef hash or Corned Beef and Cabbage instead.) Unfortunately, if you own a PK-232, a computer, or something that is of a digital nature, then you are a prime candidate for some free hash of your own.

So, on to hashing it out with data controllers. My PK-232 is a great generator of computer hash here. I used to get an earful off the monitor cable from the computer to the monitor but that is now the least of my worries since I am using a real monitor instead of a converted computer terminal. The kind of hash that I am dealing with is of the variety that the PK-232 generates and subsequently renders itself numb to the desired signals that I want to decode. I can now hear you out there saying that I want to go and dig out signals that are .5 db above the noise (I wish). I know that Cole, W6OXP, has delved into this subject also, but it is one that bears a repeat performance because it affects so much and the general principles that are going to be discussed here can make a big difference.

What causes the hash on the power busses? Answer, any device that is attached to the bus and switches power in some way. All logic families are guilty of it. Whenever a device changes state, it uses power off of the bus. The bus acts as a combination of resistance, capacitance, and inductance at the same time. Therefore, the bus can't support instantaneous current draw and suffer NO drop in power. This drop in power is passed on down the bus to other chips in the circuit and they add their own drains at their own times and that's how the hash gets onto the power busses and spreads havoc.

The best way to eliminate this is to have a separate power source for each chip (right.....). Very impractible. So, we do the next best thing, we put a capacitor across the power supply pins of the chip so that the capacitor acts like a storage battery and dumps power into the chip when it needs it to relieve some of the demand on the bus and recharges when it is able to. This will help eliminate some of the hash. The rest is eliminated by proper design of the board before manufacture.

Of course, you are now wondering what the previous diatribe has to do with the PK-232. Well, here is the answer. Only part of the chips have the bus capacitors next to them. These are in the digital section. The analog section does not have any (at least on my PK-232). This allows the remaining hash to get to the amplifiers in the filter section and fill them up with garbage and desensitize them.

So, what I did was solder to the plus supply pin and the ground pin of each amplifier chip a 4.7 uf tantalum capacitor making sure that I observed polarity. Tantalum caps have a rotten tendency to blow up if hooked up backwards and make a nasty mess in the process. This little modification has been covered many times on the packet BBS's but I took it one step further. The use of bypass capacitors in the design of solid-state equipment is one that should never be forgotten, but unfortunately cost sometimes gets in the way.

In the filter section, there are 4066 chips used to change the filter constants. These are also hooked across the same bus that the amplifier chips are so I added the caps to them as well. I was able to measure about 60 mv of hash on the bus line in the filter section and after the caps were installed, I could not see the hash on the scope. I saw more of the AM broadcast station on the trace that is on the other side of the hills from me, than the hash. With that improvement, I also made a slight change in the filter section.

I have the PK-232 being driven from an ICOM IC-720A radio. On the back of the radio, as do most of the solid-state HF transceivers, is an output that supplies a fixed level of received audio equivalent to a tap on the high side of the volume pot. In most cases, you can't increase the level to help out on the weak signals. So, I made a change in the first amplifier in the filter chain. Basically, I took the feedback resistor of the first opamp and increased it from 39k to 56k. That gave me some more sensitivity by raising the gain of the amplifier from 3.9x to 5.6x without being too aggressive. After I made the change, I tried it out on some weak HF FAX transmissions. I could barely hear the signal and the system kept right on chugging away without missing a beat where before it would have garbaged up on me. Not bad at all. One warning though. This modification was done to solve a particular SYSTEM problem. This may not work with your own situation and may make things worse rather than better, so I suggest that you evaluate your situation first before changing out parts that could cause you trouble.

Not to change the subject any, I thought that I would pursue a side subject here for all concerned. At least in the United States, devices that have the ability to output RFI and EMI have to meet one of two standards, basically referred to as "Class A" and "Class B." The "Class B" standard is the more stringent of the two and products so designated can be used in the home and in the workplace. A piece of equipment that is designated as being "Class A" is only intended to be used in the workplace and not at home because the leakage is higher and more likely to affect equipment, such as radios and televisions. So, if you are looking at getting a computer system for your shack, make sure that it is rated "Class B." If you use a "Class A" item in your home, I believe that is illegal. Besides, it will interfere with your radios by creating more HASH! Please remember, the subjects that I just covered, bypass caps and the FCC noise limits, can be applied to anything. Any and all pieces of solid-state equipment should be properly designed with techniques to help limit RFI generation.

READER SURVEY

Our publisher, Dale, W6IWO, has sent to me the results of the reader survey. I found the results interesting to read. I wished that it had gone into more detail on the questions but that is water under the bridge. I would like to address a couple of the points that were brought out. One, I wish that I had more funds to look into the new equipment and evaluate it for you but, unfortunately, I don't. Second, I wish that some of the manufacturers would let me borrow one of their new devices for evaluation and publishing, but so far, that has not happened. So, because of that, I write about only what I can get my hands on.

A REQUEST

I need to know what you want me to cover in this article. The best way is to send me a note via packet. It will get to me as I check for mail about once a week. Besides, it does not cost you any money in postage. The mail can be sent to me N6NKO @ WB6YMH-2 via packet. Using this method will insure a quick response, possibly via packet.

Here is a basic chart on how to do connects, disconnects, and the like on packet:

To connect to a station, W6AAA, direct and on his frequency:

"type" C W6AAA (return)

To disconect from a station:

"type" control-C
then "d" (return)

To connect to node NODE1:

"type" C NODE1 (return)

To connect to W6BBB via nodes NODE1 and NODE2:

"type" C NODE1 (return)

When you are connected to NODE1, type the following:

type" C NODE2 (return)

When you get a response that you are connected to NODE2,

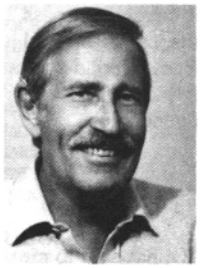
"type" C W6BBB (return)

That should help you out a bit. I did not include how to use digipeaters because they only cause channel congestion and don't help out that much.

Contest season is upon us. I know that WA7EGA is drooling and foaming at the mouth to watch his multi-computer, multi-radio RTTY contest monster work and chew up the bands while he sits back with a cool 807 and watchs. Well, I will be in the fray of it also. Danny, N6IHQ, and I have been working together and we are going to hit it hot and heavy this year. I am in the process of writing the duping software for the contests that we will work and we are going to have FUN!!! The XYL's and harmonics will become contest widows and orphans for a while but, of course, when the going get tough for women, the women go shopping. (My left rear pocket feels sore already.) Hopefully, we will see you out there on RTTY and AMTOR on the bands.

de, Richard, N6NKO ■

DX NEWS



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

Well, we may have won the war, but we sure lost the peace. So RM-7248 was withdrawn by the ARRL and the threat of Packet incursions in the RTTY sections of our bands supposedly receded. So what are all those packet stations doing on 14,093, 14,096, 21,096, 21,093 and now often as far down as 14,088??

Why do they have to spoil it for the RTTYers: they are not LIDs, so why act as such? What is wrong with the vast "waste-land" above 21,100 and with the Packet Frequencies above 14,100? The "STA" does not contemplate that those unattended operations take place in the recognized RTTY segment of the band. I would say that in the strict interpretation of the law, such operations are completely illegal and might put the Operator's license in danger of being suspended. Anyway, the inevitable result will be that RTTY creeps down into the AMTOR portion... and AMTOR slides down into the CW portion of the band and the digital segment will start at 14,050 or 14,060. Well, maybe the CW mode should give up some of it's space in favor of Modern Means of Communication.

And while I am on my bandwagon; does the ARRL not have brand new, state-of-the art, facilities? Does QST not advertise that the ARRL Bulletins are broadcast on 21,095, 18,102.5 and 13,095, etc. Mark? So why is it, then, that they are invariably anywhere from 130 to 300 cycles low? On 17 meters as low as 18,102.17? Is that necessary with today's equipment?

SUMMER DOLDRUMS ....

With propagation slowing down and the K-index usually being pretty high, this summer surely cannot compare with last year. Yet there was a lot of good DX around, and yet, the bands were often underpopulated: everyone taking vacation? Yet, there was some great DX: VK9LI made lots of us happy during the ANARTS Contest (and QSLs are out already): A GREAT EXAMPLE! (Operator was VK2EG).

Some very rare ones have come out of the woodworks, and expect to be active for some time, like VQ9RB from Chagos (this time not on a vessel in the Lagoon) and ZD9BV with his new IRDXA gear. Those are not easy to find, but they will be there for a long time. Be careful with the ZD9: many slims using a ZD9 call.

The persistent (lucky??) ones this summer, were able to find such as: BV4QA, 5V7DP, PZ1BS, J39BS, 9L1US, SU1HN, SU1ER, JY9SR, ZD88BOB, J28TY, TA3D, C31RI, UJ5K, A41KB, A41JW, A45ZO, RF6FC, GJ4YMX, 9K2EC, TZ6VV, TZ1DE, HKOBKK (San Andres), PJ7YL, P43SF, PJ2MI, PJ2WOL, LY2WW, YL1WW, FY4FS, FY5DG, UM8NC, UM8MU, UG7GWY, FK8BK, V85FH, V85GA, SV0CR (Crete),JX9CAA, OD5NG, OD5SK, 9Q5BG, J73WH, J73EH, J73WA, RF1F/UA3TT, T5RM on ARQ, CE0ZIG, UQ2HO, UH8AAB, ES2WX, ES7FU, V73AX, ZC4NC, C6A/AB4ES, V$6WH, 7Q7LI (maybe?? WFWL), TU2BB, 8P6AT, HC8VB, OY9A, TK5IU, 6W6JX, 3BBCS, 5B3ONC, FR4EC, CN8CC, UC2ACT, UCI-IWR, RH8AX, VK9NS, TR8JLD, T32AB, TF4LB..well, seems I could go on forever.. but this is not supposed to deal with what has gone by, but with what is to come. It was a long hot Summer, even in Guatemala.

But, though we could use a little more activity on the bands, specially in the daytime on 15 meters (yes, it is mostly open), the DX is there. Do not do as I do; do as I say: call CQ now and then and get some activity going-especially in the .090 to .100 segments, before we loose them entirely to packet. RY RY RY on top of them is not enough, nor does it bother them, they just keep "re-trying" their QRM.

RAMBLINGS ....

Congratulations are due to Gin, JA1ACB; the ARRL approved 301 DXCC countries on RTTY. (Maybe now I should retire..Hi!). More congratulations are due to Lynn, DU1AUJ; she had a healthy baby boy, Angelo, in May. I really cannot judge which of the two events is more important.

I have to request for HELP in converting older gear to FSK operation. HA5CP, Gyuri, a personal friend of mine, has a FT-757 he would like to convert to FSK to be able to use the narrow filters. Please, for any help contact me at the above address, or at the TGVT Aplink Mailbox on Amtor.

The fine bunch of Egyptian amateurs published their first Radio Society Newsletter in May. Editor is SU1HN, Hamed, the well known RTTYer and it is a very nice publica-

tion. Write Hamed with SAE etc. for a copy. It is worth while.

Now the "Sad Story Department"

There was trip to Palmyra last year. One of the participants is going to Afghanistan soon and is sure he will be permitted to operate. So, how about RTTY?

Well, the experience on Palmyra was not the greatest. The QSO rate was low (nothing we can do about that) but worse; of 55 worked, only 44 QSLed. Many guys did not come thru with the contributions they had promised for this $50,000 expedition. (But CW/SSB QSL rate and contribution rate was not a lot better.) So, no RTTY will be considered from Afghanistan this trip.

You remember VU7JX, an "All Time New One." QSL rate for that ran only about 50 percent. Even the "ALL Time New One" from St. Peter and Paul's Rocks last year, with the very few RTTY QSOs they were able to make, received only about 24 QSLs for the 35 or so QSOs made.

So, if we are that lackadaisical about QSLing and supporting a rare one, how are we going to encourage them to go thru the troubles of carrying and operating RTTY gear from some difficult location? You tell me. I have no answer.

CHIAO ....

Out of consideration for our dear Editor, I have tried to keep this Column as short as possible. After all, we have a lot of direct, first hand stories from well known DXers, and I want to leave space for that, so have minimized the Brown Sugar.

Thank all of you for the wealth of information you supplied me, without which this Column could not be. Among others, we thank VK2SG, W2JGR, OD5NG, N2HOS, W5KNE, JA1ACB, DO1AUJ, W6PQS, HK1LDG, KD7P, DJ6JC, 9K2EC, W5KS1, TI2US, JG1NBD, JA3DLE/1, JH1BIH, JH1QDB, HA5HO, WA4MCZ, WA8FLF, VU2JX, VU2RBI and H44SH (not necessarily in that order).

May the Lord Bless you and give you all this nice DX to come. I hope to see you next month, if our Dear Editor does not fire me first.

de John, TG9VT
on the Guatemalan Volcanos

LATE DX FLASH: John, KA3DBN will be in Anquilla from Sep 24 thru 29 with heavy emphasis on RTTY. Info supplied by N3UN.

DX COMINGS by John Troost, TG9VT

First some News that did not happen: NEPAL, 9N5DX never showed. KH2/KD7P, MINAMI TORISHIMA was not reported active BANGLADESH was not seen on RTTY. Maybe in the future: we will let you know if we find out.

H44SH went QRT from the SOLOMONS about Mid-May and is transferred to the IVORY COAST: We should see Stu up on RTTY from there soon.

Not sure yet, but WZ6C/ST4 could be active on RTTY soon from the SUDAN. He has a license and last I heard he was searching for a PK232 or similar: if you are willing to help, please contact WA4MCZ, Bill, for details. His phone is (616) 323-4433: he is coordinating that effort.

TAKA, JG1NBD will be active on RTTY from the SEYCHELLES, S79, from 12 to 17 September.

Our good friend, ZL1AMO, Ron Wright, lost all his gear during his SOLOMON Trip. He has given many of us a new country on RTTY, like ZK1, ZK2, T28, FW0, 3D2, etc. Any possible financial help to permit him to replace some of that equipment will be much appreciated. His Call Book address is good since about a Century. The IRDXA has already offered him a KAM Modem.

JB1QDB, Kuni, will activate OGASAWARA; JH1QDB/JD1, mainly on RTTY, including the CQ WW RTTY Contest, from 23 thru 30 September. That is a 28 Hour trip by ship as no air connections are available.

The expeditions to SOUTH GEORGIA, VP8SGI and SOUTH SANDWICH, VP8SSI, are still on schedule: VP8SGI 22 November thru 5 December: VP8SGI 25 November thru 3 December. All this year. Total cost is over $140,000 and donations would be appreciated via AA6BB/7, Jerry Branson, 93787 Dorsey Lane, Junction City, or 97448, USA. RTTY will be included from each island, as the International RTTY DX Association, (IRDXA) is providing one RTTY Machine for each of the two Islands.

A VIC-20 is now on the way to RODRIGUEZ ISLAND, 3B9FR, courtesy of IRDXA. Maybe we get lucky in a month or so from that Ultra-Rare one.

IRDXA is also working to activate P29KK, PAPUA NEW GUINEA on RTTY: equipment offer has been made. Also P29BT has advised that he hopes to be up on RTTY shortly.

It is 99 percent certain that CE3BFZ and a group, will activate CEO/JF, JUAN FERNANDEZ ISLAND in November '90. Donations please to KC0TO. Bill Haigh, VR6WGH, PITCAIRN ISLAND, will be there till late December this year. He has been pretty active on RTTY. He is there to relieve Tom Christian, VR6TC, during his current trip to the U.S. He will QSL when he return to New Zealand.

6W6JX, Jean, will be active as C53/6W6JX, THE GAMBIA, from 9 thru 23 August. He has been active before as C56 and did a fantastic job.

Watch for DF2UU, he is scheduled to be on RTTY from ICELAND, TF.

And then I have a note here and cannot remember who gave me the information, that 9X5/GOLLZ will be active from RWANDA for the next 5 years and is waiting for a permanent call-sign.

A well known RTTYer, T12US, Jimmy recently lead a group of hams on an expedition to TI9, COCOS ISLAND. Unfortunately he could not get a portable computer in time to include RTTY in the operation. However, there is a good chance that TI3DJT will make this trip in September and be fully equipped for RTTY.

VP2V/JH4IFF will be active from the BRITISH VIRGIN ISLANDS, from about 10 August.

A group of Hungarians is making preparations for a World Wide trip with a Buss-like Vehicle, equipped with all sorts of Radio Gear. I.E. a "Mobile World Expedition." They plan to start out late November this year and be on the road for at least 12 months. Lots of preparation has gone into this.

VU2JX and his group are all ready for a BHUTAN operation later this year. This will be an All Mode operation, including 6 Meters and Satellite: RTTY of course. They are waiting for final approval of the paperwork, which so far appears to be running on schedule and final OK is expected shortly.

And last, but not lest: KH0TU MALPELO ISLAND, will be an All Time New One on RTTY starting 2 November '90. The RTTY operator is the well known Raul Gonzalez, BK1LDG, top scorer in many RTTY Contests. Equipment help is essential for RTTY. The IRDXA has offered a VIC 20 and cabling. ICOM is presently considering the loan of an IC 751A for FSK. Still needed are such items as beam antennas, rotors, cabling, an electric generator, etc. Anyone wishing to lend equipment for this operation could sent it to: Raul Gonzalez, c/o Pegasus Freight Forwarders,, 7318 N.W. 79th Terrace, Miami, FL: phone (305) 887-9550. Cash contributions please only to the expedition leader: HK3BED. Arturo Afanador, POB 584, Bogota, Colombia: registered mail please and checks marked: "for HK0TU RTTY."

There will be plenty of RTTY activity from the EAST and WEST CAROLINES, JA2NQG will be up from BELAU as KC6CW from 13-16 September and from YAP as V63AN, look on 21088 and 14088. At the same time JH2BHL will be KC6DX and V63AR.

de John, TG9VT ■

Ed: *In the coming months, John's DX COMINGS will appear as a stand alone feature. This change will make it easier to spot this special section of his column.*

AMTOR

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

I hope all our readers had a very pleasant Summer, although I have heard that some folks would prefer to erase this Summer from their memories, due to lightning strikes, floods, hurricanes and other forces of Mother Nature. Thankfully, no earthquakes of any significance, in my area!

After the May/June "Beginner's issue" hit the stands, I began to receive some very interesting requests for rig modifications. I would like to thank all of you for your interest and I hope that the information you received, will enable you to have many successful AMTOR contacts. Credit must be given to A.E.A. in Washington state and I.C.S. (UK), for compiling a booklet of the various modifications and also the Hams who took the time and technical skills, to help work out what had to be done to the "non AMTOR compatible" rigs.

While on the subject of rig modifications, I received some feed back from W6ZH, Pete, concerning the Yaesu FT757GX. The info I sent out for that rig, was for the MK1 version. It appears that one has to be VERY careful and you should not attempt the mods without the technical manual! The schematics may or did differ from the actual circuits and some parts were not located where shown in the book. (Sounds just like automobile wiring!). R268 was a surface mounted device, located on the solder side of the board. The P.A. board is multi-layered and EXTREME care must be used when removing R28, R32 and R39, otherwise the plated "through- holes" will become useless. Pete recommends that you check for continuity with an Ohm-meter after removing the three resistors and if necessary, install "jumper wires" to complete the circuitry. To prove that the mods did work, Pete was able to have a successful ARQ link with a station 30 miles (50KM) away, on 15 meters! Thanks for your input, sir.

If anyone has figured out a way of getting the CW filters to work in either USB or LSB on rigs that MUST use AFSK, like the FT757, TS140 etc, please drop me a line. I am sure that there are other users, who would appreciate narrower receive capabilities. I have a modification for the TS430s on file, if anyone is interested, an SASE will get you the details. In the Hints and Kinks section of the last issue, I omitted to mention that the SQUELCH on your receiver and on the TNC, should be set to fully open. If the Squelch is enabled, even to a small degree, ARQ links could be disrupted and text flow would either slow down or be nonexistent.

From the recent reader's survey, it appears that the beginners would like to have a definition of the various abbreviations used in AMTOR. Here are a few of the most commonly used ones:

DEFINITIONS

AMTOR: Amateur Teleprinting Over Radio.

FEC : Forward Error Correcting

ARQ: Automatic ReQuest.

SEL-CAL: Selective Calling, usually four LETTERS taken from your callsign, although there is now provision for seven LETTER Selcals in the most up -to date TNC/Software packages.

MODE A: ARQ

Mode B: FEC

Mode L: Listen to ARQ (monitor).

WRU: Who Are You

MASTER: The station who initiates the ARQ link by sending your Sel-Cal.

TIMING: Usually needs to be about 20ms.

IDLES: Also called Phasing signals. Essential to synchronize decoding of the transmitting station's text when in FEC.

There are a few more like ISS, IRS and so on, but for the newcomer, they are not "essential" reading.

How to Access AMTOR Mailboxes.

The most common AMTOR mailbox system in use today, is called APLINK, concieved, written and Copyrighted by Vic Poor, W5SMM. According to the latest APLINK Directory, which can be found elsewhere in this issue, there are 42 stations throughout the world. Of course, there are other systems in use, that use other software, like G3PLX, HB9AK, LA9OK, PAORYS, PA3AGA, OD5NG, JA5TX, K4CZ, to name a few.

For the time being, I will concentrate on how to access the APLINK system. First of all, pick a station callsign from the directory and call up that station, using the appropriate Sel-Cal. If you have selected a mailbox that scans a variety of frequencies, you should set your ARQ "time-out" to more than 60 seconds. The reason for extending the time-out is because it usually takes the scanning system that long to go through it's routine.

Once you have achieved an ARQ link, the mailbox (MBO)) will ask you to "logon". If you are a first time user, type the following on a new line: NEW (space) your callsign (space) your Sel-Cal (CR/LF) and a variety of other commands will be sent to you. Don't forget to make a hard copy for future reference. If you would like a full APLINK User's Guide, send an 11/9 SASE to either W5SMM or AD7I.

You may have noticed that the +? change-over sequence, from the Slave's direction, has been substituted by a CR/LF after each command. Do not despair, for those of us who have been indoctrinated with the +? INSTEAD of CR/LF at the end of each command. Use either, but, DO NOT use both.

One further comment on the APLINK directory. Some of the listed MBO's, may not have a great deal of general information in them. Some may only be used as private MBOs. I have not accessed all 42 in the list but from past experience, AH6D, VK2AGE, TG9VT, WA8DRZ/6, WB7QWG/9 have numerous files of general interest, including DX news, ARRL Bulletins and so on. My apologies to those Sysops not mentioned, who do hold files of general interest. Leave a message at TG9VT and tell me what I am missing! Incidentally, APLINK will not accept a W6/GOAZT input, so if you want to take me to task about something, you will have to write to me.

That's it for this issue. I am sure that Dale will breathe a sigh of relief after typing all those frequencies!

Happy chirping and see you next month.
73 GL and DX

de Eddie, W6/GOAZT ■

The AMTOR APlink listing begins on page 20 and continued on page 22.

...Brings You A Better Experience

Keyers

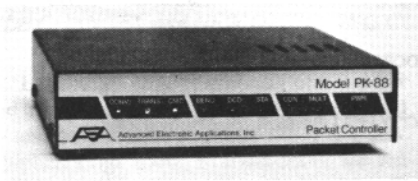
The Morse Machine MM-3 Keyer

The Morse Machine has all the features you need in a memory keyer, including 2 to 99 WPM speed selection and over 8,000 characters of soft-partitioned memory. Twenty memories store your messages...as short or as long as you like. Memory can be expanded to 36,000 characters. All memory is backed up by an internal lithium battery.

Comprehensive Morse training facilities are built-in. **A Proficiency Trainer** for random code group practice. **A Random Word Generator** which generates four-letter words and **A QSO Simulator** which allows you to call stations, answer a CQ or listen to realistic on-the-air QSO's.

The MM-3 also features automatic serial number insertion and incrementing in any memory message. Use the front panel knob to adjust your sending speed or enter a precise speed with the keypad, toggling between the two at any time. Exchanges can be expedited by having parts of your message sent at a higher speed. You can even add remote switches for four of the memories to send your response or call CQ. The MM-3 can also be programmed for automatic beacon use. The RS-232 compatible serial I/O port provides computer control of the MM-3 and monitoring of the Morse training features.

Packet



PK-88 Packet Radio TNC

Unique operating features with a proven hardware and software design make AEA's PK-88 your best choice in packet radio--now with MailDrop, an 8KByte efficient personal Mailbox. The PK-88 also allows multiple single frequency QSO's, digipeating and networking. It's a superb value, packed with all the most needed packet radio features such as direct interface capability with NET/ROM and TCP/IP. In addition to all the features of a "standard" TNC, the PK-88 offers features not found in any other TNC:

- WHYNOT command - Shows reasons why some received packets are not displayed.
- "Packet Dump Suppression" - Prevents dumping unsent packets on the radio channel when the link fails.
- CUSTOM Command - Allows limited PK-88 customization for non-standard applications.
- Enhanced MBX command- Permits display of the data in I- and UI-frames, without packet headers and without packet headers or retried frames.
- Enhanced MPROTO command - Suppresses display of non- ASCII packets from Level Three switches and network nodes.

Multi-Mode

PK-232MBX Multi-Mode Data Controller

With over 40,000 units sold worldwide, the PK-232MBX is the world's leading multi-mode data controller. Combining all amateur data communication modes in one comprehensive unit, the PK-232MBX offers Morse Code, Baudot, ASCII, AMTOR/SITOR 476 and 625, HF and VHF Packet, WEFAX receive and transmit, TDM, as well as commercial standard NAVTEX automated marine information services.

All software is on ROM.

- 20 front panel status and mode LED indicators
- RS-232 compatible
- Exclusive SIAM™ Signal Identification and Acquisition Mode
- TDM Time Division Multiplex decoding
- PakMail™ mailbox with selective control of third-party traffic
- FAX printing - supports most printers
- Two radio ports
- Host mode for efficient program control of the PK-232MBX
- KISS mode for TCP/IP networking protocol compatibility
- 32K RAM lithium battery-backed
- Many features for the digital SWL

Antenna Tuners

AT-300 and AT-3000 Antenna Tuners

For tuning perfection, choose AEA's AT-300 (300 watt) or AT-3000 (3 kW) antenna tuners. Quality and exceptional engineering are built-in for maximum performance and long operating life.

The low-pass design provides more harmonic attenuation for lower TVI and allows matching to a much wider range of antenna impedances than common high-pass designs.

The AEA tuners feature a frequency compensated dual-movement SWR meter for ease of tuning with a front panel power range switch. Minimal SWR is achieved by inductors with 18 (AT-300) and 20 (AT-3000) taps. AEA's exclusive patent pending CAM switch design on the AT-3000 provides accurate tuning. The built-in front panel antenna switch allows you to easily select two unbalanced (coax-fed) antennas, a dummy load or a balanced antenna.

Advanced Electronic Applications, Inc. 2006-196th St. SW/P.O. Box 2160 Lynnwood, WA 98036 206-775-7373
Specifications subject to change without notice or obligation. Dealer inquiries invited. Copyright 1990.

The following APlink stations operate 24 hours a day (unless noted) on the (Mark Carrier) frequencies listed below each station:

CALL	SELCALL	SYSOP	LOCATION
9K2EC	NKEC	MOSHIN	SAFAT,KUWAIT
7035 14072 14079	18102 21081 21079 24925 28072		
9K2DZ	NKDZ	ABDUL	SAFAT,KUWAIT
14072 14074 18102	21072 28072		
AH6D	AAHD	PAUL	AIEA(HONOLULU),HI
14068.5 14069.5 14070.5 14077.0	14071.5 14072.5 14073.5 14074.5 14075.0 14075.0		
DL0YB	DLYB	WERNER	DASSENDORF(HAMBURG)GERMANY
14080	(2000- 1000Z)		2108 (1000-2000Z)
DU9BC	DUBC	FRED	DAVAO CITY,PHILLIPINES
14072.0 (24HRS)	7023	(MORNINGS)	
FE1JPY	FJPY	HENRY	ANGERS, FRANCE
14070.89	(BEAM HEADINGS CHANGE)		
	EVEN WEEKS 1300-2200Z		
	ODD WEEKS		1900-0100Z
	WEEKENDS		1300-0100Z)
FK8BK	FKBK	LOUIS	NOUMEA,NEW CALEDONIA
	14070		(0800-1300Z MON-SAT)
G4SCA	GACA	JOHN	PLYMOUTH,ENGLAND
3587.5 3589	7035 14081	7036	14070 14070 .5 14071.5 14072 14077 (1300-2200Z)
HL9TG	HLTG	GARY	CAMP HUMPHREYS, KOREA
14073.5			
K1UOL	KUOL	BOB	BETHEL,CT
14071.5 (DAYS)		7077 (NIGHTS)	
K2PEQ/4	KPEQ	BILL	FORT LAUDERDALE,FL
14079 (1100-2300Z)			
K7BUC	KBUC	DEL	PHOENIX,AZ
7047.5 7071	10140	14071.5	14073.5 14074 14075
KB1PJ	KBPJ	DAVID	BOSTON,MA
14069.5 14070.6	14071.5	14072.5	14073.5 140 74.5 18102.5 21074.0 28125.0
KE5HE	KEHE	JIM	HEARNE, (COLLEGE STATION),TX
3625 7071 18102.5 21072.5	7072.5 21074	1014 0.5 2812 5	10142.5 14070.5 14071.5 14072.5 14073.5
KK4CQ	KKCQ	HARVEY	PENSACOLA,FL
14070.5			
LU1LDS	LLDS	PONZIO	PASO DE LOS LIBRES ,ARGENTINA
14072.3	(2200-0200Z)		
N0IA/7	NNIA	BUD	LAS VEGAS,NV
1400 -0200Z	(DAYS)		
3625 7071.0	10140.5	14070.5	14072.5 21072.5 21074.5 28125
0200-1400Z	(NIGHTS)		
3625 3627	7047.5	7071	7072.5 10140.5 14072.5 28125
N6EQZ/7	NEQZ	TED	RENTON (SEATTLE),WA
3625 7071 21072.5 21074.5	7072	14070.5	1407 2.5 14073.5 14075.5 14076.5
ND6D/MM2	NNDD	JERRY	
14069 (WHEN VESSEL AT SEA)			
OA4CK	OACK	LIMA,PERU	
14080			
OZ2FAR	OFAR	JORGEN	FARUM,DENMARK
14076			
PA0QRS	PQRS	PIET	KRIMPEN(ROTTERDAM),NETHERLANDS
3581 3586	7034	7037	14070 14071 14072
PA0RVR		PRVR	PAPENDRECHT,NETHERLANDS
14071	(PARTTIME)		
PJ2MI	PJMI	JOSE	CURACAO, NETHERLANDS ANTILLES
14077.8		(1000- 1200 AND 2200-0100Z)	
SU1ER	SUER	EZZAT	HELIOPOLIS (CAIRO),EGYPT
14076		(1800Z,FRI- 0800Z,SAT)	
TG9VT	TGVT	JOHN	GUATEMALA CITY,GUATEMALA
14068 14069	14074	18102	21074

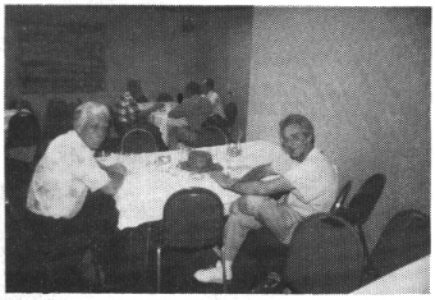
Continued on page 22

MORE RTTY Dinner and Hospitality Suite pictures from Dayton 1990

L. to R. Clark, W9CD, Mel, K0PFX, and Steve, K4CJX. RTTY hospitality suite. Dayton 1990

L. to R. Ed, W3EKT, and Barry, W3FV. Two very active Contesters. Ed recently has been operating from station W3LPL. RTTY hospitality suite. Dayton 1990

L. to R. Ray, VE3UR, Bob, VE3JAN, John, VE3JWB, Dick, K0VKH, and Bill, W0LHS. RTTY hospitality suite .Dayton 1990



Forground, L. to R. Paul, AH6D and Wayne, NZ4W. RTTY hospitality suite. Dayton 1990

1990

CQ/RTTY JOURNAL World - Wide RTTY DX Contest

Starts 0000 UTC Saturday - Ends 2400 UTC Sunday

September 29-30, 1990

NOTE: RULE CHANGES and NEW OPERATING CLASSES !!!!

I. Announcing: The Fourth Annual CQWW RTTY DX Contest, Co - Sponsored by the RTTY Journal.

II. Objective: For amateurs around the world to contact other amateurs in as many CQ Zones and countries as possible using the digital modes.

III. Contest Period: 0000 UTC September 29 to 2400 UTC September 30, 1990. The total contest period is 48 hours, but no more than 30 hours of operation are permitted for single operator stations. The 18 hours of OFF time can be taken any time during the contest period, but OFF periods may NOT be less than Three (3) hours in length. All ON and OFF periods MUST be clearly noted in the log and summary sheets.

(a) Multi-Operator and Multi-Multi stations may operate the entire 48 hour period.

(b) A Single Operator MAY operate more than the 30 hours, but only the FIRST 30 hours will count toward their Official Score. (This allows rarer DX to give their multiplier to more stations)

NOTE NEW OPERATOR CLASSES!!!

IV. Operator Classes:

1. Single Operator, All Band and Single Band. One person performs all operating and logging functions. Use of spotting nets, DX Alert Packet Systems, telephone etc. is NOT permitted.

2. Single Operator Assisted, All Band Only. One person performs all operating and logging functions, however the use of DX spotting nets or any other form of DX alerting assistance IS allowed. The operator may change bands at any time.

3. Multi-Operator, Single Transmitter. All band entry only. More than one person operates, logs, checks for duplicates, use of a spotting net, etc.

a. Only one (1) transmitter and one (1) band permitted during the same time period (defined as ten (10) minutes). Once the station has begun operation on a given band, it MUST remain on that band for 10 minutes; listening time counts as operating time.

Exception: One --- and only one--- other band may be used during the same time period if -- and only if --the station worked is a new multiplier. Logs found in violation of the ten (10) minute rule will be automatically reclassified as multi-multi to reflect their actual status.

4. Multi-Operator, Multi-Transmitter. All band entry only. No limit to the number of transmitters, but only one (1) signal per band permitted.

a. All transmitters must be located within a 500 meter diameter or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

V. Entry Categories: Single Operator entries may enter either;

(A) All Band. (B) Single Band.

NOTE: An all band entry may also submit his/her log for a particular band as an entry for single band. EXAMPLE: W0LHS works all bands as a single operator during the contest and does extremely well on 10 meters. He could enter as an ALL BAND entry and also enter his 10 Meter log as a SINGLE BAND entry for 10 meters. Single Operator Assisted and Multi Operator entries can only enter all band only.

VI. Modes: Contacts may be made using Baudot, ASCII, AMTOR (FEC & ARQ) Packet. (No unattended operation or contacts through Gateways or Digipeaters.)

VII. Bands: 80, 40, 20, 15 and 10 meters. Don't forget that VE stations cannot operate below 7.100 and that the Novices/Techs cannot operate below 28.100.

VIII. Valid Contacts: A given station may be contacted only ONCE per band regardless of the Digital MODE employed. Additional contacts are allowed with the same station on each of the other bands as well.

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

X. Countries: The ARRL and WAE DX Country lists will be used. NOTE: THE U.S.A. AND CANADA COUNT AS COUNTRY MULTIPLIERS. EXAMPLE: The 1st US State and Canadian area you work not only count as a multiplier for the state or area, but also count as a country multiplier for each band.

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

XII. Multiplier Points: One (1) multiplier point for each U.S. state (48) and each Canadian area (13) on each band. One (1) multiplier point for each DX country in the ARRL and/or WAE lists on each band. NOTE: KL7 and KH6 are country multiplier ONLY and NOT state multipliers. One (1) multiplier point for each CQ zone worked on each band. A maximum of 40 per band.

NOTE: Canadian areas are VO1, VO2, VE1 N.B., VE1 N.S., VE1 P.E.I., VE2, VE3, VE4, VE5, VE6, VE7, VE8 N.W.T AND VY YUKON.

XIII. Final Score: Total QSO points times the total multipliers equals the total claimed score.

XIV. Contest Entries and Logging Instructions:CQWW RTTY DX logs and forms should be used to facilitate scoring and checking. All Logs Must:

1. Show times in UTC.
2. All sent and received exchanges are to be logged. (Callsign, RST, Zone, Country, State/VE, points claimed)
3. Indicate State/VE area, Zone and Country Multiplier only the FIRST TIME it is worked on EACH BAND.
4. Use a separate log sheet for EACH BAND.
5. A check list of duplicate contacts for EACH BAND (DUPE SHEET)
6. A MULTIPLIER Check Sheet for each band.
7. An overall SUMMARY SHEET showing total QSOs, Points, Zones countries and states/VE areas worked.
8. Each entry must be accompained by a sign declaration that all contest rules and regulations for amateur radio in the country of

operation have been observed.

Contest forms are available from CQ, the RTTY Journal and the Contest Director. RTTY Journal address is 9085 La Casita Avenue, Fountain Valley, CA 92708. Please include a large SASE with 2 units of US first class postage or IRCs.

XV. Disqualifications: Operating in an unsportsmanlike manner, manipulating scores or times to achieve a score advantage, or failure to omit duplicate contacts which would reduce the overall score more than 2% are grounds for disqualification. The use of Non Amateur means such as telephones, telegrams, etc., to elicit contacts or multipliers DURING the contest is unsportsmanlike and the entry is subject to disqualification. Actions and decisions of the Contest Committee are official and final.

XVI. Awards: Plaques will be awarded to the first-place finishers in each of the operator classes. Certificates will be awarded to second and third. Certificates will be awarded to the first-place finishers in each of the U.S. and Canadian call areas. Certificates will be awarded to the first place finishers in each DX Country. In addition the Highest Scoring Novice/Technician will receive a certificate.

XVII. Deadline: All entries must be postmarked NO LATER than December 1, 1990. An extension may be given if requested. Logs should be mailed to: Roy Gould, KT1N, CQWW RTTY DX Contest Director, P.O. Box DX, Stow, MA 01775, U.S.A.

XVIII. Plaques (Donors):

Single Operator, All Band:
World - **AEA, Advanced Electronic Applications ,Inc.**
North America - **HAL Communications Corp.**
South America - **Association of DX-EX, Ecuador**
Europe - **HAL Communications Corp.**
Oceania - **RTTY Journal**
Asia - **N5JJ Memorial**
Africa - **Roy Gould, KT1N, Roland Belanger, N1FTD**
Single Operator, Single Band:
Single Band- High Score **Kunihiko Fujii, JH1QDB**

Single Operator Assisted:
World - Open
Continents - Open

Multi Operator Single Transmitter:
World - **AEA, Advanced Electronic Applications, Inc.**
Continents - Open

Multi Operator, Multi Transmitter:
World - Open
Continents - Open

There are many plaques looking for sponsors, Single Band, a specific country, Multi Op by continent etc. If you are interested in sponsoring one of these catigories contact the Contest Director.

de Roy, KT1N ■

AMTOR APlink station listings Continued from page

V51NH VVNH NICO WINDHOEK,NAMIBIA
14070

V73AT VVAT TIM KWAJALEIN, MARSHALL ISLANDS
14069.5 14070.5 14071 .5 14073.5 14074.5 14075.5 14077 14079
14081 (0800-0130Z)

VE3IUI VIUI ROBIN BURLINGTON(TORONTO),ONT,CANADA
14068. 5

VE8DX VIDX BOB POND INLET,NWT,CANADA
7073.5 7077 14071.5 14072.5 14073 .5 14077 21071.5
21075 21079.8 28071.5 28075 28080

VK2AGE VAGE GORDON GOONELLABAH,NSW,AUSTRALIA
7045 140 75 14077 21076
(0200-0700Z) BEAMED NA 0700-1030 ASIA
1030- 1200 NA 1200-1800 EU
1800-1900 NA 1900-000 EU)

VK2EHQ VEHQ PETER KULNURA(SYDNEY),NSW,AUSTRALIA
14070.5

VK6YM VKYM HERVE BECKENHAM(PERTH),AUSTRALIA
14081
(1400- 2300Z BEAMED EU ,2300-1000ZPAC)

VU2DPG VDPG DIETER NEW DEHLI,INDIA
14079 (1400-0100Z) 28079 (0100- 1400Z)

W1FYR WFRY ALAN GILSUM, NH
7071 7075.5 10140.5 14070.5 14071.5 1407 2.5 14075 21074

W7DCR WDCR GARY LA PINE,OR
3625 7071 7072.5 10141.5 10142.5 14070. 5 14072.5 18102.5 21072.5
28075.5

WA1URA/9 WURA FRANK GRABILL (FORTWAYNE),IN
3732.8 7071 7075.5 70 76.9 10140.5 10141.5 14070.5 14071.5
14073.5 14074.9 21076 28123

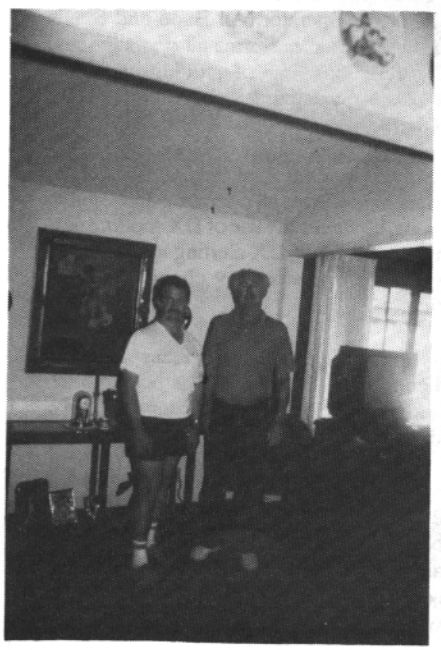
WA8DRZ/6 WDRZ CRAIG REDWOOD CITY (SANFRANCISCO),CA
(10140.5 10141.5) 30M TEMP.
14068.5 14069.5 14070.5 14071.5 14072.5 14073.5 140 74.5 14075.5
WB7QWG/9 WQWG BOB INDIANAPOLIS,IN
7072.5 7075.5 14071.5 14072.5 14073.5 21071.5 28075.5
WB8APD WAPD DAVE WILLOUGHBY (CLEVELAND),OH
14071.5

ZF1GC ZFGC FRANK BODDENTOWN, GRAND CAYMAN ISLAND
14069.5 14070.5 14071 .5 14072.5 14073.5 14074.52 14075.5

ZL1ACO ZACO NEILL PUKEKOHE (AUCHLAND), NEW ZEALAND
14070.5 14072. 5 14073.5 14075 14075.5 14076

PLEASE SEND ALL COMMENTS/CHANGES TO WA8DRZ

Partial group picture of RTTY dinner. Dayton 1990



Ian ,VK2DNJ visited with me (W6IWO) earlier this year. Ian was on holiday.

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)

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FOR SALE: ST-6000 $350.00, Apple monitor $50.00, monitor $20.00, 28 ASR (3 speed) W/Dome Reperf $150.00, Model 19 (mint) $100.00, 2 Model 43 (both) $75.00, Sonar 2M FM & PS $50.00, Computer Hutch $50.00. K3KD (215) 754-6286

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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

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.

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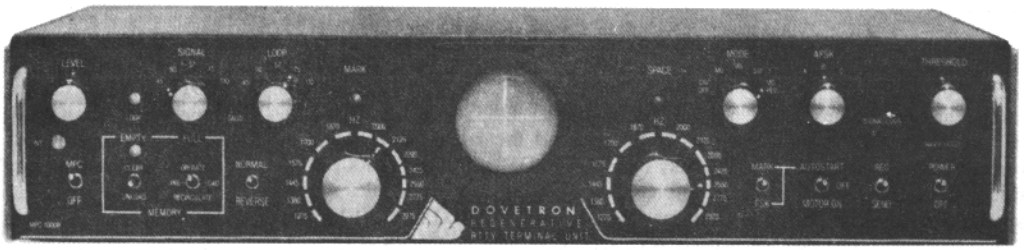

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