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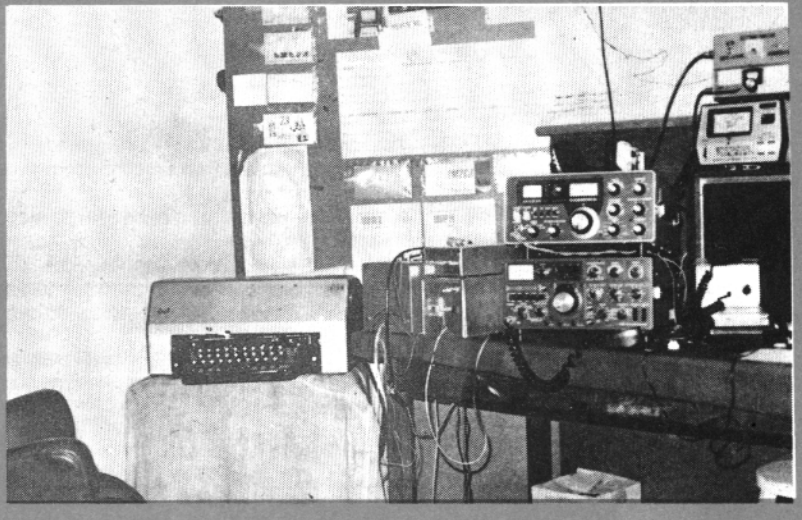

SHACK OF 9M2MW-FT101B,TS820S, HOMEBREW ST-5 TU, AFSK HOMEBREW AK-2, ROTATOR CONTROL 502CX,RTTY CREED 7B

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RTTY JOURNAL

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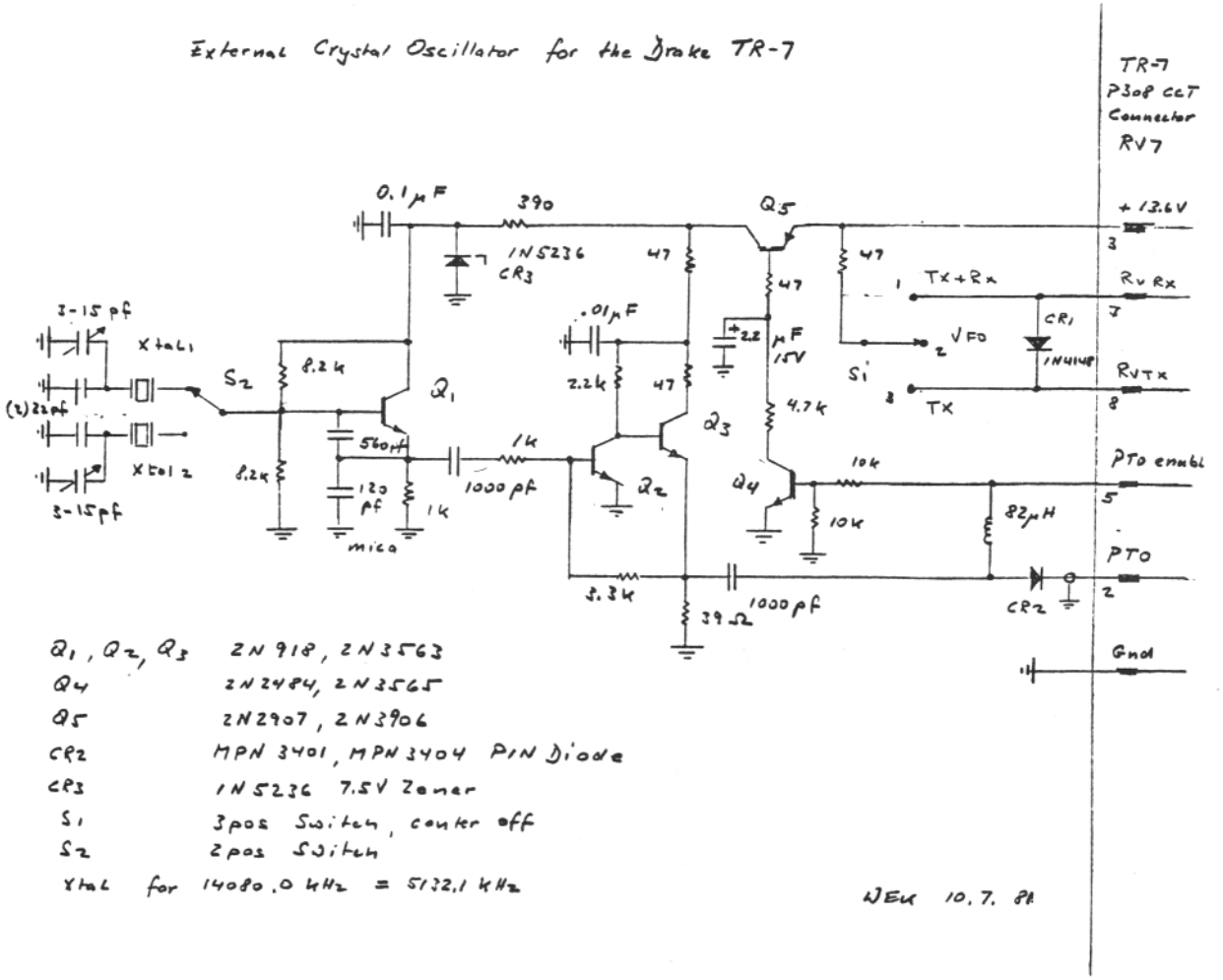

Q1, Q2, Q3	2N 918, 2N3563
Q4	2N2484, 2N3565
Q5	2N2907, 2N3906
CR2	MPN 3401, MPN 3404 PIN Diode
CR3	1N5236 7.5V Zener
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New versatility for the old bear in your station . . .

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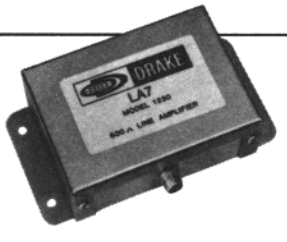
Crystal Controlled AFSK Modulator:

High Tone Pairs	Shift	170 Hz	425 Hz	850 Hz
	Mark	2125	2125	2125
	Space	2295	2550	2975
Low Tone Pairs	Shift	170 Hz	425 Hz	850 Hz
	Mark	1275	1275	1275
	Space	1445	1700	2125

• **Printer Interface for Hard Copy,** all modes for parallel ASCII printers. Loop keyer for conventional teleprinters. • **Composite Video Output,** for any standard video monitor. •**Kansas City Standard AFSK Output,** KCS tone pair for ASCII. • **Large Capacity Display Memory,** two page display memory contains 32 X 16 lines per page. • **Split-Screen,** with a keyboard command, the display can be divided in two; the upper half for transmit and the lower half for receive. Messages can be composed while receiving. • **Buffer Memory,** 53 character type-ahead keyboard buffer. • **Word Wrap-Around,** in receive mode, word wrap-around prevents the last word on a line from becoming split in two. Moves whole word to next line. • **Automatic Letters Code Insertion,** if desired, LETTERS (diddle) code can be transmitted continuously in a pause of transmitting from the keyboard. • **Audio Monitor,** a built-in audio monitor circuit with automatic transmit/receive switching enables checking of the transmit/receive tones. • **Transmitter Keying Circuitry,** keys either grid block, cathode keyed, or solid-state transmitters. • **Power Requirement,** The Theta 7000E requires only 13.6 Vdc @ 1 amp. Plugs into 13.6 Vdc accessory jack on PS7 or PS75 power supplies. • **Effective Packaging for RFI Protection,** well designed metal cabinet and protective circuits prevent RFI. • **Terminal Size:** 15.8"W x 11.8"D x 4.7"H (40 x 30 x 12 cm) • **Weight:** 11 lbs (5 kg) • **Monitor Size:** 8.7"W x 9.8"D x 8.9"H (22.1 x 24.1 x 22.6 cm) • **Weight:** 11 lbs (5 kg)



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Line output, input levels as low as 15 mV rms (47 kilohm) will result in an output of 1 mW nominal into a 600 ohm balanced line. Output level adjustable by internal pre-set level control. Interfaces low level audio to RTTY terminal unit or phone line that requires a 600 ohm balanced/unbalanced input. One 36" phono to phono cable supplied. • **Size:** 4.5"L x 1.3"H x 2.5"W (11.4 x 3.3 x 6.4 cm). **Weight:** .3 lbs. (.14 kg).

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DFD SYSTEMS AMATEUR RADIO TELETYPE SYSTEM

A Development Story

Dick Jugel, KØDG

One of the most enjoyable and fascinating modes of communications used by Amateur Radio Operators is Radio-Teletype (RTTY). Basically, RTTY can be defined as the transmission and reception of electrical impulses that correspond to the various letters, figures, and symbols of a standard character set. These electrical impulses can be transmitted and received over great distances on high frequency radio circuits.

The popularity of RTTY is rapidly increasing. More and more manufacturers are entering the field with low-cost, high-performance RTTY equipment, and the number of technical "How To" articles in amateur radio publications is rising. This growth should continue, especially in light of the Federal Communication Commission's recent ruling to allow the use of the American Standard Code for Information Interchange (ASCII) on the Amateur Frequencies. The older five-level Baudot Code, although suitable for "plain text" message traffic, is less than ideal for use with the more modern computer based RTTY systems.

One of the reasons for the upsurge in RTTY popularity has been the development of reasonably priced, solid-state terminal and computer equipment to replace the older "mechanical monster" teleprinter gear. RTTY is now available at reasonable cost, without the space requirements, maintenance problems, and "noise pollution" associated with the mechanical equipment. In addition, the legalization of ASCII should attract many more enthusiasts into the RTTY fold, including those with primary interests in computing rather than Amateur Radio. It should be noted here that an FCC operator's license is not required to receive RTTY signals: All that is necessary is a fairly good Amateur Band receiver and a simple tone demodulator.

The first computer system to gain widespread acceptance on the amateur bands was the Radio Shack TRS-80, which simulates a keyboard send/receive (KSR) teleprinter with the MACROTRONICS M-80 hardware and software interface. There must be hundreds, if not thousands, of these units in use today, and the MACROTRONICS M-800 system is now being shipped to provide limited automatic send/receive (ASR) operation to TRS-80 owners. MACROTRONICS is continuing to improve and upgrade it's RTTY hardware and software.

During 1979, DFD Systems performed benchmark tests of the TRS-80/M-80 System. The TRS-80 was a level II disk system with 48K of user-programmable memory. The system was satisfactory for general amateur KSR use, but left much to be desired for heavy duty traffic handling use.

The system was tested in Navy-Marine Corps Military Affiliate Radio System (Navy MARS) station NNNOZVW. For those unfamiliar with MARS operations, station reliability and performance requirements are similar to those of commercial message service stations. The major problem areas noted were:

KSR operation was completely unacceptable (the M800 system was not available yet). MARS RTTY station operation involves storing and forwarding of significant volumes of message traffic, which is done with paper tape on the mechanical machines. The TRS-80 was completely incapable of performing in this area without relying on mechanical paper tape equipment as I/O devices in the RTTY "Loop".

The limit of 64 characters per line proved to be a significant problem in handling MARS traffic. The standard TTY line length is 72, and columnar information would often end up garbled on the CRT screen.

The unshielded TRS-80, along with it's unshielded video monitor, was prone to both the generation and reception of Radio Frequency Interference (RFI). This caused problems in the receiver when trying to copy weak signals, and completely wiped out the CRT display during transmit. Extensive shielding efforts were necessary to reduce the RFI problems to a barely acceptable minimum.

The net result of these problems was that the Radio Shack system was simply used as a novelty item in the station configuration, without replacing any other station equipment; the teleprinter and paper tape equipment were still relied upon as much as ever. Therefore, the system could not be cost-justified on the basis of machine replacement or more efficient station operation, and was regarded as a "frill" that could be removed at any time without adversely affecting station operation. In fact, after several months, the TRS-80 was not even used during traffic runs anymore, since the mechanical machines were less clumsy to operate directly from the terminal unit loop than from the TRS-80 loop.

The TRS-80 system was discaarded, but the experience gained through it's use was retained. The specifications for an RTTY system that would be suitable for heavy-duty MARS use was formulated, and another phase of hardware selection and evaluation was begun. The decision was eventually made to build a custom computer system from scratch, based on the S-100 bus, when no commercially available computer could be found to fill the bill (not the least of the requirements was that the system must be reasonably priced!).

Then came the Heath announcement of the H19 terminal and the H89 computer! The H8/H9 combination had been evaluated earlier, but discarded because of the restrictions imposed by the H9 terminal. However, the HDOS operating system was very impressive, and would fit the requirements perfectly. The H19, with a full 24x80 character screen, was exactly the ticket for RTTY use. The major evaluation points that led to the selection of the H19/H89 were as follows:

The H19 terminal contained all the features that were necessary to support split-screen, full line RTTY displays.

HDOS allowed access to the CPU interrupt facilities, which is necessary to develop a truly "multiprogrammed" fascility (The RTTY system must be able to receive and transmit at the same time, which requires full

duplex "multiprogrammed" capability).

The 8250 Asynchronous Communications Element (ACE) could be used as the computer-to-terminal unit interface port, thus easily allowing full ASCII and BAUDOT operation with interrupt driven Input/Output capability.

The disc capabilities of HDOS would allow COMPLETE replacement of ALL mechanical equipment! No paper tape punches, readers, or mechanical printers/keyboards would be necessary in the resulting station configuration!

The disadvantages of the H19/H89 system were that the RF shielding was still likely to be a problem, and a custom program would have to be designed and written, since no suitable RTTY programs currently existed for use with HDOS.

An H89 system was ordered in July, 1979, and design work on the software began. The program was written in assembly language, to conserve memory space and process data at the interrupt level. The H89 system arrived in September, 1979, and was operational on the first Navy MARS RTTY net in early October. The system has worked flowlessly since then, and has actually replaced all mechanical BAUDOT equipment at Navy MARS stations NNNOAFL and NNNOZVW. The floppy disk completely replaces all paper tape equipment, and the H89 itself handles all printer/keyboard functions. All MARS message traffic is received, stored, corrected, and forwarded using only the floppy disk drive.

As expected, shielding was a problem. The Heath RFI modification was installed, which helped some, but a steel enclosure instead of the foam cabinet would be a vast improvement. Using standard grounding and shielding methods, including using aluminum tape to shield the cabinet interior, the RFI problem has been reduced to an acceptable level. Several MARS RTTY broadcasts require output levels in the range of 500 watts, sometimes for more than an hour, so the shielding problem can be critical if not carefully considered.

After extensive reliablility testing and functional testing on the MARS circuits, the system was modified slightly to include automatic CW identification and to operate on an H8 computer as well as the H89. The system is now compatible with amateur rules and regulations (MARS does not require CW identification), and is being marketed by DFD Systems for use on the amateur bands with Heath computers and the Heath Disk Operating System (HDOS).

The RTTY program provides full duplex (send-while receive) capability, both Baudot and ASCII modes, at standard speeds up to 19,200 baud. Full ASR capabilities are provided using the system floppy disk as the storage medium. The system console is divided into three sections, with the received data being desplayed on the upper part of the screen, transmit and command data on the lower half, and a real time display of actually transmitted information on the 25th line in reverse video (since the transmit buffer may be way ahead of what is actually being transmitted over the air at a given time, the 25th line always reflects, in a "time square" moving display fashion, the data that is actually being transmitted over the air at that time). The "split screen bar", which is a solid line that separates the receive and transmit windows, also displays system status information and the time-of-day clock.

The size of the upper (receive) and lower (transmit and command) CRT screen windows can be changed by the system operator at any time, except when the system is in transmit mode. This feature allows the operator to tailor the size of windows to meet changing conditions at any time during the operation of the system. For example, most of the CRT space could be allocated to receive while casually listening to signals on the band, or most of the CRT space could be allocated to transmit during periods of long transmissions, such as when sending pictures or MARS traffic runs. Each window automatically scrolls line information completely independent of the other. The receive window data can optionally be "packed" to use the entire 80-character CRT display line length when a maximum amount of received data is desired on the desplay.

System commands are brief, and indicative of the operation to be performed. As such, they are easily learned in a very short time. Provisions are made for automatic computer control of the station push-to-talk (PTT) line, and CW identification is automatic.

The system includes a time-of-day clock routine, complete with an alarm feature, to remind the operator of such things as approaching schedules and net times. The time-of-day clock is also used to provide an automatic disk log of all system start and stop times, and transmitter on and off times. In addition, manual entries may be inserted into the log, thus making it possible to do away with the manual log completely.

One very unique and interesting feature of the system is the dual-cursor scheme used to display current status of the word correction buffer. Two cursors are used, one destructive block cursor which denotes the next position that will be occupied by the next character entered from the keyboard, and the flashing underline non-destructive cursor that lags behind the block cursor at a "word correction buffer length" number of characters. The "word correction buffer length" is specified by the operator, and can be changed at any time. This length is not only the distance at which the flashing underline cursor will lag the block cursor, but it is also the point to which backspacing will be allowed in case of the typing error. The automatic word wrap-around feature is also limited at this point. The word wrap-around feature will allow automatic wrap-around to the next line when the end of an input line is encountered. If the word being typed will not fit on the current line when the end of line is encountered, the system will automatically move the entire word to the beginning of the next line.

User acceptance of the system so far has been very enthusiastic. The software continues to be improved, and new releases are distributed to authorized customers for a minimal medium and handling charge. The

latest release contains a picture copying and transmission mode that will allow the transmission and reception of RTTY PIX with printer overlining (Previous software releases would not allow overlining on either transmitted or received data). Future releases will include additional features, identified and requested by system users, that will increase the utility and operating pleasure of the system.

As stated earlier, the original software was designed and developed primarily as a Navy MARS traffic handling system. The system is now available, completely redesigned and rewritten for Amateur operation, from DFD Systems, 4805 N. 107th Street, Omaha, Ne. 68134. The system is delivered on a 5 1/4" diskette, and is priced at $39.95. Each system is individually generated to include the Station call sign, so this information, along with the type of computer (H8 or H89) must be specified with the order.

Table 1 is a summary of the current system command. Complete program documentation is provided with each system, as well as instructions for interfacing the computer system to radio station equipment.

TABLE 1

Command	Function
B=nnn	Switches to ASCII and sets Baud Rate.
BYE	Closes down system and returns to HDOS.
CTRL-A	Shuts off alarm clock (tone on console speaker).
CTRL-B	Inserts a CW Identification into the message.
CTRL-C	Exits Pre-type or Transmit Modes. Use after RETURN.
CTRL-Z?Z	Emergency return to HDOS. NOT recommended for use.
CAT	List all disk files with the extension "TTY" or "PIX" on the system default disk drive.
CAT0	List all disk files with the extension "TTY" or "PIX" on SY0:.
CAT1	List all disk files with the extension "TTY" or "PIX" on SY1:.
CAT2	List all disk files with the extension "TTY" or "PIX" on SY2:.
CD	Close receive disk file.
CH	Close hardcopy divice.
CT	Clears the Pre-Type Buffer for new data.
CWID	Turn on automatic CWID. NOCWID turns it off.
D=fname	Opens disk file for writing received data.
DS	Sets Downshift upon receipt of a space (blank).
D1	Dismount the disk on SY1:.
D2	Dismount the disk on SY2:.
EVENP	Sets Even Parity for ASCII operation.
FB	Opens Blue buffer for loading.
FR	Opens Red buffer for loading.
FT	Opens Type Ahead Buffer for entry. CTRL-C Closes.
FW	Opens White Buffer for loading.
Function Keys:	
f1fname, n1, n2	Fills transmit buffer with (fname) disk file.
f2	Inserts date in transmit buffer.
f3	Inserts time of day in transmit buffer.
Blue Key	Inserts message loaded into Blue Buffer.
Red Key	Inserts message loaded into Red Buffer.
White Key	Inserts Message loaded into White Buffer.
H=XX	Specify hardcopy device driver (LP: AT:).
K=fname	Delete (Kill) the indicated disk file (fname).
L=nn	Sets line length. Use 73 for Baudot RTTY standard.
M1	Mount a disk on SY1:.
M2	Mount a disk on SY2:.
N=PPP....	Write data (PPP...) to system log.
NOSYNC	Disables the automatic diddle.
NODS	Sets No Downshift from figures on receipt of a space.
NOP	Sets no parity checks for ASCII operation.
NOSTIK	Sets no STIK parity for ASCII operation.
OH	Open hardcopy printer device.
ODDP	Sets Odd Parity for ASCII operation.
PA	Prints currently set alarm clocks.
PACK	Packs received data into full 80 column lines.
PIX	Enters Picture mode. NOPIX exits Picture mode.
P=nnnQ	Sets the Port Address to specified octal value.
PT	Prints the type-ahead buffer contents.
RA=HH:MM	Resets or cancels the specified alarm.
RH	Turn on receive hardcopy print. NORH turns it off.
R1	Reset the disk on SY1:.
R2	Reset the disk on SY2:.
S=nn	Switches to Baudot operation and sets speed in WPM.
SA=HH:MM	Set alarm for time entered, Up to ten alarms.
SP=nn	Set screen receive/transmit split line.
STIK	Sets STIK parity for ASCII operation.
SYNC	Sets automatic synchronous idle. NOSYNC resets SYNC.
1SB	Sets 1 Stop Bit for ASCII operation.
2 SB	Sets 2 Stop Bits for ASCII operation.
TH	Turn on transmit hardcopy. NOTH turns it off.
TX	Enters the transmit mode starting with data in the type ahead buffer first out
TXF	Enters the fast, break-in transmit mode preserving data in the type ahead buffer for later transmission.
TX=fname, n1, n2	Enters transmit mode and sends the specified disk file. Useful for CQ's, contests, etc.
U=n	Designates the default disk drive unit (0, 1, or 2).
UNPACK	Unpacks the received screen and displays as received.
W=nn	Sets the error correct buffer line length.
WRAP	Sets operator input automatic CR/LF wrap on. NOWRAP turns it off.
X=fname	Switch output disk file to (fname).

HITS & MISSES

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

ITALIAN QUAKE

In the May/June issue of the RTTY JOURNAL, I requested follow up information on the Italian quake. The quake took place on Sunday November 23 about 1900/2000 local time. Lucio Oriana, I2OLW sends me the following information. "On Tuesday morning, I received a call from the help-coordinator I1BAY, I was requested to establish a net with the United States. I tried unsucessfully to contact W1AW I was able to contact W1YNE Gordon and establish a welfare traffic net. We arranged two skeds each day on 14090 at 1400 and 1900 UTC. Due to propagation we also used 28100. The next day W2PSU Ken came on frequency and the amount of work at my end doubled. All inquires I received from Gordon and Ken were screened, corrected and passed by VHF to I2UHC Gilberto. Gilberto sent all messages via faximile on a line provided by the 3 M company to the areas effected. SANDRA my XYL helped correct messages and also cross checked lists, Sandra although not an Amateur was a great help and I believe she will soon get a license. Well George here are the numbers.
Total hours on RTTY: 300
Total Hours in contact with USA: 53
Total messages with W1YNE:228
Total messages with W2PSU:135

I wish to commend the following Amateurs: W1YNE, W2PSU, WA1KKP, N1NA, K1GK, KA1DYD, WB1CUS, K1BSO, WA1YDU, N1RU, KA1BAT, WA1YVV, WA1USA, N1ASR, W1GO, KA1ABI, W2TCA and all the gang in R.I." signed Lucio Oriani, I2OLW.

I wish to extend my thanks also to all the RTTY gang. This is one more instance where amateurs and in particular RTTY amateurs met the challange. Well done gang.

RTTY SURVEY

I will pick up the survey where we left off last month.

TELETYPE MACHINES

The order of popularity, they are as follows: 28KSR, 28ASR, Model 15, model 19, model 26, model 35, model 32, model 33, model 37, Kleinschmidt, Creed, Mite, Lorentz and Sagam.

VHF TRANSCIEVER

The most popular VHF transciever was the Kenwood, followed by Yaesu, Heath, Icom, KDK, Regency, Midland and Azden.

VHF ANTENNA

The most popular VHF antenna was the Ringo. The 11 element Cushcraft beam was next. The survey ended up as follows: Ringo, Cushcraft, Homebrew Yagi, Quad Hy-gain. F9FT and homebrew ground planes.

ACTIVE ON TWO METER REPEATER

Sixty-three per cent stated that they were active on two meter repeaters.

ACTIVE ON 220 REPEATER

I was very surprized to find only sixteen percent were active on 220 repeaters.

DO YOU LIKE RTTY CONTESTS

Fifty-three per cent stated that they did like RTTY contests.

RTTY CONTESTS ACTIVE IN

The most popular contest was BARTG. The survey response was as follows: Bartg, CARTG, VK/ZL, Volta, Corona, DARC and Giant Flash.

ARRL MEMBER

The survey revealed 67% were ARRL members.

DO YOU USE THE QSL BUREAU

Surprisingly, only 51% were users of the ARRL QSL Bureau.

TIMES PER YEAR QSL BUREAU USED

The survey revealed that six times per year was the most popular while 12, 4, 2, 10, 5, 3 and one followed in that order.

DO YOU USE A COMPUTER ON RTTY

Thirty-eight per cent stated they used a computer on RTTY. The popular machines were: Heath, TRS-80, Apple and homebrew, in that order.

SUMMARY

This will wind up the survey. Let's take a look at what the survey profile looks like.
Years licensed....18 years
Years on RTTY....6 years
Class of License....Extra
Not a member of an RTTY club
Subscribes to 4 radio magazines: RTTY JOURNAL, QST, 73 and Ham Radio
HF transmitter....Drake
HF Linear....Heath
HF Antenna....Triband 3 element
Mast....40 foot
HF TU.... ST-6
TELETYPE machine....28KSR
VHF transciever....Kenwood
VHF antenna.... Ringo
Active on two meter repeater
Not active on 220 repeater
Likes RTTY contests
ARRL member
Years ARRL member....11 years
uses the QSL bureau
Uses the QSL bureau 6 times per year
Does not use a computer on RTTY

Well that's the RTTY survey. In the next issue I will discuss the indications gained from the survey. I will also discuss your comments.

I really enjoyed bringing you the RTTY JOURNAL survey. The hard work was well worth while. The insight gained in our of Ham radio makes it all worth while. I hope everyone will enjoy it.

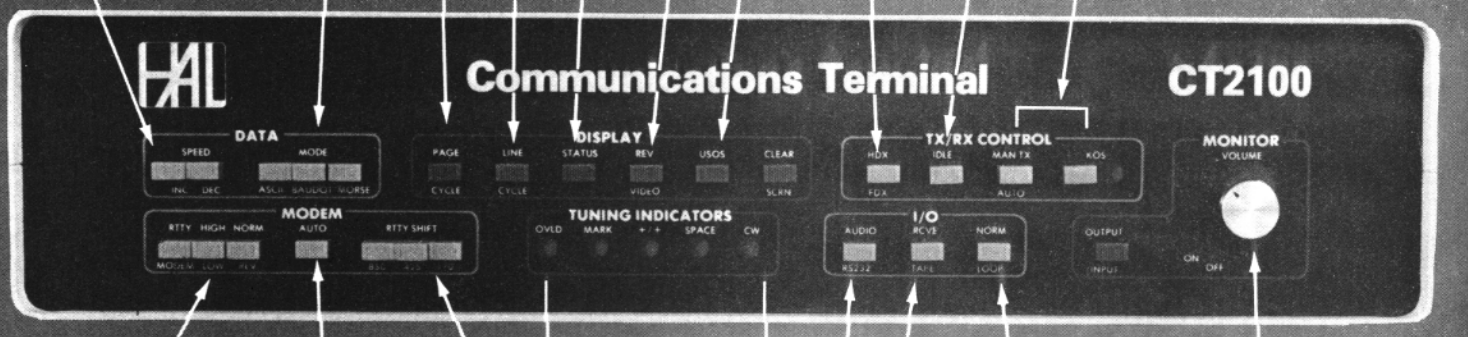
SCOTTSDALE

The ARRL Southwestern convention was held on October 9th thru 11th. Dee and John had the RTTY hospitality room packed. I was pleased to warm my tired old bones in the Arizona sun. Bill Henry (Mr. HAL Communications) gave a very fine seminar on the art of RTTYing. Bill stopped by

continued on page 12

CT2100

HAL Puts MORE Behind The Buttons



Four Internal RTTY Demodulators
- High Tones (U.S. Standard)
- Low Tones (IARU Standard)
- 103 Modem (1070/1270 HZ)
- 202 Modem (1200/2200 HZ)

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- MSG2100 2000 Character "Brag Tape" ROM

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  -or-
  4 Pages of 36 Character Lines
- Split Screen (with KB2100)

CT2100

9" TV Monitor

KB2100

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Start trimming that dipole and fine tuning your Yagi...you've got only a few months to perpare for the CW and RTTY WORLD CHAMPIONSHIPS which are beng jointly sponsored by the RTTY JOURNAL and 73 Magazine.

Whether you're a contester or not, here is your opportunity to work that new state or country, think of the many new friends you'll meet for the first time!

It promises to be one of the biggest contests ever assembled on these two modes. A lot of effort over the winter months will be spent getting the word diseminated around the world. We are counting on you to be our spokesman.

Mark these dates down on your calendars and begin planning for these two big WORLD CHAMPIONSHIP EVENTS:
10-80 Meter CW WORLD CHAMPIONSHIPS... April 3, 1982.
1-80 Meter RTTY WORLD CHAMPIONSHIPS.. April 4, 1982.

Full details about these events will appear between the Contest Pages of all major Amateur publications after the first of the year. Contest rules and entry forms will be available from the RTTY JOURNAL later this winter. Watch for a future announcement and in the meantime, let us know of your thoughts about these two contest spectaculars.

The summer vacations are sadly over with for another year and it's now time for indoor activities again. The DX activity is on the up swing again. Recently, I worked FW0BK on Wallis Island for a real nice catch. I want to thank Jack W5HEZ, for the fone call tip on that one. QSL info is via FK8DJ. The W1AW broadcast listed the QSL info to DJ9ZB and the info that I have is that Mic the operator that was operating RTTY said to QSL via FK8DJ, so beware on this one! This operation was active for seven days in the middle of September. I hope everyone got him.

The 8J prefix is the call of Japan and counts as whatever distric that the station is in such as 8J3XPO in Kobe, Japan counts as a JA3 station.

Easter Island was on during the first part of October operated by the Radio Club of Chile. There callsign was CE0AA and SWL info is to the Chilean QSL Bureau.(see listing)

Ted Double, G8CDW wrote me several months ago asking about giving the DXCC Award to SWL'ers. After discussing this with DEE, she has given the go ahead on this and there will also be an award for the SWL'ers. It looks like Ted has gotten the required cards. The rules will be the same for SWLers using the ARRL countries list. Great work there Ted. Ted is also the Contest and Awards manager for BARTG.

Bob, WOLHS writes again about the possibility of getting the manufactors to donate or loan the various DX clubs or groups that are going on DX-expeditions to these rare locations.

The DX Honor Roll will be printed in January. This a listing of the standings of the active DX chasers. All are invited to send in their inputs to me at my home address or to relay them to me on the air. I have not been too active on HF as of late, but if you see me on and wish to give me a call feel free to do so. The DX listing will have your callsign and the number of stations worked and the number that you have QSL cards from, such as having worked 106 countries and confirmed 98 of them, you would send me your HONOR ROLL listing as: 106/98. If your count has not changed since the last one in July there is no need to send me an update. Last minute updates may be made by calling on the fone. I always enjoy chatting with you.

I wish to thank the following Amateurs for their inputs this month: KØPJ/6, K5WTA/6, K1NVY/7, W2PSU, W1AW broadcast, WOLHS, W5HEZ, WD6BBW, WA9-AKT and W7LLC. Here is some of the activity seen or reported the past few weeks:CE0AA via Radio Club of Chile, Casilla P.O.B 13630, Santiago, Chile, VB2SV, Jos POB 73 Salatiga Java Island, Indonesia, 15 mtrs 1800Z YB2AG Hari, Box 088 Semarand, Indonesia 15 mtrs., LU1HCE John Coppens, Casilla de Coreeo, 103 5152 Villa Carlo Paz Argentina, LU1DGCm Mario 20 mtrs 0100Z. HP1XPM 20 mtrs 0200Z. I0ZSG, Silvo 20 mtrs 0430Z. I6VDB 20 mtrs 0430Z. FM7BW via WB4IWW. EA7CLH 15 mtrs 2230Z. EA9JV Avre Box 100 Melillia 15 mtrs 0100Z. EA9KQ 20 mtrs 0030Z. F08GX 20 mtrs 0900Z. F00AJJ 20 mtrs 0900Z. S8AAA box 821 Umtata 15 mtrs 2000Z. VP2AR 15 mtrs 2300Z. YJ8TT Augustin Box 63 santo Rep. Vanuata New Hebrides 20 mtrs 0900Z. FY7YM 20 mtrs 2300Z. ZF1GC on 20 mtrs at 0300Z POB 1618 Grand Cayman Is BWI or via VE4XN. ZS6DN 10 mtrs 1500Z. VS6CT via KB9N RR4 box 86 Kankakee,IL 60901. HL9JV Bruce Richards A Co. 304th Sig. BN APO SF 96358 USA. GJ5-CHV via DL3EW. CN2DKH box 299 Rabat special callsign at El Dakla. CN8BI. CH2HN 20 mtrs 0400Z. F5JA 20 mtrs 0500Z. EA4KR 20 mtrs 0500Z. PP7AF Juarez 20 mtrs 0100Z POB 113 Maceio, Alagoas 5700 Brazil. PP7AAQ 20 mtrs 0400Z, VK6VK 20 mtrs 0900Z. ZP5CCG. TI2DO Jorge Morava Costa Rica. TI2AEB Armando POB 8/5670 San Jose Costa Rica. SP3KEY. FW0BK Mic via FK8DJ. HH2MC Dan POB 501 Port Au Prince Haiti both 15 & 20 mtrs around 0300 ZE1FW Ian. OX3PT Peter via WA2TTI. VS6EK via Buro. 9Q5HU Box 1002 Kinshasa Zaire.
73 de Skip.....

HAM HELPS

James Hagan 2711 Brittany Rd, Albany, GA 31707 writes that he wants to add sync idle, the "diddle" feature to his ST-6 and Mod 28KSR. Can anyone help him?

Bob Pearson, W9KKL, 304 Maid Marian Dr, Schererville,IN 46375 is looking for a schematic for an ASCII to Baudot convert so that he can use a Mod 33 on RTTY.

DX COLUMN

JOHN CUNNINGHAM, WA9WJD
POST OFFICE BOX RY
PERRYSVILLE, IN 47974

I have not received anything in the way of reports, newsletters, or even notes lately so I cannot report much. This may mean that there is not much going on in the way of new developments. It could also mean that everyone is, like myself, busy as bees getting all the last minute winter-coming-on jobs done.

I have noticed some increase in activity since the evenings are cooler. I have also noticed some real good openings on 2 meters but did not find much on RTTY on during any of them. Where is everybody???

There has been quite a bit appearing about the packet repeaters and the developments in that field are really quite exciting. This will be a real step forward for reliability in communications as the system develops. Can you imagine the inpact of a world wide system of message centers accessible at will to all RTTY operators? I for one, am really looking forward to the day when all of this type of activity becomes a reality. I keep reading all the articles I see on the subject and am still hoping to find a program for my TRS-80 so I can use it on the packet systems but so far nothing has been found. This may be a good program for someone to put on the market. I don't think I am the only one who would like to have such a program. With the number of TRS-80's there are on RTTY, just think how big a boost the packet project would get if they were capable of operating that system. I would bet someone has an 80 running packets somewhere. How about letting me hear it??

You may recall my comments about the very good service I received when I ordered parts from YAESU. I now want to tell you that I had a similar experience with Heath. The lady on the telephone even had to find the part number for me and still I received next day service. It sure is good to find these people who give that extra measure of service to a guy, when he is at wits' end with a sick rig.

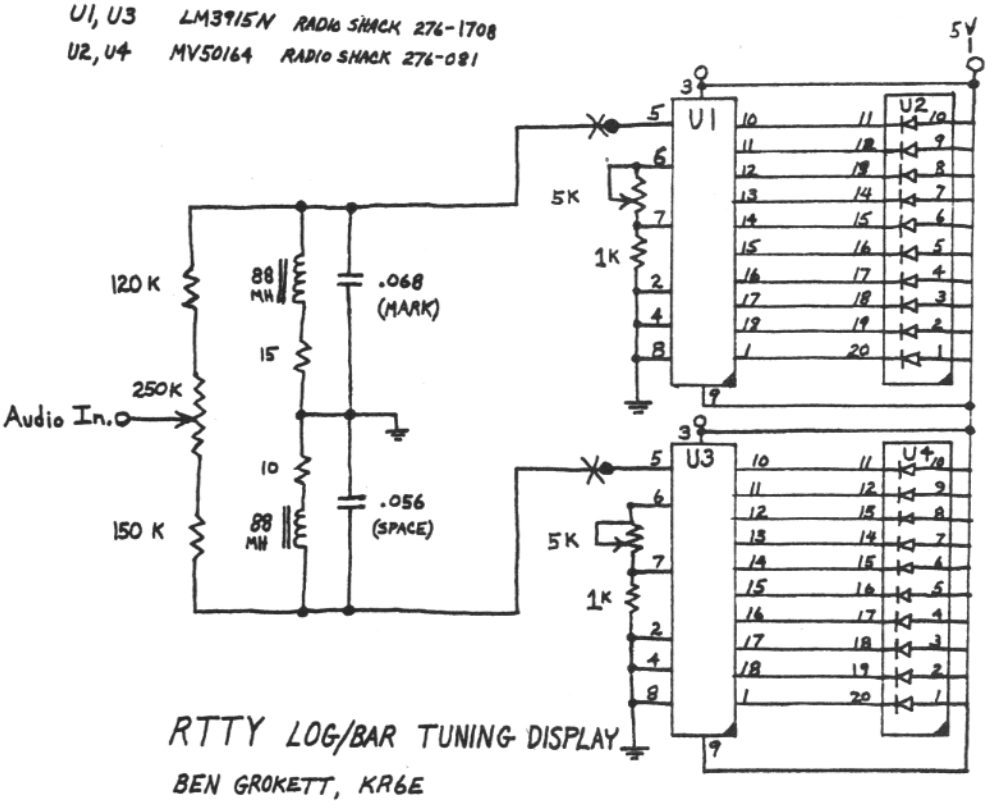
In a previous column, I mentioned setting up displays in schools, shopping malls and other high traffic areas. Our local club just had such a display at the local mall and believe me, it drew quite a crowd. The RTTY display had a lot of people fascinated, especially when Ron,KA9CAP started sending the pix on two meters. We hung the finished products up in the booth and got a lot of comment about them. Another thing that stopped traffic was when we made contact with ZF1GC Frank. We had one club member explaining what was happening while another was on the air. This definately helped the onlooker understand what was happening.

We found that if you take the initiative and explain a little of the operation people then understand enough to have their curiousity aroused. They will then ask questions and you have yourself a good audience. Try this with your display, if no one is asking questions, answer the ones you see on their faces. It worked great for us.

Another thing we found, with all of the schools now having computers in the classrooms, the kids do not hesitate to use one when they see it. So, if you have a program in the computer that you don't want disturbed, watch it closely.

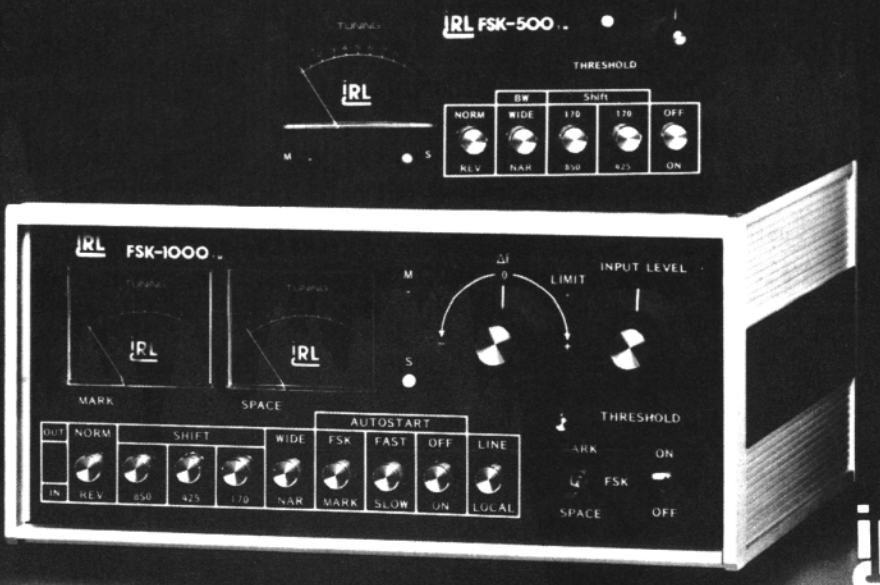
Good luck with your display, don't forget to let me hear about it. Also newsletters, club activities, new repeaters, old repeaters, where you can be found on the band.....AND where everybody else is..

Articles are always needed for the JOURNAL, especially those on homebrew items. You may not think anyone else would be interested but they probably are. Also send the JOURNAL any comments on new products, troubles with them or whatever, perhaps HAM HELPS can help. 73 and CUL.....JOHN



RTTY LOG/BAR TUNING DISPLAY
BEN GROKETT, KR6E

A RTTY DXers' Dream



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RTTY LOG/BAR TUNING DISPLAY

By: Ben Grokett, KR6E
1127 Shirley Drive #3
Milpitas, CA 95035

The following article describes a versatile, effective solid state display for radioteletype (RTTY) signals. The display uses easy to obtain components and construction is very simple.

Conventional displays using a CRT as a display device are somewhat inconvenient because they require high voltage supplies and they have a relatively short lifespan if they are used in a system that is continuously on. Tuning meters are not good tuning indicators because they lack visual effectiveness and it normally requires two meters (and their support circuitry) to see both sides of an RTTY signal.

The method I will describe has several advantages over conventional displays. It requires very little space; less power consumption then conventional CRT displays; is visually effective with a bright LED bar display that can be read with a glance; a single power source (-5 V) and requires easy to obtain devices which are inexpensive. The estimated cost of this display should not exceed $15.00.

The key device in this solid state display is the National Semiconductor LM3915 logarithmic display driver. A single LM3915 will allow 27db of signal range in 3db increments and this device can be cascaded for even greater range. The input signal may be DC or AC without the need of a decoupling capacitor.

CONSTRUCTION

When building this display use standard solid state construction techniques. Lead lengths are not too critical but they should be kept as short as possible following good construction practices. It is left to the individual user to decide whether to build this display as part of a complete terminal unit or to have it operate as a piece of auxiliary equipment. The input circuit shown is very simple however, the builder may put much sharper filters in line if he chooses. Also, depending on the particular station devices driving this display, the builder may want to run the input fully saturated although doing this removes the ability to see selective fading. The variable resistor between pins 6 and 7 on devices U1 and U3 determine the sensitivity of the display. The resistor between pins 7 and 2 control the display brightness and the builder may want to make this resistor variable. If the input signal is very low level it may be necessary to run it through a preamplifier stage however, most applications should not require this since minimum input sensitivity is typically .1 volt. An audio signal generator with a flat response can be used to set the display for equal sensitivity from both channels. If the LED's flicker connect a .1ufd capacitor from the LED anode to ground.

I have used this display for several months now and it remains on 24 hours a day. Typical LED life should allow 5 years of continuous on time. The power source can be stolen from an existing source within a terminal unit or better yet, taken from a single 7905 voltage regulator.

PARTS:

U1, U3 LM3915 Radio Shack Part # 276-1708.
U2, U4 MV50164 Radio Shack Part # 276-081.
2 88 millihenry toroids
2 1K resistors
2 5K variable resistors
1 120K
1 150K
1 15ohm
1 10ohm
1 250K variable resistor
1 .068 mylar cap.
1 .056 mylar cap.

REFERENCES:

National Semiconductor Linear Devices Application Notes.

See schematic on page 10

QSL MANAGERS CONTINUED.

5NØDOG.....W4FRU
5Z4PD.....DL3WL
5Z4RT.....I8JN
5Z4YV.....JA2AJA
8P6AY.....K4ZS
9A1ONU.....IØLVA
9M2MW.....K4BF
9Y4VU.....W3EVW

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WAEDC 14-15 Nov.81 Apr 81

EXTERNAL CRYSTAL OSCILLATOR FOR THE DRAKE TR-7

By: Walter E. Kaelin, KB6BT
12332 Saraglen Drive
Saratoga, CA 95070

The Drake TR-7 is a versatile HF rig for the RTTY mode. For Autostart, Mailboxes, AMTOR etc. The stability of a crystal oscillator is necessary. The internally provided crystal oscillator is awkward to use. So I designed a small outboard oscillator using the external VFO input. The crystal frequency will be appearing on every 0.5 Mhz band. Here is the circuit description.

Q1 is a typical Pierce crystal oscillator. Be sure and use mica capacitors in the base emitter feedback. A buffer amplifier consisting of Q2, Q3 provides a low impedance output. CR 2, a PIN diode switches the RF thru to the set or decouples the oscillator from the set in the off state. S1 selects the mode of operation as follows:

POS 1 Crystal control for RX and TX
POS 2 VFO control for RX and TX
POS 3 Crystal control for TX, VFO control for RX

Q4 senses the PTO enable line and switches the oscillator on thru Q5. If the oscillator were on jointly with the VFO, the leakage thru CR 2 would give you a spurious response at the crystal frequency. For extra stability, I put the crystals in a 60 DEG C oven. Components are not critical and the connector is available from Drake at a nominal charge.

Schematic is on inside front cover.

HITS AND MISSES BY WA6CQW CONTINUED

the RTTY hospitality room on Saturday night and I sure had fun talking Apple computers and RTTY in general with him. Don Wallace, W6AM dropped by and I enjoyed his comments on his trip to China. Senator Barry Goldwater, WA7UGA gave a very fine speech Saturday night after the banquet. What this man gets accomplished for Ham radio is amazing. We all owe him a great debt. The Arizona RTTY gang talked long and hard on RTTY with me. I really enjoyed myself and the XYL Jean and I were sorry it all came to an end on Sunday.

I will wrap up my column for this month. So long for now.....George

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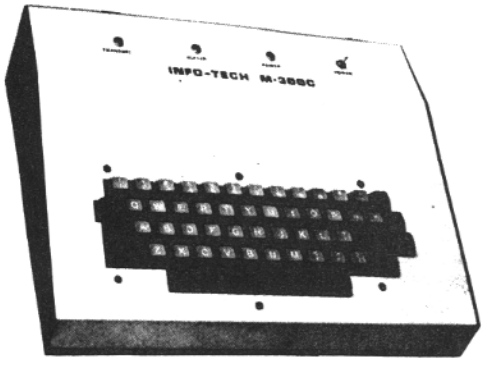

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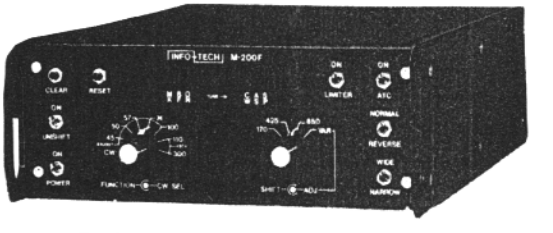

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SALE! RTTY ID GENERATOR. Accepts 5 or 12 volt supplies, 31 RTTY characters available, (please include letters, figures, spaces etc.) Your preprogrammed answer-back must be supplied with order. Ex:DE YOUR CALL, NAME, CITY AND STATE. See Jan. 1980 RTTY JOURNAL for complete description Board is same size as popular ST-6 boards. Kit $34.99,now on sale $24.95 Board alone was $8.50, now priced $4.00. Please add $1.50 for shipping. DAYTAPRO ELECTRONICS, 3029 N. Wilshire, Arlington Hts,IL 60004. Visa/ MC accepted. 312-870-0555.

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NOW KEEP SENDING while you CW ID. The MS-738 AFSK tone mixer is the VHF'ers answer. See November 1979 RTTY JOURNAL for full description. Kit $10.95 plus $1.25 shipping. DAYTAPRO ELEC TRONICS, 3029 N. Wilshire, Arlington Hts,IL 60004. Visa/MC accepted.

FOR SALE: Teletype Model 35 ASR, Mint condition. Call 312-870-0555 evenings or write Neil Petlock, 3029 N. Wilshire Ln, Arlington Hts, IL 60004, $400 or best offer.

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WANTED: SPARE PARTS FOR TELETYPE Corp Kleinschmidt Corp, and Mite Corp., Please send list. Phil Rickson, W4LNW P.O. Box 70, Morrisonville, NY 12962.

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MOBILE RECEIVE ONLY TELEPRINTER,ASCII CODE, 100 WPM. Unit intended to be mounted in car underdash, however could be used in boat. Power required 12 volts DC. Teleprinters are solid state in design and use digital stepper motors for type font and indexing Prints using a ribbon and roll paper. Set has built in AFSK demodulator, selective calling, ribbon reinker, auto carriage return line feed features. Teleprinter appears to be in excellent condition and documentation available with purchase. Physical size 13" x 9" x 4". Not going to see many of these around especially at $450.00. Call ED, WA2FBY 212-372-0349 or write 3730 Nautilus Ave, Brooklyn, NY 11224.

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DID YOU HEAR THE NEWS?? A5 AMATEUR TELEVISION MAGAZINE was purchased by WBOQCD. The new expanded format includes full coverage articles and pictures on all modes of specialized communications including fstv-sstv-rtty-satellites etc. Printed six times per year at $10. Send $2.50 for sample issue good towards subscription. A5 Magazine, POB H, Lowden,IA 52255 "our 15th year".

RTTY TUBES; 116 antique 45Z5's, various CRT's (inquire). Also Western Electric TD2 I.F.Main amplifiers, I.F. buffer amplifiers, and 70 Mc. I.F. Amplifiers. Need 2-signetic 25L01B and PROM 8748-8. H. Galbraith, 1214 S. Alvord, Evansville, IN 47714.

1982 SAROC ANNUAL PRESTIGE CONVENTION April 1-2-3-4, Aladdin Hotel. If you did not advance register for 80-81 SAROC, send QSL card with SASE for details. POB 14217, Las Vegas, NV 89114.

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SAVE $700 ON MICROLOG ATR-6800 with application module 1.1 and Sanyo 9" monitor.AS new in original pack.Used short time.The ultimate for RTTY plus computer and terminal modes. First $1800.Also TRS80 Mod 1 one level two 16K.Perfect,like new in original pack extras $500 BASCOMB K4KOZ, 5620NW 3rd Ter,Boca Raton,FL 33431.395-994-1242.

HAM HELPS CONTINUED

Galen Miller,W9ZIB, 17311 Willowbrook Dr, South Bend,IK 46636 has a Mod 28ASR that he got from a trucking company and has a #207-16000 series LAAC cabinet. Can anyone give Galen a hand as he can't get it to print at all?

AWARDS SECTION

Mac Bellows,W4MWP
3220 Pine Valley Road
Sarasota, FL 33579
WAC all on 20 mtrs #94 Dated 21-9-81.

Michio Hayashi
15207 Nirenoki Shimizumachi
Kumamoto City 860 Japan
DXCC #59 dated 21-9-81

Yasutaka Nagata
2-31-9 Shakujirdai
Nerima-Ku Tokyo 177 Japan
DXCC #60 dated 12-10-81

John Chandler, K4VDM
809 Lincoln Avenue
Johnson City, TN 37601
WAS 15-9-81

QSL MANAGERS LIST

A4XFW..... K6QX	SvØAP.....WB7NCF
CN8BI.....IØUWG	T4AHC.....WA6QFN
C5AAN.....DJ5QT	TG9GI.....K8HV
C31CJ.....F6GZM	TU2GA.....K9BXA
C31UL.....DF5HS	TU2JJ.....KNØKCN
C31PS.....DL5NJ	VE6GBU/SV....DK3CU
C6ACA.....W2IUC	VKØKH.....VK5WV
DK5BD/ST2..DF1BP	VKØJM.....VK3BAF
FK8CR.....W7OK	VP5AH.....WA4DRU
FK8CU.....W7OK	VQ9MR.....N5GU
FK8DJ.....JH3XCU	VR1AF.....W7OK
FM7BW.....WB4IWW	VR3AH.....WB4PRU
FR7BE.....W4LZZ	VR6BJ.....KØBJ
FR7ZS.....F5DV	VS6CT.....KB9N
FWØBK.....FK8DJ	XT2AW.....KN1DPS
FY7AS.....F5WQ	YJ8YS.....JL1CII
GJ5CHV.....DL3EW	YT2D.....YU2CDS
HI8XDF.....K3SWZ	ZB2BL.....W2UTH
HMØOO.....DK5ML	ZB2EY.....DL5NJ
HP1AXW.....K1RQ	ZD9GG.....ZS1Z
HZ1TC.....I8YCP	ZF2AC.....N3JL
JY1.....WA3HUP	ZF2BN.....W4HET
K4GMH/VQ9..K4GMH	ZK1AM.....WØWP
K6SAD/KH2..VE5QY	ZP5GLS.....W3HNK
KØ5D/HR5..WBØMZB	ZS2MI.....WA2IZN
KX6HC.....W1FO	ZS6DN.....WA4HHG
OY1A.....K6XP	3B8RS.....DJ6QT
P29BB.....VK4AHD	3B9RS.....DJ6QT
OX3PT.....WA2TTI	3D6AD.....WA6QFN
S8AHC.....WA6QFN	5B4HF.....KC5I
ST2SA.....DJ9ZB	5NØAAS.....DJ2HZ

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