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RTTY JOURNAL

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FREE BROCHURES AND INFORMATION

DX

Next month in this column there will be a new DX columnist. I shall mearly whet your appetite for things to come by telling you that he lives in the midwest and is an avid DXer.

Some of you have written to say that you could not tell when your subscription to the RTTY JOURNAL expired. Well, if you will look at the back cover (the one with your name and address on it), I'll let you in on a big secret. Your expiration date is on the top line--right above your name and callsign. It will be a four digit number...as:12-85 which means the subscription will run out with the December 1985 JOURNAL.

DX NET

About a month ago Juan, LU4EGE and I decided to put a DX net on the RTTY bands. We started with being on the air on 21.090 on Sundays from 2200 to 2400 Z. We managed to have some nice stations join with us. W9CD, Clark; W6MI, Alfonso; OA4CK, George; JA1ACB, Gin; JA1EOD; TI2AGL; HC5KA, Ted; LU5DLE, Norby; N2CTK, Bob; W2JGR Jules; WB3FIZ, Pat and XYL Elizabeth, KA3GIK; W5WF, Bill; DF1UP; JA1JDD, Taka; ZS6CC, Hofie; XE1AFU; and YV5-DFI were among the stations checking in. We decided however, that Sunday football and honey-dos kept a lot of RTTYers off of the air so on January 6,1984 we opened the net on Friday on 14.090 from 2400 Z to 0300 Z. The first week we had check-ins as follows: LU5DLE, Norby; VE1ASJ, Andy; K4SBA, Lev; JA1JDD, Taka; KC7GO; VE7-FHF; W1GKJ, Norm; KA1ZX, Greg; KB6UI, Dick; YV5AGF, Jose; KI4X, Tony; KC7OM - VE7PU, Bill; JA5TX, Mitsuo; N6EQW, Berfie; W7THX, Toby; TI2AEB; TI2JIC and a PW8 station I goofed on his call.

Please feel free to join Juan and me on this net. It seems to be a good one. On the thirteenth of January, I was in Las Vegas at SAROC and could not find anyone to lend us their shack for the net so Juan carried it on alone.

I found that there are a lot of us on RTTY that want to exchange QSL cards but have no way to do so as the DX BURO does not have a current address for that call, it is a commemorative call, or it has not been placed in the call book. There are many ways to ruin your day besides finding a nice DX station to chat and then finding no way to QSL with the station.

Here are some of the DX stations and their QSL managers/address:

5T5JD is now operating as FO8JD-Jose Dumoulin, POB 85, Papeete, Tahiti, French Polynesia.
AP2MQ- Mansur Quereeshi, 7 Union Park Samanabad Labore, Pakistan.
A7XD-Mike Smedal, POB 4747, Doha, Qatar, Arabian Gulf.
CP6EL Alfredo Pauker, POB 470, Santa Cruz, Bolivia, South America.
CP6IH-Roberto, Box 163, Santa Cruz, Bolivia, S.A.
C31MM- Bruno Clase, Casa Pascol, La Massana, Andorra.
C6ACA-Barry Packington, St. Andrews School, Box N7546- Nassau, Bahama Is.
C6ADW-Mike Wallen, Box 6333, Nassau, Bahama Is.
EA6BG Mateo Amengual, M. Canals 40, Palma, Mallorca, Balearic Is.
EA6HH- Paco POB 852, Palma, Mallorca, Balearic Is.
EA6HY Gabriel Capo Caimari, Varet 15, La Puebla, Mallorca.
EA8RU Pedro Del Castillo, POB 357, DR Chil 3, Las Palmas, Canary Is.
EL2AG-POB 3049, Monrovia, Liberia, West Africa.
CE3CEW-Maria Establier Wending, Napolean 3027, Santiago, Chile.
YV6BTM Ernesto-POB 693 Ciudad Bolivar Venezuela.
EL2AT formerly CN8AT c/o American Consulate, APO New York,NY 09155.
FC2CJ-Marcel Poli, Box 223, Ajaccio, Corsica.
FP8DF- Pierre Cloony, Box 41, St. Pierre et Miquelon Is.
GD3FKW- Ken Ball, Oxenford Cottage, St. Lawrence, Jersey, C.I.
GD3YED- Rich Hillsboro, Selbourne Dr, Douglas, Isle of Man.
GI4AHP-Ted Sloan, 3 Adelaide Pk, Belfast Ireland BT96FX.
GW3EHN Oscar Thomas-76 Waun Road, Swansea, W. Glamorgan England SA42QN.
HH2MC-Dan, POB 501, Port au Prince, Haiti.
HK2ECH- Fernando, POB 1791, Cucuta, Columbia.
HP1PM-Peter, Box 603035, El Dorado, Panama.
KV4AQ- Dr. Randall James-Christianslot, St. Croix, V.I. 00820.
LU1HCE-John Coppens, Casilla de Correeo 103, 5152 Villa Carlo Paz, Argentina.
LU5DLE-Norby Jat, 589 West Capitol City, Buenos Aires, Argentina.
LU4EGE- Juan Rydzik, Box 97, 1000 Buenos Aires, Argentina.
OA4BR-Zip Zillon, Box 538, Lima, Peru
OD5JW- Wassim, POB 14-5449, Beirut, Lebannon.
OX3FG-Walther, Box 177, Julianhaube, Greenland 3920.
PP7AF-Juarez, POB 113, Maceio, Alagoas 57000, Brazil.
PZ1BF- G. Lichtveld, POB 184, Paramaribo, Surinam.
SP3CMX-Mieczylaw Czarnecki, Walczaka 13/110, 66-400 Gorzow, Poland
SV0AP-Kent Parsen, POX 711, APO NY 09291.
TI2AEB-Armando, POB 85670, San Jose, Costa Rica.
TI2DO-Jorge, Morava, Costa Rica.
TI2HP-Humberto Perez, Apartado 952, San Jose, Costa Rica.
TF3SB-Doddi Bjarnason, Skeejagata 17, 105 Reyjavik, Iceland.
TU2HH-Alain, POB 1347, Abidjan, Ivory Coast.
UT5RP-Dima, Box 373, Odessa, Ukraine.
VP2AR-Hickey, POB 550, Antiqua, West Indies.
VP2SV-John Caldwell, Palm Island, St. Vincent, West Indies.
VS6CT-via KB9N, RR4, Box 86, Kankakee IL 60901.
YB0ACB-Warren, Box 2282, Jakata, Indonesia.
YB2AG-Hari, Box 88, Semarang.Indonesia.
YB2BLI-Niko Indarto, POB 27, Yogyakarta, Indonesia.
ZE1CE-Taffy, POB 300, Gatooma, Zimbabwa, Rhodesia.
ZF1HJ-Jack, POB 1215, Grand Cayman, B.W.I.
ZP5CD- Claudio Del Conte, Box 1337, Asuncion, Paraguay.
XT2AU-Enno Bussmann-Quinol, POB 385, Ouagadougou/Haute Volta, West Africa.

Please send me any additions or corrections to the above list to be published at a later date.
Dee, N6ELP, POB RY, Cardiff, CA 92007

packet radio part one by lynn taylor, w6UUT

How often have you tried to get on your favorite RTTY channel, only to discover that the channel is busy? Maybe you want to ragchew, but you don't want to interrupt a net or a picture being sent or information from a mailbox. Ideally, what we all want is a channel with lots of activity, but that is never busy when we want to use it. Sound impossible? Read on!

Last night, I came into the shack and fired up the rig. I read the mail for a little while, then decided to call WD6FPY and see how he was today. I established contact, and we talked for several minutes--while the other QSO continued--with perfect, armchair copy, no interference to either QSO, and without changing frequencies.

This neat little trick is just one of the advantages of Packet Radio. In this article, I will briefly explain what a packet is, define the relevant terms, and talk about the history of packet networks. Next time we'll talk about how to choose some packet gear and getting a packet station on the air, and chat about some of the exciting things planned for the near future.

A 'packet' is conveniently sized piece of information taken from an incoming stream of data. To this data is added some information, which makes a generalized packet look like this:

:frame:address:control:data:check:frame:

The :frame: at the beginning and end simply mark the ends of a packet. The :address: is the network address of the station the packet is addressed to (and usually the address of the sender). :control: is used by the packet equipment to tell how the packet is to be handled. The :data: field is of interest to us, since that is where our information is carried. :check: is used to detect errors in the packet, and the closing frame ends the packet. Some packets may not have all these parts, depending on the protocol used.

Protocol is simply a standard way of establishing contact and communicating with another station. A typical RTTY protocol might start 'K5WTA DE WB6UUT -- ARE YOU AROUND JAKE? - K K K ' to establish contact, a number of exchanges starting with both call signs and ending with K K K', and a sign off ending with 'SK'. Basically, the packet protocol does the same thing, but it is handled automatically by the packet equipment. Additionally, the protocol allows the packet stations to share a channel by not sending data until the equipment has enough to justify a packet (two seconds is a long transmission), and allows error-free communication by re-sending data when the receiving station has not acknowledged reception of a good packet. There is a standard protocol for Amateur use, called AX.25.

Operating packet radio requires special gear, just like RTTY. In place of the RTTY Terminal Unit, we use a Terminal Node Controller (TNC). TNC's are microprocessor based devices which are programmed to talk to the user and translate his desires to the protocol used by other stations in the network. The TNC has some memory to buffer data to and from your terminal, and to store packets which may be needed to be resent. Other terms you may see used are PAD (Packet Assembly-Disassembly facility) and IMP (Interface Message Processor), all three terms are interchangable. TNC is the most popular in Amateur usage.

A network is simply two or more TNC's which are capable of communicating with each other. The method of communicating, radio or otherwise, is isolated from the user. In other words, to access the network, I don't care particularly how the various stations communicate, as long as they do. It is the concern of the TNC to handle such details as transmitter keying and identification.

If you think about it a bit, you will realize that some tasks that the TNC performs (like keying radios) are affected greatly by the type of channel used, while other tasks (like building, checking and acknowledging packets), are not concerned with the communications medium. This leads to the idea of a layered protocol. The most common layering scheme, called the International Standards Organization Open Systems Interconnect model (ISO OSI model) defines seven layers, each concerned with a different issue. Level 1 is called the Physical Layer, which in our case handles transmitter keying and modulation. Level 2 is the Data Link Layer, which takes our (possibly unreliable half-duplex channel and divides it up into reliable channels by sending and acknowledging packets. Level 3, called the Network Layer, takes packets destined for stations we can not hear, and figures out how to relay them through other stations (and higher levels are designed for more sophisticated uses, such as distributed data bases, where a number of computers appear to be a single system, and are not considered part of the communications network.

Each layer defines a protocol for communicating with others on it's own layer, or 'peer-to-peer' communication. The actual communication is handled by passing the information to a lower layer (until it reaches layer 1), and eventually back to the original layer. This allows changes in any one layer to be made without changing the other layers. For example, the standard AX.25 layer 2 protocol shares the same layer 1 as the VADCG and the experimental TAPR Dynamic Addressing protocol (in fact, the TARP TNC handles both AX.25 and VADCG protocols). Also, we could use AX.25 on the phone lines, or use different modulation and speeds without modification to layer 2.

The techniques used in Packet networks are not new. Consider how the postal system operates: you write a letter and place it in a mailbox. Periodically the 'stored' messages in the mailbox are picked up, transported, sorted, routed, transported again, and finally delivered. No one would dream of reserving a special

PACKET RADIO CONTINUED

path for a letter, your 'packet' of mail takes up the minimum amount of space needed, and only while in transit. On the other hand, most electronic communications systems assign a channel (radio or landline) to be used for the duration of the communication, even while both users are silent (like the postman waiting at your door in case you want to send a letter).

In August, 1964 the Rand Corporation suggested a fully distributed packet network to meet U.S. Air Force requirements for a survivable communications system with no critical sites or equipment. Not only did the proposed system achieve this goal, but it was projected to be very economical. The Air Force did not follow up this report, and the ideas were largely ignored until later.

In 1967, the Department of Defense Advanced Research Projects Agency (ARPA) was sponsoring research at a number of facilities across the United States. Linking these sites together provided an excellent environment for a protype network. ARPANET went on line in January 1969, and proved the feasibility of packet networks. This network is still in operation.

Radio first became involved when the University of Hawaii began looking for a way to link its' various campuses to a central computing center. The ALOHA network went on the air in 1971, paving the way for other radio based networks, both terrestrial and via sattelite.

Doug Lockhart, VE7APU, and a group of Canadians added the word Amateur to Packet Radio on May 31,1978. The pioneering work of Vancouver Amateur Digital Communications Group opened this mode to many Amateurs, and encouraged others to follow. The Amateur Radio Sattelite Corporation (AMSAT) and the Amateur Radio Research and Development (AMRAD) have been very influential in setting standards, while the Tucson Amateur Packet Radio Corporation (TARP) has developed state-of-the-art hardware and the firmware to run VADCG, AX.25 and (soon) TARP Dynamic Addressing protocols.

Now that we have seen where the Amateur Packet Radio has been, and discussed some of the terms and issues involved, we are ready for next month's article about building a TNC and putting it on the air, operating packet radio, trans-continental VHF communication and mailboxes in space.

RELAY SWITCHING REVISITED CONTINUED
from last month

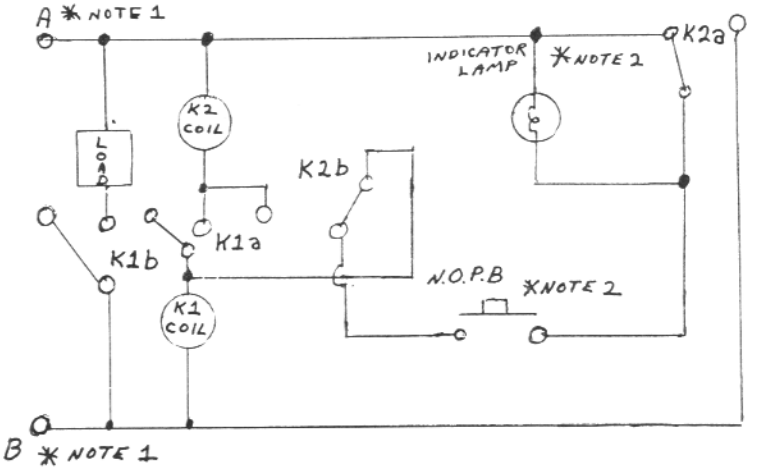
BY: Ralph Irish, WA8GDT
POB 122
Utica, MI 48087

With the "New and Improved" circuit, The commonly available Potter and Brumfield plug-in relays can be used to great advantage.

CAUTION: All of these relays are NOT wired the same at the bases. Different voltages on coils may have different base wiring connections. Do not assume that all Octal-based relays have the same pin connections.

NOTES:

1. Voltage at points A & B is twice the coil rating of relays.
2. Suggest where possible use illuminated push buttons to reduce the chances of a circuit being energized without you being aware of it.



XE1LL, Art Cohen with Ralph, WA8GDT at Dayton in 1983 wanting Barb to attend.

MSO'S

by *Dick Uhrmacher,* K0VKH

INSTALLMENT # 3

Now that we know where some of the MSO's are, and how to get on their frequency, let's devote some time to learning the 'ins and outs' of their command structure.

Although some MSO systems have slight variances from system to system, many of the 20 meter MSO's utilize the command format designed and implemented by the HAL Communications Corporation, and exhibited by the HAL MSO/MPT/DSK Systems. As you move from system to system, it is a good idea to obtain hard copy of each systems "Help" feature, which will list each command, and a brief explanation of what each command will produce when executed by the MSO.

Let's remember one thing about using MSO's, before we get started. LISTEN on the MSO frequency BEFORE transmitting or activating the MSO! Don't be responsible for ruining someone elses QSO, interfering with their use of another MSO, or their general use of the frequency. The MSO's are there 24 hours a day, and waiting a few minutes for a clear frequency is nothing less than courtesy on everyones part!

Ask if the frequency is clear, and if so, identify your station and send the appropriate ACCESS CODE with two (2) CR/LF's. It's a good habit to learn! The MSO should immediately reply to you, providing its sign-on response.

With the exception of the ACCESS CODE, and the FOUR N's (NNNN), ALL commands sent to the MSO's MUST be fully "left justified". This simply means that commands must be RECEIVED by the MSO on the left-most margin. As simple as this sounds, I note many aborted sttempts to utilize the MSO's, caused by remote users who fail to insure that their commands are left-justified. Left justification is easily accomplished by sending at least two (2) carriage return/line feeds (CR/LF) IMMEDIATELY PRIOR to sending the command. Various keys on different types of equipment cause the CR/LF to be sent. In some it is the "RETURN" key; in others the "ENTER" key; and in others the "NEW-LINE" key. Additionally, it is MANDATORY that a CR/LF be placed immediately AFTER each command, and the command will not be executed unless this CR/LF is received by the MSO. Placing two CR/LF's prior to each command, and one after, will make execution of the command a sure thing. Two examples follow. In this first example, we will ask the MSO to provide its "HELP" command, which will list each command available to the remote user.

1. Activate your transmitter.
2. CR/LF
3. CR/LF
4. .HELP (CR/LF)
5. Turn off your transmitter.

Let's look closely at the above sequence of events. If it is possible, place your transmitter in 'Mark Hold' for a couple of seconds when first activating your transmitter. Then send the two CR/LF's followed immediately with the command. Do not allow your transmitter to go off-the-air between these sequence of events, as that will allow noise, QRM, QRN, etc., to creep into the MSO demodulator, and possibly interupt the left-justification of your command.

Line four (4) has two important items contained in it. EVERY command to the MSO, (with the exception of the ACCESS CODE, and four N's -NNNN), MUST be preceded by a "period", (.) This "period" causes the command word, (HELP in this case), to become distinctive from all other text received by the MSO. If the "period" is not received by the MSO, the command word will be ignored. Secondly, note the CR/LF immediately after the command. The command will NOT be executed unless this CR/LF is received. When you turn off your transmitter after this CR/LF, the MSO should immediately reply with the HELP Command information.

The second example differs only slightly from the first. At times, propagation conditions will be marginal between your station and the MSO. To assist the MSO demodulator in "getting in the mood", add the line of RY's prior to sending the two CR/LF's, as follows:

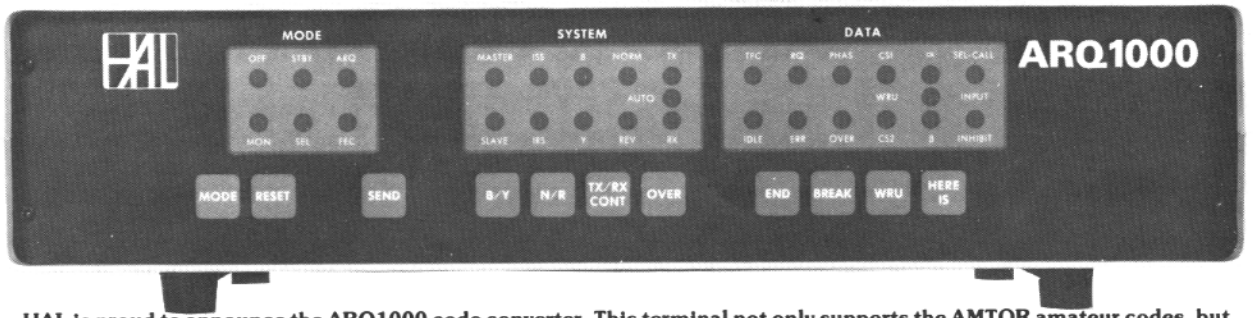
1. Turn on your transmitter.
2. RYRYRYRYRYRYRY (Just a few will do the trick)
3. CR/LF
4. CR/LF
5. .SDIR (CR/LF)
6. Turn off your transmitter.

The MSO should be replying with the DIRECTORY, which is a listing of the files it presently has stored in its memory.

Next, I think it's time to describe a bit about the real reason that MSO's exist, the ability to store and retrieve files left in the MSO. All of the information presented above, concerning left-justification, CR/LF's. etc., apply to writing and reading messages, with some minor variations. First of all, each message in the MSO has a name, and we call it a "FILENAME". The filename is originated by the person who originates the message, and can be up to 16 characters in length. Since a long filename takes longer to transmit, the shorter the filename the better.

For example, the filename ABC:XYZ would indicate that ABC has a file waiting for him, written by XYZ. A more explicit filename can be used.

AMTOR RTTY

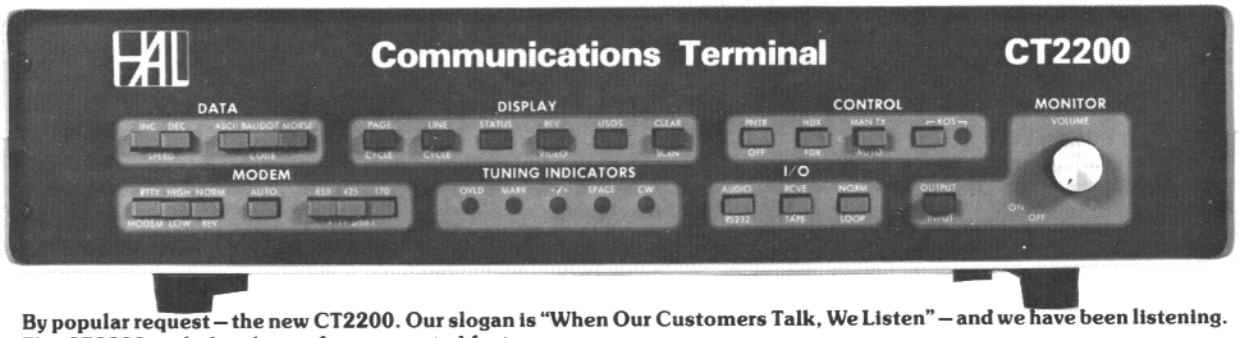


HAL is proud to announce the ARQ1000 code converter. This terminal not only supports the AMTOR amateur codes, but meets ALL of the commercial requirements of CCIR Recommendation 476-2. The ARQ1000 can be used with present and previous generation HAL RTTY products. In fact, any Baudot or ASCII full duplex terminal at data rates from 45 to 300 baud may be used with the ARQ1000. Some of the outstanding features of the ARQ1000 are:

- Send/receive error-free ARQ, FEC, and SEL-FEC modes
- Automatic listen mode for ARQ, FEC, and SEL-FEC
- Meets commercial requirements of CCIR 476-2
- By-pass mode for normal RTTY without changing cables
- Programmable ARQ access code, SEL-CAL code and WRU
- Programmable codes stored in non-volatile EEPROM
- Keyboard control of normal send/receive functions
- 30 Front panel indicators and 11 control switches
- Interfacing for loop, RS232, or TTL I/O
- "Handshaking" control for printer and keyboard or tape
- Self-contained with 120/240V, 50/60 Hz power supply
- Cabinet matches style and size of CT2200 and CT2100
- Table or rack mounting
- Built-in DM170 modem option available
- Encryption option available for commercial users
- 8½" × 17" × 10½"

The ARQ1000 is commercial-quality equipment that will give you the outstanding performance you expect from a HAL product. Write for full details and specifications of the ARQ1000.

BY POPULAR REQUEST



By popular request – the new CT2200. Our slogan is "When Our Customers Talk, We Listen" – and we have been listening. The CT2200 includes these often requested features:

- New AMTOR connections for use with ARQ1000
- Keyboard programming of all 8 "brag-tape" messages
- Programmable selective call code
- Expanded HERE IS storage for a total of 88 characters
- Non-volatile storage of HERE IS, "brag-tape," and SEL-CAL code
- 3⅝" × 17" × 10½"

All of the proven CT2100 features are retained. Some of these features are:
• Tuning scope outputs (a MUST for AMTOR) • Built-in demodulator for high tones, low tones, "103", or "202" modem tones • 36 or 72 character display lines • 2 pages of 72 character lines or 4 pages of 36 character lines • Split screen or full screen display • Baudot or ASCII, 45 to 1200 baud • Full or half duplex • Morse code send/receive at 5 to 99 wpm • Send/receive loop connection • Automatic transmit/receive control (KOS) • Audio, RS232C, or Loop I/O • On-screen tuning and status indicators • Clearly labeled front panel switches, not obscure keyboard key combinations • Separate convenient lap-size keyboard • Internal 120/240, 50/60 Hz power supply • Attractive shielded metal cabinet

In addition, an update kit is available so that all CT2100 owners can update their CT2100's to include CT2200 features. The kit even includes a new CT2200 front panel! Rather than making a proven product obsolete, HAL put even more behind the buttons. Pick up a CT2200 at your favorite HAL dealer and join the RTTY fun. Write for our full RTTY catalog.

HAL COMMUNICATIONS CORP.
Box 365
Urbana, IL 61801 (217) 367-7373

THE RTTY MAILBOX CONTINUED

A file dealing with information concerning ASCII could have a filename as:ASCII INFO - Any descriptive name can be used, however, in the interest of saving on-the-air time, the shorter the better.

After receiving a copy of the DIRECTORY from the MSO, the remote operator can easily READ one of the files listed. (Some may be password protected, but more about that later). You READ a file from an MSO exactly the same way you asked for the HELP command, except that you add the FILENAME tothe command. For example:

1. Turn your transmitter on.
2. CR/LF
3. CR/LF
4. .READ ABC:XYZ (CR/LF)
5. Turn your transmitter off.

The MSO should now be outputting the file ABC:XYZ to you. Note that the only real difference in this command, as compared to the HELP command, is that we have used the READ command, added the FILENAME, and moved the CR/LF to immediately after the filename.

But, you say, I'm chomping at the bit to write a message to my friend in St.Louis. Well, everything you've learned so far is directly applicable to the WRITE command as well. First, pick a FILENAME that your Missouri friend will recognize. If you are W6YYY, and he's WØUUU, then the filename UUU:YYY should tip him off in a hurry. Here's the sequence of events:

1. Turn on your transmitter.
2. CR/LF
3. CR/LF
4. .WRITE UUU:YYY (CR/LF)
5. The text of your message goes here. It can be any length necessary to convey your message. REMEMBER: You must INDENTIFY your station within the time limits prescribed by FCC rules, so limit your message in all cases to LESS than 10 minutes in length, as the MSO must also comply with those rules!
6. .ENDFILE (CR/LF)
7. Turn off your transmitter.

There's not a lot of difference in WRITE'ing a file, than READ'ing one. Be sure to place that CR/LF immediately after the filename, and note that there is a mandatory "space" between the WRITE command, and the start of the FILENAME; and, line six contains the command that tells the MSO that you're finished WRITE'ing your message, and to close the file, or write it to disk.

At this point, the MSO should be responding to you with the FILE STORED message. If for some reason there is no response to your ENDFILE command, there's a good chance that QRM, QRN, improper command for formatting, etc., has interfered with it, and your message has been received by the MSO, but NOT written to memory. Don't panic and close the MSO, or ask for the DIRECTORY, just re-send the ENDFILE command again. Turn your transmitter on, send two CR/LF's and .ENDFILE. If it fails to respond after two or three ENDFILE's, then something else has happened, and there's a good chance that your message has been lost. Your only recourse in this case is to start the WRITE sequence over again.

In wrapping up this session, you must always remember to close the MSO. Remember, there are usually more than one MSO on each frequency, and if more than one is left open, EACH will respond to commands given on the frequency, and the resulting chaos is unusable to anyone. (If you should find two MSO's open at the same time, the only recourse is to send the EXIT command, which should shut both MSO's off. Then you can re-open the MSO of your choice and utilize it). Here's the sequence for closing the MSO:

1. Turn on your transmitter.
2. CR/LF
3. CR/LF
4. .EXIT (CR/LF)
5. Turn off your transmitter.

At this point the MSO DEACTIVATED message should be issued by the MSO. If the EXIT command is not received and acted upon by the MSO the first time, send it again. And finally, if the MSO DEACTIVATED message is never received by the remote station, turn on your transmitter and send four N's (NNNN). This is a second "off code", and should shut the MSO off. No response is given by the MSO when four N's are utilized, and the four N's should only be used as a last resort to insure that the MSO is closed. Some MSO SYSOP's have the four 'N' feature disabled, and only the EXIT code will close the MSO.

It should be noted that the remote MSO user MAY NOT use imbedded MSO commands in the file text to be stored, nor use the four 'N' letter sequence.

That's it for this time. Next issue we'll talk about file protection, passwords and other MSO features of interest. Good luck, and have fun on RTTY!
DE DICK, KØVKH

TERMINAL PROGRAM FOR TRS80/100

BY Walt E. Kaelin, KB6BT
12332 Saratoga Drive
Saratoga, CA 95070

This is a basic program that allows the use of the TRS80/100 as a terminal for Amateur use on AMTOR with the AMT-1, the ARQ-1000 or packet radio with the TAPR board.

Here is a description of the application and the program:

The program is designed to run on the TRS80/100 and its' close cousins from NEC and Olivetti. The RS232 port is set to 110 baud ASCII. If used, for instance with an AMT-1 AMTOR terminal you can operate from 12V DC in a boat, on field day or any other mobile operation.

The "GRAPH" key is used as a second control key, since the control key is already tied up in the AMT-1. The following command table illustrates the point:

Graph I sends the ID "DE WALT KB6BT"
Graph Q sends "THE QUICK BROWN FOX"
Graph T sends the local time and date
Graph C sends a CQ call
Graph F Sends a prepared DO.file
Graph S clears the screen
Graph E exits the program and returns to the menu.

Certain lines that contain the

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ICOM introduces the IC-R71A 100KHz to 30MHz superior-grade general coverage receiver with innovative features including keyboard frequency entry and wireless remote control (optional).

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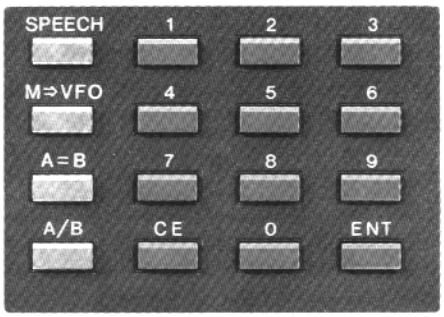
Infrared
Remote

Passband tuning, a deep IF notch filter, adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.



Keyboard Entry. ICOM introduces a unique feature to shortwave receivers... direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

VFO's/Memories. A quartz-locked rock solid synthesized tuning system provides superb stability. Three tuning rates are provided: 10Hz / 50Hz / 1KHz.

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All stated specifications are approximate and subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. R711283

by GEORGE

HITS & MISSES

GEORGE HAMMON, WA6CQW
14215 Pecan Park Lane Space 73
El Cajon, CA 92021

VIC CLARK

On November 25,1983, Vic Clark, W4KFC suddenly died. The tragic news of the ARRL Presidents death brought a shock wave thru all of the Amateur Radio fraternity. I had the good fortune to discuss long range planning of the League, including RTTY, with Vic. I wrote to him many times on behalf of RTTY and always received a thank you note with his comments. We chatted at ARRL conventions and his keen interest in all aspects of Amateur Radio was contagious.

QST January 1984 issue has a fine tribute to Vic written by Dave Sumner K1ZZ. Dave quotes Hal Steinman, K1ET with an eloquent tribute, "Vic Clark was a big man who never made anyone feel small."

220 MHZ

The FCC's Office of Science and Technology now suggests that the 220-225 MHz band be the subject of an FCC notice of proposed rule making. The use of this band is in question. I have written on this topic many many times, "USE IT OR LOSE IT."

ANTENNA DATA

Starting January 3,1984 Antenna data collected on forms 714 and 610 will be eliminated. Form 854 can be obtained from FCC Consumer Assistance Branch, Gettysburg, PA 17325, any district office or from the ARRL.

COMPENSATION

The House and Senate passed the FCC authorization funding. Just prior to Thanksgiving, Senator Barry Goldwater K7UGA, dropped his opposition to any fee's. This resulted in a fee permitting ammendment. The ARRL will now develope its' own volunteer examining program.

SCHOLARSHIP

The ARRL foundation has established a scholarship endowment fund to honor Senator Barry Goldwater, K7UGA. If your contribution is $25.00 or more your name will be listed in QST. For $100.00 or more your name and call will appear in QST and you will also receive a signed photograph of Senator Goldwater. A contribution of $1,000.00 or more entitles you to, in addition to the above, your photo will appear in QST. Contributions of any size are solicited with ARRL as the adminstrator.

CALLSIGNS

The prefix hunters will enjoy this: California Amateurs will be allowed, during the month of July 1, 1984 to August 31,1984, the use of either "23" or "84" in place of their "6" to commemorate the 23rd Olympiad in Los Angeles, California in 1984. My call would be WA23CQW or WA84CQW. This designation will be allowed only for the period of time listed above and only for Californians living in California during this time.

SAROC

The RTTY JOURNAL gang will make the drive to Las Vegas and my column next month will have a complete story on the fun, new equipment and how good or bad we did on the tables.

So long for now, George, WA6CQW

NOTE: George will certainly have some tales (tall and not so tall hi) about his return journey from Las Vegas. Seems George and XYL Jeanne had car problems so turned back and stayed in Las (Wages) another day. That's the reason they gave us at any rate. See Georges column next month for the real reasons (who needs a reason to have another days vacation)?

Mary had a little lamb,Its fleece was black as ink..And everywhere that Mary went, The lamb would go I think! It learned to copy code one day..And thus became a Ham..Which really is remarkable.. A Ham made out of lamb!!! By Jim Thurston, W4PPB.

TRS80/100 CONTINUED

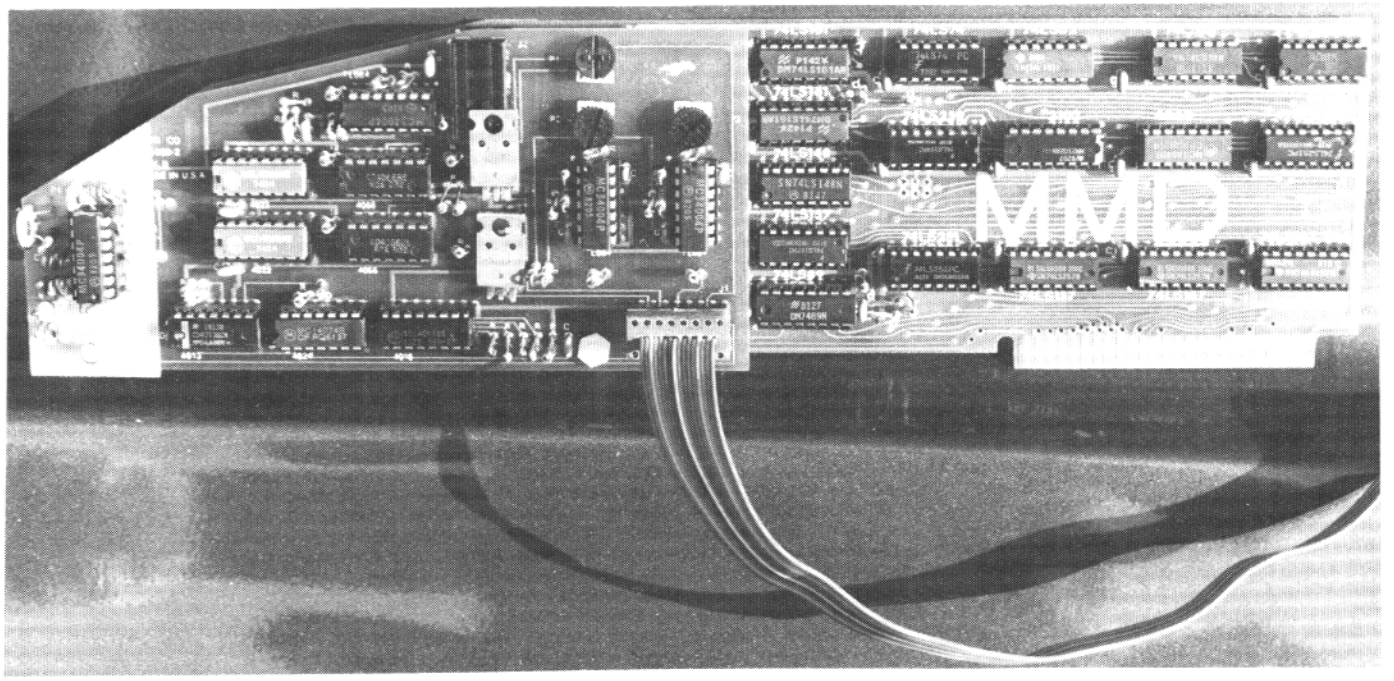
callsign must be customized, and of course, you can transmit live from the keyboard!

Two improvements are planned; to scroll incoming messages and to allow them to be saved to the buffer.

```
5 'PACKET TERMINAL PROGRAM FOR TRS80/
     100.DEC 7 83. KB6BT
10 CLEAR 2000
20 MAXFILES=4
30 ON COM GOSUB 300
50 PRINT@80,"GRAPH E TO EXIT "
80 OPEN "COM:37I1E " FOR IMPUT AS1
90  OPEN  "COM:37I1E" FOR OUTPUT AS2
95 COM ON
100 A$=INKEY$:    IF A$="" THEN 100
102  IF  A$=CHR$(142) THEN 121 'GRF I
     ID
104  IF  A$=CHR$(147) THEN 122 'GRF Q
     QBF
105  IF  A$=CHR$(135) THEN 125 'GRF T
     TIME
106  IF  A$=CHR$(132) THEN 123 'GRF C
     CQ
107  IF  A4=CHR$(130) THEN 126 'GRF F
     TX FILE
108  IF  A$=CHR$(143) THEN 129 'GRF E
     EXIT
110  IF  A$=CHR$(139) THEN 124 'GRF S
     CLS
120 PRINT#2,A$;:GOTO100
121  PRINT  #2," DE WALT KB6BT ":GOTO
     100
122  PRINT  #2," THE  QUICK  BROWN  FOX
     JUMPS  OVER  THE  LAZY  DOGS  BACK
     1234567890 TIME S ": GOTO 100
123  PRINT  #2,"CQ  CQ  CQ  CQ  DE  WALT
     KB6BT":GOTO 100
124 CLS:GOTO 100
125    PRINT    #2,DATE$;"#PST#";TIME$
     :GOTO 100
126 GOSUB 400:GOTO 100
129 PRINT #2,CHR$(27):MENU:END
300 C$=INPUT$(1,1)
310 PRINT C$;
330 RETURN
400 CLS:FILES
410    PRINT@    240,CHR$(27);"p";TEXT
     FILES  ONLY  (.DO)";CHR$(27);"q";
420  PRINT@  280,"FILE  TO  TRANSMIT:":
     INPUT F$
430 OPEN F$ FOR INPUT AS 3
440 IF EOF (3) THEN 490
450 A$=INPUT$ (1,3)
460 PRINT #2,A$;
470 GOTO 440
490  PRINT #2,CHR$(10):CLOSE 3:RETURN
```

Enjoy de Walt KB6BT

ANNOUNCING MMD RTTY PACKAGE



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USE OF REAL TIME CLOCK	NO	NO	NO	YES
CRYSTAL CONTROLLED AFSK	YES	NO	NO	YES
ANY SHIFT FROM 21 TO 900HZ	NO	NO	NO	YES
80 COLUMN VIDEO**	NO	NO	NO	YES
USE OF EXTRA MEMORY)64K***	NO	NO	NO	YES
DISK SAVE WITH NO LOSS OF DATA	NO	NO	NO	YES
ON-LINE EDITOR (KEYBOARD)	YES	NO	NO	YES
SEL-CAL-MAILBOX	WRU ONLY	NO	NO	YES
SELECTABLE TEXT WINDOWING RX/TX	NO	NO	NO	YES
VARIABLE BANDPASS FILTER	NO	NO	NO	YES
VARIABLE MARK TONE-21 TO 4500HZ	NO	NO	NO	YES
DIGITAL RECEIVE FILTERS	NO	NO	NO	YES

* APPLE IS TM OF APPLE COMPUTER
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30 words $3.00, additional words 5 cents each - Cash with copy. Deadline 1st of month for following month.

JVC 4800 COLOR TV Camera and reel to reel color portable recorder, works but have FLAWS. Trade for glass RTTY. W3MED, Scott, Annopolis 301-757-1991.

FRED SAYS:"CASH IN those unused teleprinter repair parts." Trade too. Send SASE for list of parts, supplies gears, manuals, tools, toroids etc. Fred Schmidt, N4IT, TYPETRONICS, Box 8873, Ft. Lauderdale, FL 33310. After 9PM call 305-583-1340.

WORLD RADIOTELETYPE FREQUENCY LIST 9th edition by Joerg Klingenfuss (FRG). New list of 2463 frequencies monitored in 1983. Frequency, call sign, name of station, ITU country symbol, times of reception and other details are included. All types of RTTY stations are listed-press, aero, weather, telex, military, diplomatic, maritime and others. New 9th edition now has hundreds of commercial SITOR-SPECTOR (AMTOR) and FEC stations listed. 86 meteorological stations on 279 frequencies are included. 438 RTTY abbreviations. Authorized by Klingenfuss in USA. $12.95 PPD USA and Canada. Send for free RTTY list of publications. Universal Electronics, Inc., 4555 Groves Road, Suite 3A, Columbus, OH 43232.

WANTED:TELETYPE spare parts and/or unused Teletype equipment and subassemblies. Any quantity, model 28, 35, 37, 40 43. Send list for best offer to Morris Precision Parts Co., Box 157, Morris Plains, NJ 07950 or call 201-993-9669.

FOR SALE:TELETYPE model 32ASR with 60 wpm gears ready for Amateur use. All machines in good condition $425. KL7HDY. 907-563-6209.

MICROLOG ACT-1 with NEW AMTOR UPGRADE including all manuals and cables in perfect condition $850 UPS-PD. L.H. Connelly. 305-842-1861.

MUST SELL! MINT CONDITION Model 28ASR teleprinter with typing re-perforator loop PS, and all manuals. Asking $375 but make me an offer as I am moving to Florida soon! Call Mark Holland, W6JOB @ 213-821-9185, 4038 Moore St. Los Angeles, CA 90066.

BUMPER STICKER- "My Favorite Radio Station Is (your call sign)." Display on car, in shack, anywhere! Nice gift for Ham friends. Only $3. ARPRESS, 1556(R) Hicks Pike, Walton, KY 41094.

IBM-PC/ASCII/RTTY/CW All speeds, full featured, split screen, buffers beaucoup, and more - color or mono SASE for full details. Emile Alline, NE5S, 773 Rosa, Metairie, LA 70005.

AMTOR-AMTOR-AMTOR-AMTOR-AMTOR-AMTOR The new HAL ARQ1000, Error Correction terminal, will provide no compromise AMTOR capability for your RTTY station. This full featured unit must be seen in operation to be appreciated. For full details write or call Dick, KØVKC, DIALTA Amateur Radio Supply, 212-48th St., Rapid City, SD. 605-343-6127. All of your HAL and INFO-TECH equipment needs. Our prices can't be beat!

WANTED:REINKER KITS for Model 14, Model 15, and Kleinschmidt machines. Any quantity. Also need replacement felts. Bill Johnson, N5KR, 1808 Pomona Dr., Las Cruces, NM 88001. 505-522-2042.

DISK DRIVES the HAL DS3100 Now you can have almost unlimited mass storage with your DS3100ASR! Over 326,000 bytes on two diskettes with the new HAL DSK3100! If you are into traffic handling, then the DSK-3100 will make those long traffic runs a snap for you. Call or write Dick, KØVKC, DIALTA Amateur Radio Supply, 212-48th St., Rapid City, SD 57701. 601-343-6127. All of your HAL and INFO-TECH equipment needs. Our prices can't be beat!

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BARN FULL OF USED 28, 33 and 35 machines AS IS. Lots of used parts (some for 43). Two GE Terminet 1200 RO printers without covers, with new parts and service manual all 3 for $300. Consider trades or offers. Aaron Dickey, K7GCP, 51 North 850 West, Orem, UT 84057. 801-225-0678 or 227-9666.

ANYONE WITH INFO for RTTY Program for "Microkit-8/16" microcomputer system, or "Microdisk" system by Futuredata Computer, please contact Denis Mahoney, VE6ZX, 9208 81st St, Edmonton, Alberta, Canada T6C 2W3.

I would appreciate any info concerning hookup requirements, TU's, interfaces etc., needed to utilize my M-35 TTY with a Commadore 64 and Collins S line. G. Fisk, K6TAM, 676 Pleasant Valley, Rd, Aptos, CA 95003.

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CONTESTS-CONTESTS-CONTESTS-CONTESTS

For those of you that missed the rules of the RTTY JOURNAL/73 World Championship Contest in the September issue of the RTTY JOURNAL, please send a SASE to: RTTY JOURNAL, POB RY, Cardiff, CA 92007. We will send you the rules and dupe sheets. The contest will be held on February 25,1984 from 0000Z to 2400Z. Hope to see all of you in there this year. Will look for you de DEE, N6ELP.

B.A.R.T.G SPRING RTTY CONTEST 1984

WHEN--- 0200 Z, Saturday, March 24, 1984 until 0200 Z Monday, March 26, 1984. The total contest period is 48 hours but not more than 30 hours of operation is permitted. Time spent as listening periods counts as operating time. The 18 hours of non-operating time can be taken at any time during the contest period, but off periods may not be less than 3 hours at a time. Times ON the air must be summarised on the Summary sheet.

WHO--- There will be separate catagories for single operator, multi-operator and SWL stations.

BANDS--- 3.5, 7.0, 14.0, 21.0 and 28.0 Mhz Amateur Bands.

STATIONS--- Stations may not be contacted more than once on any one band but additional contacts may be made with the same station if a different band is used.

COUNTRIES--- The ARRL DX COUNTRIES LIST will be used, and in addition, each W/K, VE/VO and VK call area will be counted as a separate country. NOTE: W/K, VE/VO and VK count once each only for QCA purposes.

MESSAGES--- Messages will consist of:
a. Time (GMT) This must consist of a full four figure group and the use of the expression "Same" or "Same as yours" will not be acceptable.
b. RST and Message number. This message number must consist of a three figure group starting with 001 for the first contact made.

POINTS--- Points can be claimed as follows:
a. All two-way RTTY contacts with other stations within one's own country will earn two (2) points.
b. All two-way RTTY contacts with other stations outside one's own country will earn ten (10) points.
c. All stations can claim a BONUS of 200 points for each country worked, including their own. Note that any one country may be counted again if worked on a different band but continents are counted once only.
NOTE: Proof of contact will be required in cases where the station worked does not appear in any other contest log received or the station worked does not submit a check log.

SCORING---
a. Two-way contact points times the total countries worked.
b. Total country points times 200 times the number of continents worked (max. 6).
c. Add a. and b. together to obtain the final score.

Sample calculation:
Exchange pts (302) x countries (10)
Country pts (10) x 200 x continents (3)
a. and b. added together to give score.

3020
6000
9020

LOG AND SCORE SHEETS--- Use a separate sheet for each band and indicate all times on the air. Logs to contain: Date, Time GMT, Callsign of station worked, RST and Message number received and points claimed. NOTE: Logs received from SWL must contain Callsign of station heard, report sent by that station and callsign of station being worked. Also date and time GMT that the QSO was logged. Incomplete loggings are not eligible for scoring and will be classified as check logs. The summary sheet should show the full scoring, the times ON the air, address for correspondence, and in case of Multi-operator stations, the names and call signs of all operators involved with the operation of the station during the contest.

ALL LOGS MUST BE RECEIVED BY MAY 31, 1984 IN ORDER TO QUALIFY.

SUMMARY AND LOG SHEETS--- Are available from the contest manager at the address shown below as follows:

In the United Kingdom, on receipt of a large (A4) stamped addressed envelope. All other countries outside the United Kingdom require no envelope but will need 2 IRC's to cover the cost of postage.

SEND YOUR CONTEST OR CHECK LOG TO:

Peter Adams, G6LZB
464 Whippendell Road
Watford
Herts,
England WD1 7PT

The judge's decision will be final and no correspondence will be entered into in respect of incorrect or late entries and all logs submitted shall remain the property of the British Amateur Radio Teleprinter Group.

Certificates will awarded to the leading stations in each of the three groups, the top station in each continent and to the top station in W/K, VE/VO and VK call area.

ADDITIONAL NOTES--- If a contestant manages to contact 25 or more different countries on TWO-WAY RTTY during the contest, a claim may be made for the QUARTER CENTURY AWARD (QCA) issued by the British Amateur Radio Teleprinter Group, and for which a charge of 3 dollars (US) or 15 IRC's is made. Holders of existing QCA should indicate and list any new countries to be added to their existing records. Make your claim at the same time that you send in your log.

However, in view of the high volume or work which contest manager will have to deal with, it will not be possible to prepare and dispatch any new awards or to up-date any existing records until the final results of the contest have been evaluated and published.

Additionally, if any contestant manages to contact stations on TWO-WAY RTTY within each of the continents and the BARTG contest manager receives either a contest log or a check log from each of the six stations concerned, a claim may be made for the WAC award issued by the RTTY JOURNAL. The necessary information will be sent to the JOURNAL after the contest results have been evaluated and dispatched and the RTTY JOURNAL will issue the WAC award directly.

*CONTESTS*CONTESTS*CONTESTS*CONTESTS*CONTESTS*CONTESTS

13th S.A.R.T.G. worrld-wide RTTY contest----1983

#	CALL	QSO	POINTS
1.	ON4UN	337	567,000
2.	UT5RP	276	307,230
3.	SM6ASD	205	263,885
4.	DK8NG	186	249,165
5.	HB9HK	203	220,950
6.	LU1HCE	218	211,530
7.	OZ1CRL	188	193,600
8.	DJ6JC	205	180,960
9.	LU5DFH	159	130,325
10.	KA3GIK	114	116,250
11.	LU3DJS	143	114,560
12.	W4CQI	130	105,600
13.	KB2VO	125	105,525
14.	OH8TA	133	91,665
15.	OK3KJF	141	88,200
16.	SM5FUG	124	77,805
17.	JA6GIJ	102	70,380
18.	SM7AIA	83	55,120
19.	K6WZ	79	44,490
20.	WB4UBD	136	44,200
21.	SM7LSU	72	37,680
22.	DL1VR	55	36,180
23.	SM7MO	74	34,800
24.	LA7AJ	63	32,250
25.	VE7YB	63	31,600
26.	GW3EHN	76	31,500
27.	XE1VV	70	29,785
28.	OK1MP	62	29,700
29.	AA4CK	47	27,080
30.	W7MI	55	26,445
31.	OE2SNL	64	23,520
32.	OK1AWC	64	22,200
33.	DF5BX	54	21,470
34.	W2KHQ	46	20,650
35.	OH2CQ	83	18,285
36.	SM5AAY	67	18,200
37.	WØBWJ	47	17,050
38.	VK2BQS	43	15,625
39.	JA1BYL	43	14,725
40.	W3KV	36	14,420
41.	Y33TK	45	14,310
42.	Y82ZN	51	12,480
43.	DK5KJ	41	12,040
44.	OZ4DZ	40	11,205
45.	SM7ABL	36	10,665
46.	OZ7XE	41	10,125
47.	VE3KQS	37	9,975
48.	K4AGC	30	8,875
49.	DF6ZY	37	8,800
50.	ZM3AAX	30	8,455
51.	OZ1GRF	37	8,190
52.	SM6AEN	31	7,875
53.	SM7BGE	34	6,660
54.	SM7LVX	31	6,100
55.	C21BD	33	5,940
56.	WØLHS	27	5,830
57.	TI2DO	29	4,880
58.	SM5RE	27	4,200
59.	Y55ZF	32	3,344
60.	F3IJ	19	2,795
61.	VE3IJ	19	2,795
62.	HA2MV	19	1,755
63.	KE6T	11	1,485
64.	DJ1XT	12	1,430
65.	PA3BVT	8	640
66.	W8TCO	4	120
67.	SP2FF	3	90

CLASS B MULTI-OPERATORS

1.	OHØTTY	308	344,960
2.	OH2TI	231	219,560
3.	OH2AH	133	70,750
4.	OK3KGI	88	44,390
5.	HA3KHB	32	6,555

SHORT WAVE LISTENERS

1.	OZ-DR 2135	241	270,500
2.	Y2-2814/M	149	123,370
3.	OK1-23185	125	106,560
4.	NL-4483	112	86,790
5.	FE-3700	108	68,735
6.	DE1GMH	95	62,830
7.	J. Mathews USA	75	41,850
8.	DE1KWD	29	10,730
9.	DG7AK	33	8,140
10.	NL-5288-RØ7	16	1,285

Check logs from:W6JOX, PAØKHM and LA6OU

14th S.A.R.T.G. WORLD-WIDE RTTY CONTEST 1984 RULES

We have the great pleasure to invite you to join the 14th W/W RTTY Contest run by the Scandinavian Amateur Radio Teleprinter Group.

RULES:

TEST PERIODS: 1. 0000-0800 GMT Saturday August 18,1984
2. 1600-2400 GMT Saturday August 18,1984
3. 0800-1600 GMT Sunday August 19,1984

BANDS: 3.5 7 14 21 28 MHz.

CLASSES: a) Single operator
b) Multi-operator, single transmitter
NOTE: Logs from multi-operator stations must contain the names and callsigns of all operators involved.
c) SWL

MESSAGE: RST and QSO #

POINTS: QSO with own country five (5) points; other country in same continent ten (10) points; other continent fifteen (15) points. In USA Canada and Australia each call district will be considered as a separate country. The same station may be worked once on each band for QSO and multiplier credits. Only 2-way RTTY QSO's will count.

MULTIPLIERS: Use the DXCC List and each district in W/K, VE/VO and VK.
NOTE: Contact with a station which would count as a multiplier, must be found in at least 5 logs, or contest log from multiplier station must be received to be valid.

SCORE: Sum of QSO points X sum of multipliers.

SWL: Use the same rules for scoring, but based on stations and messages copied.

LOGS: Logs must be received by October 10,1984. The logs to contain: Band, Date, Time GMT, Call-sign, messages # sent and received, Points and Multipliers. Use a separate sheet for each band and enclose a summary sheet showing Scoring, Classification, call sign, Name and Address; in case of Multi-operator stations, the names or callsigns of all operators involved. Comments will be very much appreciated.

SEND LOGS TO; C.J. Jensen, OZ2CJ, POB 717, 8600 Silkeborg Denmark.

AWARDS: To the top stations in each class, country, W/K, VE/VO, and VK call district, if the number of QSO's is reasonable.

MPC-1000R BY DOVETRON

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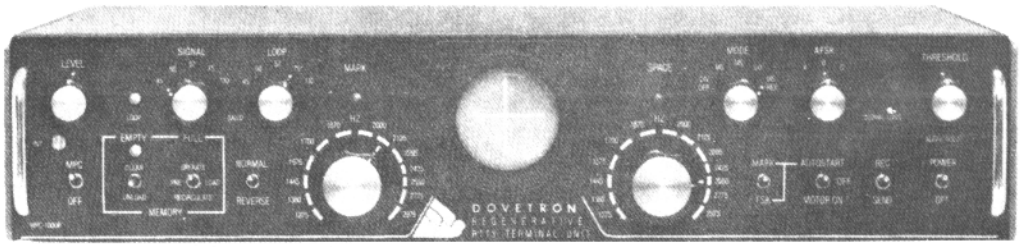

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