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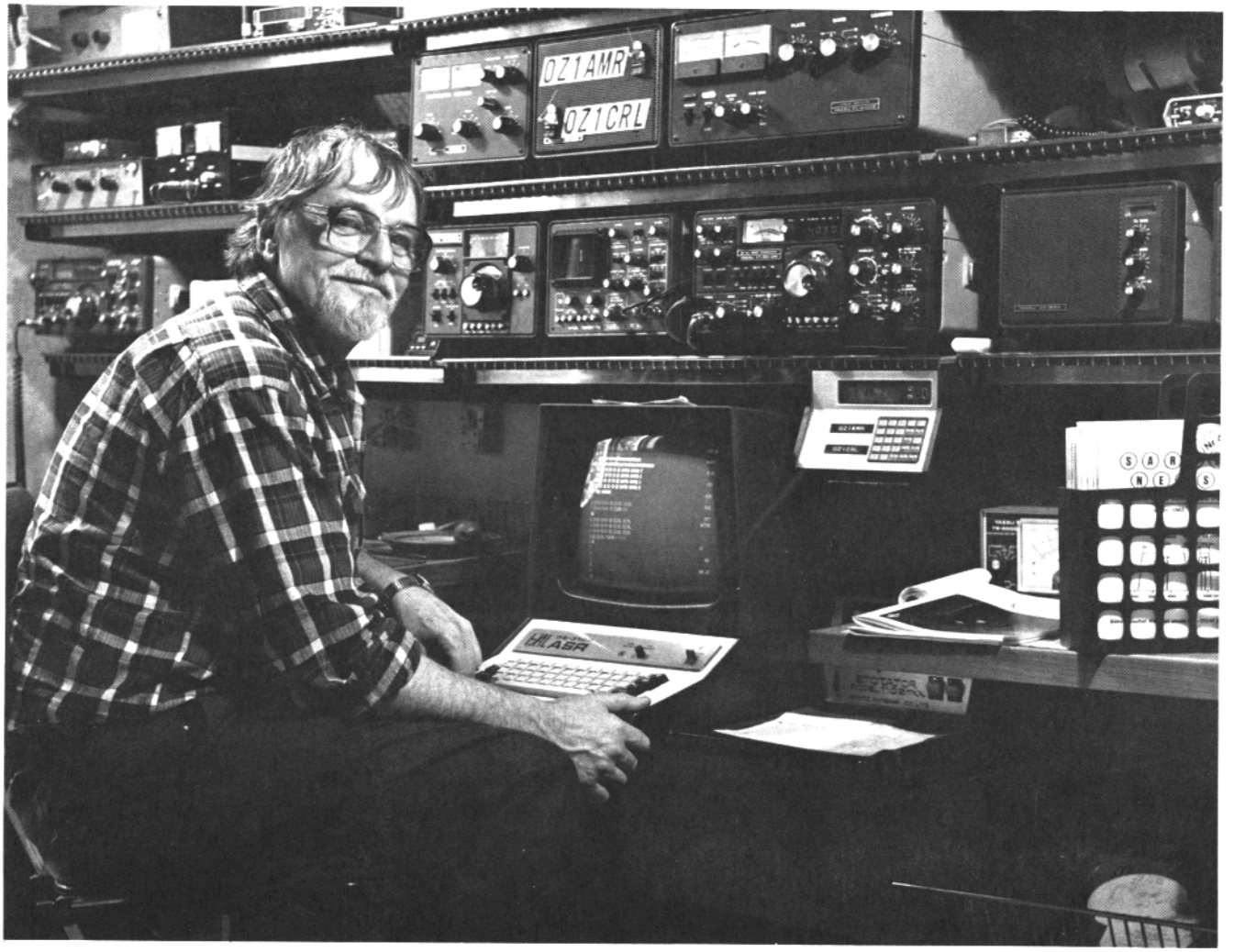
EXCLUSIVELY AMATEUR RADIOTELETYPE

VOLUME 32 NO. 9 NOVEMBER 1984 ONE DOLLAR



JORGEN, OZ1AMR OF DENMARK, PICTURE FROM WØLHS

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RTTY JOURNAL

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HITS & MISSES

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

by GEORGE

ARRL HANDBOOK

The new ARRL Handbook will be on sale by the time you read this. It will contain 1024 pages, 376 more than last year. The Handbook will sell for $16.00.

S. 2975

Elimination of willful or malicious interference with communications. S. 2975 will ammend the communications act of 1934.

This Bill, introduced by Senator Barry Goldwater, WA7UGA, is to clafy the prohibition of willful or malicious interference with authorized communications. The increase in willful interference has been duly noted by the Federal Communications Commission. This interference is not limited to Amateur frequencies. Land mobile services, police and fire have experienced this problem.

The Bill in total is as follows: "Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. Sec. 1. Section 331 of the Communications Act of 1934 as enacted by Section 120 of Public Law 97-259 is redesignated as section 332.

Sec. 2. Part I of Title III of the Communications Act of 1934 as ammended by Sec. 1, is ammended by adding at the end thereof the following new section: "willful or malicious interference" Sec. 333. No person shall willfully or maliciously interfere with, or cause, interference to any radio communication.

Sec. 3, Section 501 (a) of the Communications Act is ammended by inserting "1" before the word 'any' and adding at the end thereof a new subsection '(2)' as follows: '(2)' any electronic, electromagnetic, radio frequency or other device or component thereof within the control of any person accused of violating section 333 of this act or rules prescribed thereunder, and capable of emitting the radiation alleged to violate such section or rules, may, after written notice or an alleged violation, be seized by the United States when there exists resonable belief that seizure is necessary to prevent continued willful or malicious interference to any radio communications.

'Such equipment is subject to forfeiture to the United States if the operator is determined to have violated Section 333.'

"for purposes of this subsection, 'reasonable belief' shall be deemed to exist in but not limited to instances where continued interference is caused by use of the same or similar equipment by any person after that person has received written notice from the Commission alleging violation of Section 333 and requesting that the person ceases the actions alleged to constitute violation of such section until a final determination is made."

The FCC has indicated this amendment would not have a significant impact on present projected commission budgetary requirements.

There is only a limited amount of radio spectrum available, so we must ensure that it is used in the public interest. I know you will support Senator Goldwater in this matter. Write a short note to your Congressman and support Bill 2975.

I will close out my column for this month. The year has passed all too soon. The Los Angeles Olympics and the Fairbanks Equestrian Event in San Diego County were truly spectacular and lots of work for local Amateurs. Southern California hardly caught its breath when the San Diego Padres won the National League Pennant and 'almost' won the World Series. Padre mania has ruled this city for weeks. The weather is turning cool and I just received my Heathkit Christmas Catalog, which signals the holiday season is close at hand.

So long for now....George, WA6CQW

KAYPRO II CONTINUED FROM LAST MONTH

The CP-1's variable tuning feature, coupled with the RTCP software, makes it possible to copy weather broadcasts at 100 WPM and 850 HZ. shift plus press at 66/425 or maritime at 66/170. The combination of the CP-1, RTCP software and Kaypro II computer is not only suitable for Amateur use, but also for those SWL's who monitor RTTY signals. So, if you have been thinking of getting a 'serious' computer, the Kaypro II is worthy of consideration especially now that it can be utilized for Amateur Radio along with everything else it does.

THE "VSRTTY" SYSTEM

"VSRTTY" stands for a Very Small Radioteletype System which is battery powered and small enough to fit into a briefcase. It can store incoming messages and let you prepare outgoing messages prior to transmission. You cannot find the "VSRTTY" system in any catalog, but you can assemble one for yourself using the Kantronics Universal Terminal Unit and a Radio Shack Model 100 portable computer.

The Kantronics UTU permits any personal computer with an RS-232C port to send and receive ASCII, CW, Baudot or AMTOR signals through a VHF or HF transceiver. The UTU can operate from 60 to 132 WPM in Baudot and 110 to 300 baud ASCII.It has an AMTOR master slave, broadcast and listen modes, all in addition to Morse code.

The UTU receives audio from the transceiver and has hook-up's for microphone and push-to-talk. Scope outputs are available for tuning, although very precise tuning can be accomplished with the LED display. The computer connection has lines for

control signals, received and transmitted data and signal ground.

The Radio Shack model 100 portable computer has been on the market for about a year now and has been well received by business travellers, journalists, and others who need a small computer for word processing and business applications. In addition to an 8 line 40 character per line liquid crystal display, it has a TELCOM mode which permits the transfer of text files to other computers either directly or via the phone. TELCOM works with either an internal modem or the computer's RS-232C interface.

When the two units are connected, Telcom is selected from the Model 100's main menu. One of the model 100 options at this point is "STAT" function key 3. Pressing the function key and typing in '38N1E' configures it for 300 baud, 8 data bits per character, no parity, one stop bit and enables the XON/XOFF feature. The next step is to select "TERM", the terminal mode, function key 4. Now the two units should be communicating. Pressing "ENTER" (RETURN) on the model 100 will display the Kantronic's menu.

UTU menu's can scroll by rather quickly on the screen, but may be recalled by pressing function key PREV. This displays the previous screen. Pressing it again returns you to the last item received.

The model 100 terminal mode offers two other capabilities that may be used with the UTU: message uploading and downloading. Uploading allows the transmission of messages prepared off-line. The UTU only has a 32 character buffer, but can control its input from the external computer using XON/XOFF signals (enabled with Model 100's 'STAT" command.)

Incoming messages can be captured in the internal random access memory (RAM) using the downloading feature. The amount of text that can be held depends on the available RAM. A basic model 100 comes with 8K, but this can be expanded to 32K using plug-in RAM chips. If a small printer is available it can be used to print messages from RAM.

The UTU requires 12 volts for operation while the model 100 needs 6 v. The model 100 uses either 4 AA cells or an external supply. For portable use it should be possible to make up a 12 v. battery pack of nicad's or D cells, with a tap at 6 v, to power both units. The UTU draws about 200 mA in operation and the model 100 with its CMOS circuitry draws less.

There are many other units usable with the UTU. NEC markets a similar unit called the PC-8201A which has an almost identical TELCOM mode. The important ingredient is the ability to communicate through an RS-232C interface with parameters (baud rate, XON/XOFF, etc.) compatible with the Kantronics unit. So if you need a "VSRTTY" System, consider the Kantronics UTU and Radio Shack computer.

NOTES FROM ALL OVER DE DEE,N6ELP

ALfonso, OA4PO writes from Peru that he is now on AMTOR in modes A and B Autostart on 14.070 most days from 1800 to 2400 UTC. His selcall is OAPD. He is using a Kenwood TS-520 Mosley TA-33, Commodore 64 with AEA CP-1 and MBA-TOR-64. Alfonso will be on 6 meters when possible.

Henrick, OZ1GRF will soon become a DL or DK since moving from one of my favorite places--Gentofte, Denmark (my parents lived there), to Heinsberg, West Germany. He will be handicapped by a 25 foot antenna (local restrictions) but look for Henrick on the bands when condx are right.

John, KA6NYK and I had a party for visiting RTTYer Archie, G4OJJ at the house. RTTYers and non-Hams attended (yes, there are such things as non-Hams). PLEASE TURN TO AD SECTION.....

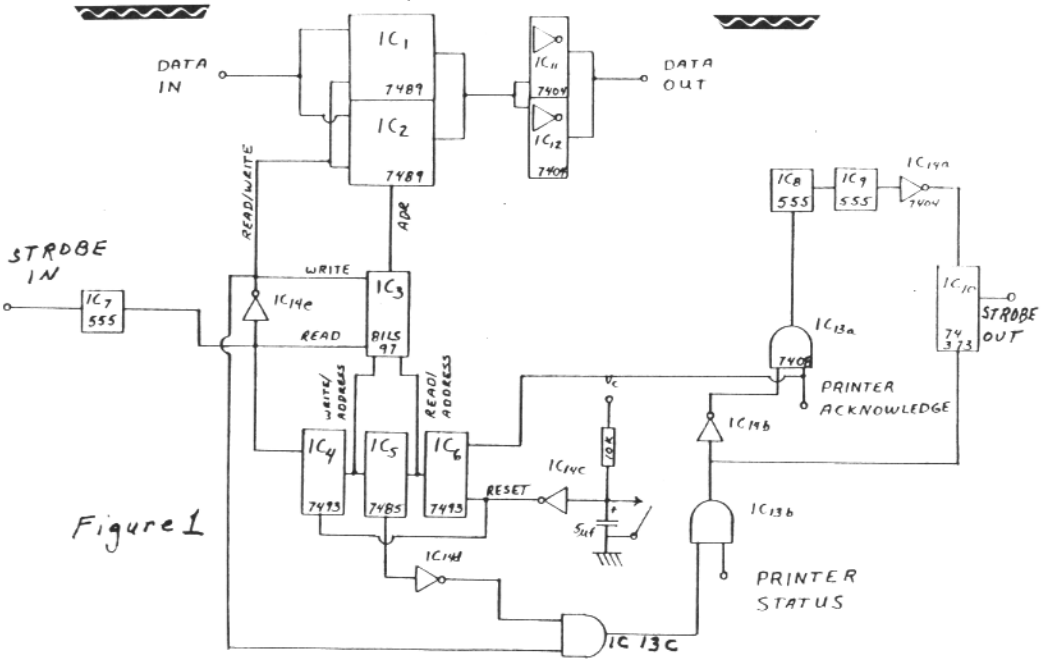


Figure 1

PARALLEL LINE PRINTER INTERFACE

MARK SPENCER
POB 5889
APO NEW YORK, NY. 09012

See Page 8 & 15.

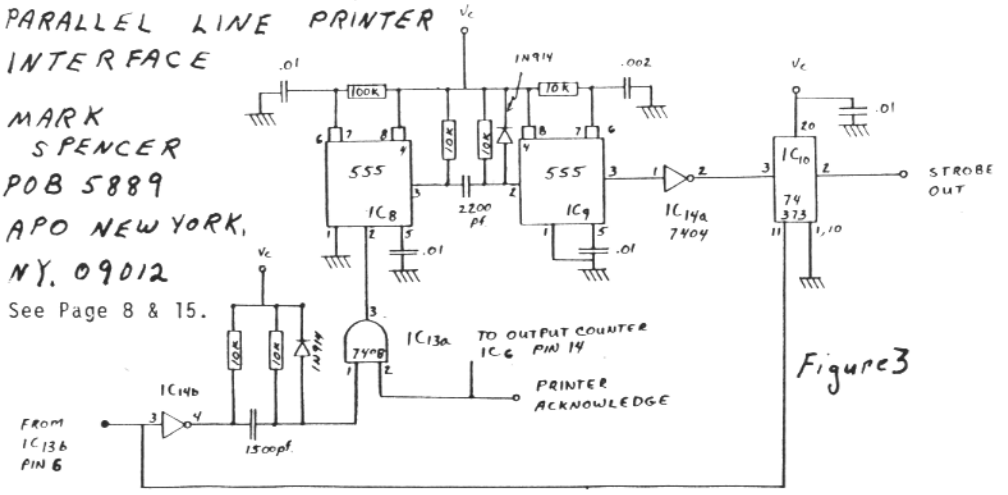
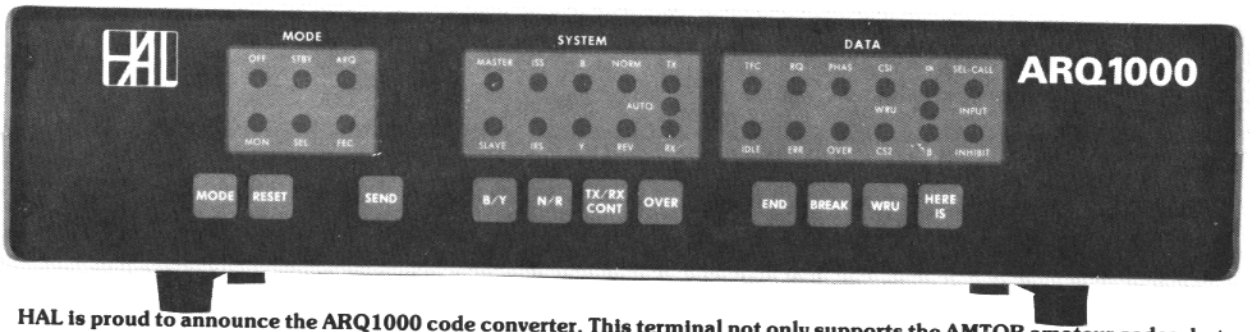


Figure 3

AMTOR RTTY

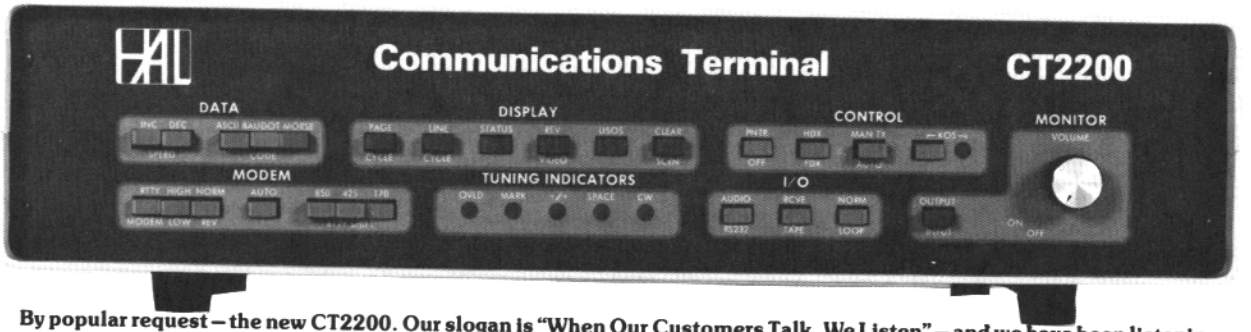


HAL is proud to announce the ARQ1000 code converter. This terminal not only supports the AMTOR amateur codes, but meets ALL of the commercial requirements of CCIR Recommendation 476-2. The ARQ1000 can be used with present and previous generation HAL RTTY products. In fact, any Baudot or ASCII full duplex 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.
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Urbana, IL 61801 (217) 367-7373

MSO'S

by *Dick Uhrmacher*, KØVKH

Hi Gang! Persistently poor band conditions continue to affect the National Autostart Frequency, as well as other frequencies and bands. QSB and QRN both seem to be taking their toll, and their effect on MSO operations has been obvious. We are seeing quite an influx of newcomers using the MSO's in recent weeks, and each and all are certainly welcome! I think it would be a good time to re-emphasize some of the 'basic' MSO requirements, as it will make using the MSO's much easier for everyone. Each of the MSO's have a "HELP" command, which will provide a comprehensive list of all commands available in the MSO.

As well as insuring that each command is received by the MSO on the left most margin, and that a 'period' (.) precedes each command, it is essential that each command, (or filename if included with the command), contain a CR/LF (carriage return/line feed), immediately after the command/filename. This delineator is the command that causes the MSO to act upon (execute) the function you have requested. Many times a remote user ends up with the 'idiot treatment', when they neglect to include this CR/LF, and the MSO silently waits for the missing delineator.

"Patience is a Virtue", someone once said, and it certainly applies to using the MSO's. Be sure that the other fellow is through using the MSO, before you jump in with your commands. A sure way to cause hard feelings is to steal the MSO away from someone who wasn't through using it!

And finally, take a little time to listen on the frequency before trying to access one of the MSO's. With band conditions as bad as they are, it's not difficult to miss one side of a QSO or MSO activity. But, if you take the time to listen, you'll usually hear the other side of the QSO/MSO, and save some embarrasement.

I received a nice letter from Emile NE5S, Metairie, LA, saying that he had read my query about ASCII parity bits in a recent issue of the RTTY JOURNAL. He has recently been in touch with the A.R.R.L. on this subject, and they provided this information: "W1AW ASCII Bulletins are sent with one start bit, seven data bits, a parity bit, (which is always space), and two stop bits. Since this arrangement is apparently the Amateur standard, I didn't think it was necessary to state it in your schedule". Signed by Charles R. Bender, W1WPR, Assistant Communications Manager, W1AW.

This posture by the A.R.R.L. conforms to that of RTTY equipment manufacturers as well, in that the HAL Communications Corporation provides four ASCII parity bit options in their DS3100 series; 1) spacing, 2) marking, 3) even parity, and 4) odd parity. The normal or default mode is factory programmed with the eighth bit "spacing". Thanks for the information Emile!

STATE OF THE ART: This reporter has reliable information that a well known RTTY DX operator and MSO SYSOP was seen racing across Alabama and Mississippi in his motorhome, actively engaged in accessing MSO's, while at the same time dodging walking catfish, snapping turtles and curious alligators. Can the Dick Tracy wristwatch-radio really be far behind?

RIVERCITY NET UPDATE: Larry Workman, KAOJRQ, Rivercity Net Manager, (Council Bluffs, IA), was kind enough to provide me with the frequency of the two meter repeater they are currently utilizing. It's 146.36 MHz input, and 146.96 MHz output. Climb on board traffic handlers, and see a MSO traffic handling system, affiliated with the A.R.R.L. National Traffic System! Keep up the good work Larry, and keep us informed of your progress.

MSO-N.T.S. MARRIAGE: I'm in receipt of a very nice letter from Curt Kock, KBØMB, who is the Net Manager of the A.R.R.L. Daytime Tenth Regional Net, and a member of the Central Area Staff of the National Traffic System. Curt has been instrumental in blazing new trails in traffic handling, specifically in utilizing an MSO for storing, retrieving and relaying NTS message traffic. The story unfolds as Curt says: "March 1984 saw me at the A.R.R.L. Midwest Division Convention. I was shopping for a MSO! No, I wasn't looking to buy one, rather I wanted the use of one for the Daytime Tenth Region. Having 'spread a little seed on the water', it wasn't long before I was getting the clues that I was looking for. Bill, KØIPT, from Council Bluffs, IA, told me that he had a friend who had a MSO, being used during the evening hours on two-meters. It wasn't long before I was introduced to Larry Workman, KAØJRQ, and needless to say we talked MSO's and traffic. That first meeting generated a "marriage" between the MSO and the Daytime Tenth Region Net! Details were worked out, and the MSO started operating about four hours per day on forty meters, frequency of 7076.5 KHz, LSB.

With the MSO in place, and Larry taking care of the technical end of things, it now became my job to 'pass the word' to all the sections, and Net members, and get them instructed in the use of the machine. Most are traffic people, and not RTTYers, and this has been a slow, continuing process.

July 1984 saw the machine being utilized. I began to appreciate what could be done. During the marathon bike race across Iowa, (The RAGBRAI), over 100 messages were put into the

See Page 14

ENGINEERING MAKES THE DIFFERENCE

Production Expertise And Service Integrity Form The Foundation For Your Long-Term Satisfaction

The fact that the Computer Patch Interface unit by Advanced Electronic Applications, Inc. is known as the best value on the market is no accident. The CP-1 was designed by Al Chandler, K6RFK (PHD-E.E.), an active RTTY user since 1963.

Given a cost per unit budget for the CP-1, Al designed as much performance as possible into the Computer Patch, including a unique new tuning indicator, referred to by one of our customers as the "Dead Eye Dick" tuning indicator. This indicator is ideal for RTTY and CW, in that it is both fast to tune and (within 10 Hz) as accurate as scope tuning. It also performs under poor signal to noise conditions in which other indicators provide no useful data.

Al's variable shift tuning was designed to move the space filter center frequency from 2225 Hz to 3125 Hz without changing the bandwidth (by varying the Q of the filter). All this is accomplished using a precision ganged potentiometer to assure proper tracking of the multiple filter stages. We could have used a pot costing a tenth as much by simply using a two-pole filter design, but we feel the advantage of a sharper filter reduces the noise bandwidth significantly and allows the variable shift control to be used like passband tuning for extra elimination of adjacent channel interference.

Some manufacturers are concerned that amateurs might try calibrating their own equipment and, therefore, have used non-adjustable components, which results in sub-optimal performance. Although more costly, trimpots used in AEA equipment allow factory adjustment for performance to design specifications. Competently designed active filter circuits need not be adjusted after leaving the factory; however, for specialized use the owner can easily change filter parameters.

Mindful of the fact that many of our customers are new to RTTY, Al made the CP-1 tuning as forgiving as possible, while providing the most critical operator a piece of equipment in which he could be proud. Even old "pro's" are surprised at the poor signal conditions under which the CP-1 will still provide good copy.

You can now experience the BEST RTTY, CW, and AMTOR offered. Couple the CP-1 with our new AEASOFT™ software packages designed for the MARS, SWL, or amateur radio operator, and you will feel a pride reminiscent of what "made in U.S.A." brought in years gone by. Please do not hold the low price of the CP-1 against us. This is one case where you get much more than you pay for relative to any of the competitive units. For more information send for our FREE catalog. Better yet, see your favorite dealer.

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PARALLEL LINE PRINTER INTERFACE PART TWO

By Mark Spencer
POB 5889
APO New York, NY 09012

In part one I described a serial to parallel converter for use with the Radio Shack Color Computer or Info-Tech M-200E RTTY T.U. and Gemini 10X parallel line printer. The interface worked fine when computer handshaking stops output while the printer is occupied printing the previous line; however, when receiving RTTY at machine speed, the M-200E just keeps sending when the printer is busy printing. To make the line printer work with RTTY, a small buffer is required between the serial to parallel converter and printer to capture the characters and hold them until the printer is ready or is transparent when the printer is receiving data. In this part I will present my 16 character first in first out (FIFO) buffer.

ASCII SERIAL OUTPUT OF M-200E

Before I detail the buffer, a preliminary look at the M-200E output is required. With a minor internal wiring change outlined in the instruction manual, The ASCII output jack of the M-200E can be converted from loop to RS 232 signals. Inside the M-200E after the RTTY, Morse or ASCII signal is demodulated, it is processed, interpreted and the appropriate character is sent to the video display module in parallel ASCII form. This signal is also processed through an internal UART and the serial form of the character is sent to the ASCII jack. The result: what is displayed on the screen is also sent to the ASCII jack. This is the signal used to drive the printer.

CIRCUIT DESCRIPTION

The buffer circuit is shown in block form in Figure 1 and in detailed diagrams in Figures 2 and 3. I split the diagrams for ease of reading. For a functional look at the individual components, refer to Fig.1

The buffer is connected between the serial to parallel converter and the printer through data, strobe in, and printer status signals from the converter and data, strobe out, and acknowledge from the printer.

The strobe signal from the converter is approximately 2 micro seconds wide with an expoential trailing edge. This signal did not advance the input counter IC4 so IC7, a 555 timer in a one shot configuration shapes and widens the strobe pulse.

The random access read/write memory chips IC1 and 2 form the 16 byte memory of the buffer. The data output is inverted in the memory so IC11 and 12 inverters restore the proper sense. The read or write address is presented through IC3, tri-state octal buffer and the read/write logic that drives the octal buffer and memory chips is generated by the input strobe and IC14e inverter. In the resting state (no data input) the read/write signal is in read sense leaving the memory chips in the read mode and the read address passing through IC3. The write sense occurs on the rising edge of the strobe from the converter, causing the IC3 to present the write address to the memory. This write signal also is one input that controls the output strobe described later.

The write address is generated by IC4. On power up, IC14c and associated RC components generate a reset pulse to set both counters and IC4 and 6 to zero. The leading edge of the first write strobe puts data into memory location zero. The trailing edge of the strobe returns to read and advances the write address counter by one. Each counter advances to 16 then starts again at zero.

IC5 is a magnitude comparitor that checks IC4 and 6 for inequality. If an inequality exists, i.e., the write counter has advanced by 1, a signal is sent through IC14d to signal the printer that new data is available for reception. IC13b and c combine printer status, comparitor, and write strobe signals. After a prolonged write signal, these combined signals trigger a read strobe or during successive read cycles, allow the printer acknowledge pulse to advance the read counter and trigger the read strobe.

IC8, 9 and IC14a form the read strobe. IC8 and 9 are configured in a 555 one shot, pulse delay circuit. The trigger from either the printer acknowledge pulse or the combined ready to read pulse through IC13b cause a read strobe pulse that is delayed approximately 1 mil second. During this time, the read address is placed on the memory and the data is allowed to stabilize before the read strobe activates the printer. The acknowledge pulse from the printer advances the read counter and stimulates the next read strobe until the write address equals the real address. At that time IC5 determines the equality and closes IC10, transparent latch to prevent the strobe from reaching the printer. This is required because the fresh data has not been read into the last location. If the read strobe reached the printer, the resulting acknowledge pulse would advance the counter uncontrolled.

If the printer is receiving characters, the above process progresses through the memory one character at a time. If the printer is busy, the characters are formed in a que that is strobed into the printer as fast as the machine is capable (by using the acknowledge strobe). This occurs faster than it takes to send one character at 110 baud!

CONSTRUCTION

As in part one, the buffer is constructed on a pre-etched board using wire wrap techniques. Again, by-pass each chip Vc pin to ground with a .01uf capacitor. The buffer is constructed in add on form so that it can be removed if desired, but I leave mine in place whether I'm using the computer with handshaking or the M-200E. DIP jumper cables make a convenient way to interconnect the converter and buffer boards.

See Pages 4 & 11 & 15

THE STANDARD OF EXCELLENCE

The world of CW, RTTY, and new DUAL AMTOR is as close as your fingertips with the new brilliantly innovative state-of-the-art microcomputer controlled* EXL-5000E.

Automatic Sender/Receiver: Due to the most up to date computer technology, just a console and keyboard can accomplish complete automatic send/receive of Morse Code (CW), Baudot Code (RTTY), ASCII Code (RTTY) and new ARQ/FEC (AMTOR).
Code: Morse (CW includes Kana), Baudot (RTTY), ASCII (RTTY), JIS (RTTY), ARQ/FEC (AMTOR).
Characters: Alphabet, Figures, Symbols, Special Characters, Kana.
Built-in Monitor: 5" high resolution, delayed persistence green monitor — provides sharp clear image with no jiggle or jitter even under fluorescent lighting. Also has a provision for composite video signal output.
Time Clock: Displays Month, Date, Hour and Minute on the screen.
Time/Transmission/Receiving Feature: The built-in timer enables completely automatic TX/RX without operator's attendance.
Selcal (Selective Calling) System: With this feature, the unit only receives messages following a preset code. Built-in Demodulator for High Performance: Newly designed high speed RTTY demodulator has receiving capability of as fast as 300 Baud. Three-step shifts select either 170Hz, 425Hz or 850Hz shift with manual fine tune control of space channel for odd shifts. HIGH (Mark Frequency 2125Hz)/LOW (Mark Frequency 1275Hz) tone pair select. Mark only or Space only copy capability for selective fading. ARQ/FEC features incorporated.
Crystal Controlled AFSK Modulator: A transceiver without FSK function can transmit in RTTY mode by utilizing the high stability crystal-controlled modulator controlled by the computer.
Photocoupler CW, FSK Keyer built-in: Very high voltage, high current photocoupler keyer is provided for CW, FSK keying.
Convenient ASCII Key Arrangement: The keyboard layout is ASCII arrangement with function keys. Automatic insertion of LTR/FIG code makes operation a breeze.
Battery Back-up Memory: Data in the battery back-up memory, covering 72 characters x 7 channels and 24 characters x 8 channels, is retained even when the external power source is removed. Messages can be recalled from a keyboard instruction and some particular channels can be read out continuously. You can write messages into any channel while receiving.
Large Capacity Display Memory: Covers up to 1,280 characters. Screen Format contains 40 characters x 16 lines x 2 pages.
Screen Display Type-Ahead Buffer Memory: A 160-character buffer memory is displayed on the lower part of the screen. The characters move to the left erasing one by one as soon as they are transmitted. Messages can be written during the receiving state for transmission with battery back-up memory or SEND function.
Function Display System: Each function (mode, channel number, speed, etc.) is displayed on the screen.
Printer Interface: Centronics Para Compatible interface enables easy connection of a low-cost dot printer for hard copy.
Wide Range of Transmitting and Receiving: Morse Code transmitting speed can be set from the keyboard at any rate between 5-100 WPM (every word per minute). AUTOTRACK on receive. For communication in Baudot and ASCII Codes, rate is variable by a keyboard instruction between 12-300 Baud when using RTTY Modem and between 12-600 Baud when using TTL level. The variable speed feature makes the unit ideal for amateur, business and commercial use.
Pre-load Function: The buffer memory can store the messages written from the keyboard instead of sending them immediately. The stored messages can be sent with a keyboard command.
"RUB-OUT" Function: You can correct mistakes while writing messages in the buffer memory. Misspellings can also be erased while the information is still in the buffer memory.
Automatic CR/LF: While transmitting. CR/LF automatically sent every 64, 72 or 80 characters.
WORD MODE operation: Characters can be transmitted by word groupings, not every character, from the buffer memory with keyboard instruction.
LINE MODE operation: Characters can be transmitted by line groupings from the buffer memory.
WORD-WRAP-AROUND operation: In receive mode, WORD-WRAP-AROUND prevents the last word of the line from splitting in two and makes the screen easily read.
"ECHO" Function: With a keyboard instruction, received data can be read and sent out at the same time. This function enables a cassette tape recorder to be used as a back-up memory, and a system can be created just like telex which uses paper tape.
Cursor Control Function: Full cursor control (up/down, left/right) is available from the keyboard. Test Message Function: "RY" and "QBF" test messages can be repeated with this function.
MARK-AND-BREAK (SPACE-AND-BREAK) System: Either mark or space tone can be used to copy RTTY.
Variable CW weights: For CW transmission, weights (ratio of dot to dash) can be changed within the limits of 1:3-1:7.
Audio Monitor Circuit: A built-in audio monitor circuit with an automatic transmit/receive switch enables checking of the transmitting and receiving state. In receive mode, it is possible to check the output of the mark filter, the space filter and AGC amplifier prior to the filters.

CW Practice Function: The unit reads data from the hand key and displays the characters on the screen. CW keying output circuit works according to the key operation.
CW Random Generator: Output of CW random signal can be used as CW reading practice. **Bargraph LED Meter for Tuning:** Tuning of CW and RTTY is very easy with the bargraph LED meter. In addition, provision has been made for attachment of an oscilloscope to aid tuning.
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DX COLUMN CONTINUED

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3X4EX 21.083 2100UTC Via N4CID
FO8DP 14.093 0055UTC Via N7RO
P29JS 14.085 0800UTC Box 515, Konedobu, Papua, New Guinea.

Is there an active RTTY DX station out there looking for a stateside QSL manager? If you are then contact KT1N Roy is an avid DXer and is offering his services.

I received a nice note from HB9HK, Dr. Willy Rogg, telling me of his, now past, DX-pedition to Liechtnstein as HBØHK [See January 1984 issue - RTTY JOURNAL]. The note arrived prior to the operation but too late to make the column deadline. This news was placed in the AJOX MSO and made available to the DXers that regularly check in for current up-dates. The operation by Willy, took place from 22 September to 13 October and he worked only RTTY and AMTOR/FEC/ARQ on 14.080 and 21.080 when the band was open. The QSL information is: HB9HK, Box 129, 6403 Kuessnacht. Rigi Switzerland.

In another very nice letter from SM5EIT, Erik Nilsson, I first heard of the multiple stations now active from China. Erik was very kind to pass on that information and quite a bit about himself. He is Secretary and Treasurer of SARTG, the Scandinavian Amateur Teleprinter Group. He is also very active in the Swedish Ham Organization as the RTTY manager and editor for the RTTY column in their newspaper, QTC.

There have been no further reports on the still to come, Knights of Malta operation. IØAOF has promised early warning of this upcoming operation, however, best you keep your eyes on the bands for this one!

The success of this column [and magazine] is based on the input that you the readers provide. Rest assured that it is appreciated and to that end, I would like to thank the following operators for their thoughtfulness and generosity of time in reporting: N1API, IØAOF, W2JGR, W1DA , W5DOZ, HB9HK, SM5EIT, W8WYK, TG9VT, and KT1N.

We still look foward, with great expectation, to improved band conditions and perhaps by the time you read this we will have that going for us. Until then, take care and the best of DX to each of you.

73, Joe, AJØX.....SK

AWARDS

WAC-Andrzej, SP2UU - 15-10-84 #103
WAC-Barbara, SP2FF - 15-10-84 #104
WAC-Krzysztof, SP2UUU - 15-10-84#105
(all from the family Ulatowski)
WAC-Roy Gould,KT1N - 15-10-84 #106
(all on 14 meters).
WAC-Roger, KE6T - 15-10-84 all on 20M

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PARALLEL PRINTER CONTINUED

OPERATION

On power up the reset RC circuit sets both counters to zero. The switch is added across the capacitor to hold the buffer at zero during printer reset or turn on which generates an acknowledge signal. Without a hold function, the buffer would step through the 16 memory locations on printer reset and print garbage. After everything is on and stable, open the reset switch and you're ready to go.

The test of the buffer comes when receiving RTTY at machine speed. Try printing a news bulletin or self generated lines of RY. The buffer will allow perfect copy throughout the line. Remember to set the converter for 110 baud, that is the factory set baud rate for the M200E output.

While using the buffer with the computer, there is no observable effect. The handshaking operation will keep the write memory one step ahead of the read memory and the print will just walk through the buffer.

CONCLUSION

The project may not have direct application in your shack, but portions of the circuit might. The UART converter is not a unique design and the parallel to serial side of the chip has promising possibilities. The buffer can be expanded to any size by cascading the counters and comparitor to increase the number of address lines and using larger or parallel memory chips.

I hope my verbage was sufficient for the newcomers to follow but not too verbos for the old timers. The project met my objectives and produced a working serial to parallel converter with buffer that works with both serial computers and the Info-Tech M-200E dedicated RTTY system.

My final objective was to contribute to the fraternity, thanks for the opportunity. I would appreciate any and all questions and comments.

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DX

JOE WOOD, AJØX

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Hi Dxer's! I see that most of us made it through a month of some of the poorest propagation that I have experienced in a long time. When things, from a DX standpoint, should be on the rise and although the propagation charts tell us that it should be, it definately is not for this part of the country. I realize that some of you are going to say, "what's he talking about?" Especially the East and West coast operators who, for the most part, have direct shots into Europe and the Far East, and even during poor periods manage to get signals through. [Note:not in southern California]. Not from here though and I must tell you it is frustrating to say the least. Enough of feeling sorry for the low latitude operators!

The October RTTY DX Column told you of the news of China. I have been asked, by several subscribers, why the information did not appear in the September issue. This column has a tenth of the month deadline and if all goes well I get out by the eight of the month. This will serve to explain how that information which reached me on the eighteenth of the month did not make the September issue. The news was on the bands however, and made for very exciting conversation among the more active DXers. I finally made the grade with BY5RA and have that one all tucked away neatly in the log. Wonder how many others have worked Lin?

BY1PK, out-fitted for RTTY by one of the Japanese operators, has been heard on RTTY but, to my knowledge, not in the United States. Word from Europe, is the presence of still another station, BY1CS, in Xhuangsi. This station has been worked by SM7AIA and others.

The ARRL DXCC award and the strong possibility of having an honor roll arose as a topic of conversation at a recent Hamfest. I approached the DXCC Liason appointee for the Fifth Call Area with this subject in mind and he told me that he felt we would have the honor roll set up within the next six months. With all the paper work and expense involved it will provide the motivation for continued DX activity by those that have reached the 100 country level and be well worth it. Have you talked to your DXCC Liason person yet?

There are not too many of us that need the country of Guatemala on RTTY but just in case there are one or two of you out there somewhere, look for TG9VT, John Troost in Guatemala City on or around 14.087. John is a dear friend and operates a MSO on that frequency. I know, what you must be thinking, 'oh no, MSOs again.' Not to worry though, John doesn't camp out on that frequency but is often there in between his forays for DX. He just received conformation of 5BDXCC, no, not on RTTY but you can be sure he is working on it. He has a very fine station set up at his home (5000 feet above sea level). A four element triband quad at 125 feet a four element full size forty meter Yagi and a double Zepp for eighty, help to launch his signal to all parts of the world. His RTTY gear is the HAL DS-3100MPT, DSK3100 Disk Drive, ST6000 Demodulator and Tone Keyer all coupled to an Icom 751 driving a beautiful new Alpha (no tune) amplifier. It's no wonder that his signal is one of the most outstanding from that part of the globe. John is often in touch with ZK1CG and he tells me that Vic is considering an MSO installation on Raratonga! Automatic DX QSOs anyone? By the way, John's stateside QSL manager is another old friend of mine, Joe Arcure, W3HNK.

I may have mentioned the 14.100 beacons in the past, I really don't recall. If I did forgive me as I feel it worth the time and space to do it again. A very valuable propagation indicator is available to us in the form of several beacoms programmed and timed so as to not interfere with each of their transmissions. They transmit on 14.100 MHz and are strategically located in various parts of the world. These beacoms, sponsored and funded by the Northern California DX Foundation have at times lost their usefulness when we inadvertently start a QSO on their transmitting frequency. I have been asked by several operators to pass this on to you as a reminder to try and steer clear if at all possible. If a rare DX station should show up on that frequency, well, use your own discretion!

CONGRATULATIONS go out to HB9HK and GM3ITN both of whom just achieved membership in the ARRL DX Century Club. Nice going and we wish you continued success.

The reports this month contained many duplicates of those just previously listed in the column. Could it be that no new ones have hit the bands or is it just lousy conditions. For the time being we will blame it on the latter and go on to.....
DX - Heard, Worked and QSL routes.

YB3ON	14.092	1221UTC	CBA (Callbook)
HI8PM	14.093	0349UTC	Box 1733,Santo Domingo.
YS1TG	14.087	1333UTC	Box 1476, San Salvador.
VQ9DX	14.087	1926UTC	Steve Bowen, VP-9 WC66Ø AIMD, FPO San Francisco, CA 96601.
C6ADZ	14.089	2128UTC	Box F2713, Grand Bahama Island.
KL7PG	14.095	0124UTC	Harold Hitchen, 3131 Brentwood Circle, Anchorage, AK 99502.
OD5NG	14.082	1103UTC	Box 5, Opglabeck 3660, Belgium
ZK2RS	14.087	0255UTC	CBA
XL3NF	14.087	0250UTC	CBA
CX7BZ	14.084	0155UTC	CBA
ZK2WL	14.092	0045UTC	Via ZL3AFH

SEE PAGE 10

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NOTES CONTINUED

Archie was having such a good time he forgot that he was supposed to get back to his sister-in-laws home. John reminded him and he reluctantly left. If the pix turn out, we will print some in the next issue.

Carl, K6WZ says to watch out for rules for RTTY contests printed elsewhere than the JOURNAL and Club news. QST is notoriously wrong with their copy we have found.

The Santa Maria Hamvention was a winner in October. John and I attended it and then journied to Lake Tahoe where we were almost snowed in. Met lots of nice Hams and RTTYers along the way. Have a good life de DEE.....

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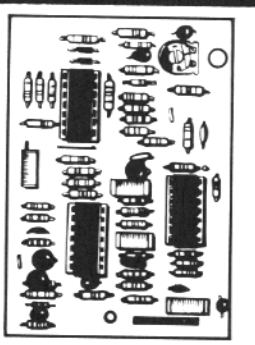

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A VISIT WITH CONTESTERS

By Bill Synder, WØLHS

Perhaps the most enjoyable part of traveling abroad is meeting Hams that you have known for a long period of time. Recently, I had the privilege of visiting two long-time RTTY Contesters, SM6ASD and OZ1CRL. Both of these gentlemen were perfect hosts, and seeing them in person made the whole trip to Scandinavia worth while.

These operators are almost always in the high end of every RTTY contest, for they are dedicated contesters!

Bo, SM6ASD, is an executive with Volvo, the Swedish auto maker. Although he is well-known on AMTOR and RTTY in Europe, BO's signals are usually only heard in the U.S. during contests. This is because he makes his home base of operation where he has no space for directional antennas. Bo works contests only from his summer place which is situated on the edge of a scenic lake about an hour fromhis home in Gotëborg. At the lake he has a collection of separate five-element beams for the DX bands. All are mounted on crank-up towers. In addition, he has a forty meter directional array aimed generally at the U.S. Look for him on 40 and 80 meters during contests.

Bo has been an official of the S.A.R.T.G. and is particularly active in that yearly contest. His work has taken him all over the world, so he has enjoyed many eyeball QSO's with other RTTY ops in other lands.

At home Bo operates on AMTOR and RTTY using an AMT-1 along with a collection of other fine equipment. Bo has definate opinions on how the RTTY/AMTOR segments of the bands should be utilized in the future. Part of our discussion centered on allocating band segments for the various sub-cultures of the digital communications world. Bo has made a statistical review of band space requirements for the CW/Digital portions of the Ham bands and I hope he will publish his ideas in the RTTY JOURNAL for all to see. It is quite revealing and his engineering background has been put to work in a very productive way.

Jorgen, OZ1CRL (on the front cover) is another dedicated contester. Retired from a business of creative ceramics, Jorgen, and his wife Grethe OZ1AMR, live in a very comfortable home situated besides a beautiful bay on the northeast coast of Denmark. His rotary beam antenna just sticks above the trees of the area. Like Bo, Jorgen has similiar ideas of how the future developments of the bands should be allocated.

The unique thing about the OZ1CRL/OZ1AMR shack is the his and hers arrangement of rigs and allied equipment. Grethe is on phone, while Jorgen spends his Ham hours on the RTTY mode. One side of the shack is devoted to the HAL and Yaesu gear for RTTY, while the other side is all phone. I could not get back far enough in their shack to show all of their gear in the cover photo.

During the day I spent with Jorgen, we managed only one contact with the U.S. and that was with W5RK, Ozzie, in Texas. It was strange to hear stations in Europe S-9 when the U.S. stations just barely made it to Denmark. I flew home from Copenhaven the next day, and I managed a contact with Ozzie a few days later. He was pleasantly surprised when he realized we had been QSO from OZ land.

Jorgen and Grethe introduced me to the Danish Smörgasbord with all of the trimmings. It was quite a feast--and fat guys like me love to eat! The QSL card designed by my hosts is a thing of beauty and a card worth collecting. Grethe is also a stamp collector, so DX cards get good treatment in their household.

Immediately after this years' SARTG I had a delightful 3-way with Bo and Jorgen. After visiting their shacks in person, it really made the contact a thrill.

MSO CONTINUED

MSO, and then handled via NTS, either Cycle 2 or Cycle 4. MSO's are not new, and certainly the NTS has been around a lot longer. However, to my knowledge, this is the first time that the two have 'married' in this fashion. Most RTTYers are not traffic oriented, and most traffic enthusiasts are not interested in RTTY. However, with the advent of the 'home' computer and reasonably priced interfaces and software, the average Ham has the opportunity of operating this mode inexpensively, (traffic people being no exception).

Conclusions. It is unusual to find two Hams with the same interests, (traffic and RTTY), fitting the roles that Larry and I do. Initial indications are that this is a good 'marriage'. There are still some minor problems to work out, but all in all I think that what we have going on here in the Upper Midwest may well serve as a prototype for other region and area nets to follow. Don't be surprised if someday all of the region, area and TCC functions of the NTS are carried out via this method, and never have a formal net session called! what next, Dear Watson"?

And for you that aren't sure which NTS Region you are located in, the Tenth Region covers the A.R.R.L. sections of Iowa, Kansas, Manitoba, Minnesota, Missouri, Nebraska, North and South Dakota, and Saskatchewan. If you are interested in traffic handling or information concerning this system, please contact Larry Workman, KAØJRQ, 1206 17th Avenue, Council Bluffs, IA 51501, or Curt Kock, KBØMB 1225 Woodhill Drive, Roseville, MN 55113. Thanks for the timely information Curt, good luck on the system, and keep us informed of your progress.

That's it for this month gang. Ol' Man Winter approaches at something less than the speed of light! Time to take a look at those towers, beams and antennas, lest you be out there at -20 degrees, trying to make your fingers work as you repair the installation. See you on RTTY!
DE: Dick, KØVKH.....

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4.	W3FV	402376	262	41.	HA5XA	53924	81
5.	KT1N	321552	260	42.	TI2DO	53080	75
6.	Y25DL	311400	201	43.	Y82ZN	52910	63
7.	K4AGC	309060	229	44.	SM7BGE	52896	60
8.	SM6ASD	291924	240	45.	VE7VP	52360	53
9.	W1DA	238784	244	46.	G4OJJ	50256	72
10.	WB5HBR	234156	185	47.	VE2QC	46784	47
11.	W2IUC	230080	174	48.	PY2ERA	46280	82
12.	JR2CFD	212480	152	49.	WB4UBD	43656	50
13.	VK5RY	204820	175	50.	W3JPT	42770	43
14.	PT2BW	198468	176	51.	PY6ACP	41920	75
15.	SM5FUG	198414	158	52.	DL8QP	41820	41
16.	OH2BDN	197152	204	53.	G3RDG	40188	59
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18.	SM4CMG	165564	110	55.	W2JGR	36800	47
19.	SM7LSU	145792	100	56.	HA8BI	36680	52
20.	G3HJC	135608	88	57.	JA2VFW	35784	31
21.	DL9MBZ	132352	90	58.	G4CJJ	32480	52
22.	K6WZ	129584	137	59.	9M2CR	32200	40
23.	DF5BX	128768	86	60.	G4EDR	29550	40
24.	W6JOX	121068	109	61.	W3KV/VP9	28800	60
25.	VE2AXO	116160	113	62.	VK2SG	28040	21
26.	KD8GC	96900	97	63.	VK2EG	27588	26
27.	GW3EHN	91728	108	64.	VE7ATH	27450	53
28.	PY2CAR	91700	89	65.	I5AZX	27100	50
29.	G4NMU	91180	98	66.	K2RYI	26112	45
30.	JF2PZH	88320	80	67.	OK3KYR	22600	33
31.	SM5AAY	85974	107	68.	VK1GM	14620	26
32.	V2ME	74700	66	69.	F3IJ	13634	21
33.	G4MKO	74476	95	70.	OZ1GRF	11850	19
34.	DL1VR	74448	50	71.	SP9BCH	9030	21
35.	SP2UUU	68544	64	72.	W8TCO	5360	8
36.	VE6ZX	68460	83	73.	Y79XN	5220	13
37.	WA6WGL	63878	60	74.	DK5KJ	3360	8

Multiple Operator Section

1.	LZ1KDP	521768	333	5.	OK3KGI	123088	104
2.	VE1ASJ	245480	203	6.	KD8KA	121000	104
3.	OK3KJF	164970	137	7.	LZ2JA	105186	107
4.	OK3RJB	164082	121	8.	AH6DV	61712	96

Short Wave Listener Section

1.	NL4483	272448	156	9.	DE1KWD	115808	90
2.	OZ-DR2135	244000	185	10.	OK2-30662	114640	173
3.	BRS 47426	228942	173	11.	REF41758	43400	55
4.	DE1GMH	165612	111	12.	G16936	29638	43
5.	BRS28198	165168	131	13.	OK221478	25650	55
6.	Io14769	136880	280	14.	FE-1107	11666	23
7.	G8CDW	129030	117	15.	HL5288R07	7100	11
8.	FE-3700	123348	98				

Check logs from:OK1KUR, SM4CJY, SM5APS, YU8FR and W8YZ.

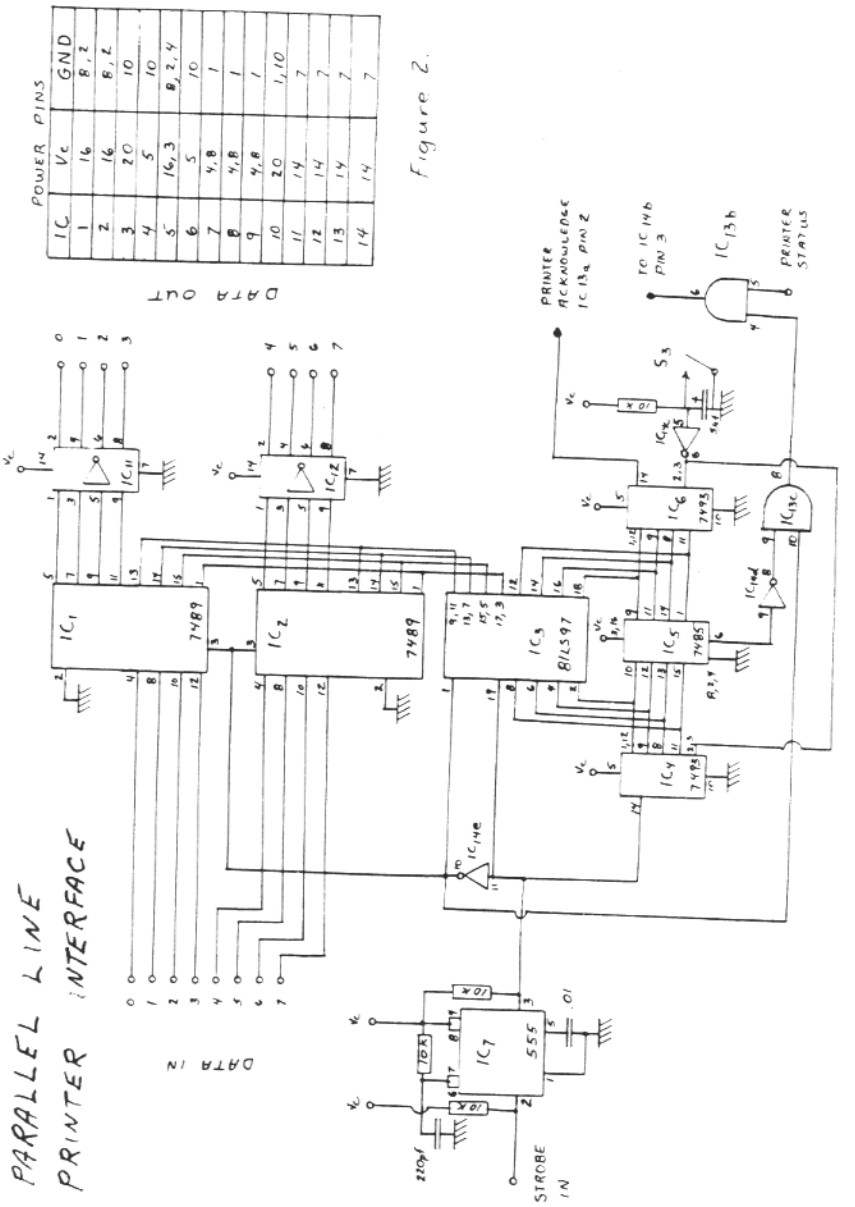

Figure 2.

Due to limited space, I have reduced the size of the very fine schematics Mark Spencer send in with his article on Parallel Line Printers. If you would like to have copies of the originals I would be happy to send them to you. Please send an SASE with $0.50 to cover postage and be sure to specify which set of schematics you would like (article name and issue number or month).

I can also copy any back issue of reduced schematics from the last year. If the schematic was too small for you to read comfortably, it probably was reduced due to space requirements.

I regret the necessity of having to reduce the fine schematics sent to us but I believe that RTTY JOURNAL readers would prefer to have more content in the JOURNAL and, when necessary, send for the expanded schematics they really need. Let me know your thoughts on this. Meanwhile keep those fine articles and schematics and pictures coming. N6ELP.

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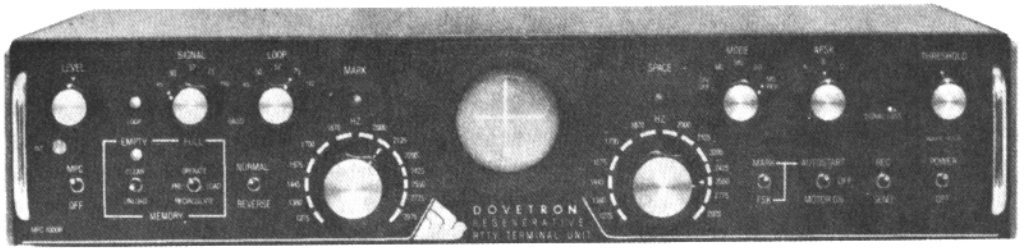

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