CLASSIFIED ADS-

FIRST CLASS MAIL

RTTY
February 1976
JOURNAL

Two US RTTY hams get royal reception in Europe.
"Knobby" W2PLQ - "Willy" HB9HK and MYL Elsy, "Bud" W2LFL.
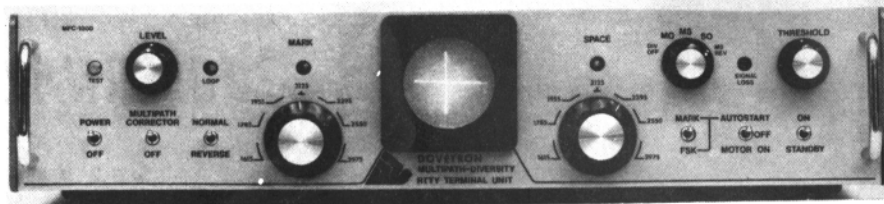See story on page 10.

CONTENTS ---

Bicentennial RTTY W.A.S. Contest.

DOVETRON - Multipath-Diversity MPC 1000 RTTY Terminal Unit.
3 [Three] to the Winners.   PLAQUES - CERTIFICATES

RULES:

The first station to submit proof of two way contact with all 50 of the United States will be the winner.

All licensed Amateur Frequencies may be used.

There will be two divisions of area: United States, Canada, Mexico and Central America will be Division #1.

The balance of the world will be Division #2.

The first two winners in Division 1 will be awarded MPC-1000 terminal units.

The first winner in Division 2 will be awarded a MPC-1000 unit. If no station qualifies from Division 2 the terminal unit will be awarded to the third place winner of Division 1.

The next five winners will be awarded plaques.

QSL cards or proof of contact must be sent to John Possehl, W3KV, PO Box 73, Blue Bell, PA 19422. Postmark of mailing will determine submission time. If no postmark is visible, date of arrival at Blue Bell will be used. It is suggested that after 40-45 cards have been received they be sent in for checking and the balance can then be sent registered, when received so that a postmark is obtained. The RTTY JOURNAL reserves full right to judge on any cards received.

Contest will start January 1, 1976 at 0001GMT and end on December 31, 1976 at 2400GMT.   HAPPY HUNTING!

Early New Years morning we listened in and were pleased and surprised to hear 80 meters full of RTTY signals looking for states. New Years day was the same. The only band that still seems deserted is 40 meters and this is a good band for low power stations to work cross country or even Hawaii and Alaska. Confusion as to what frequency to use may be part of the problem. Personally we have no preference but lets try a-round 7095. W1AW is on this freq on RTTY. 5 Kz up or down should work out. Lets have some 40 meter activity.

Working a station is part of the job, getting a QSL is just as necessary. Picture yourself as a scarce station and suddenly getting a raft of QSLs to an-swer. By ALL means enclose a SASE with your QSL if YOU want a card. One idea often successful is to use a double post card, your QSL information on one side and the station replying on the other. Rubber stamps can be used but any kind of verification is the necessity, not a fancy card. Many fellows do not have QSL cards and the easier you make it for him the better your chances of get-ting a reply back.

Remember, after the Dovetrons are won there are still 3 plaques for next winners and EVERYBODY that works WAS during the year gets a Special Certificate so don't give up because you think others are going to win. Everybody can win something.

Interpreting RTTY Weather Data.

Of all the commercial RTTY trans-missions on the h.f. bands probably the most consistent are the data from the Weather Bureau. They are broadcasted 24 hours a day on various frequencies between 3 and 30 MHz providing solid copy on one spot or another any time of day or night.

About two years ago there were no-tices during their transmissions that they were going to change to higher speed operation. Indeed, at the appointed time they did make this change and since my station lacked higher speed capability, interest waned in this area. However, recently the 60 WPM was again noted on several frequencies and my interest picked up in printing some of this information.

Most of the data is meaningless un-less one knows the various codes to in-terpret it. Many of the transmissions consist of five character number groups and even careful study of these usually fails to reveal much sensible information unless at least some idea of the codes is known. This article outlines some of the information I have been able to col-lect in correspondence with various sources.

Of particular interest is a weather summary run by WBR7O at approxi-mately 0100 and 1300 GMT. This sum-mary covers a large number of stations all over the U. S. with high and low temperatures and precipitation for the previous 24 hours. Also given are the forecasts for the following two days. This data is in plain language and needs no interpretation. These summaries are preceded by the identifying letter group "ABUS" for Selcal or stunt box coding. The four N's are transmitted by both WBR7O and WSY7O after each block of data for shutdown.

Also of interest are the data blocks preceded by the identifying letter groups "SMUS". This indicates a group of sur-face synoptic data with the M specifying that the data was collected at the "main" observing hours of 0000, 0600, 1200 and 1800 GMT. The collected reports are normally transmitted some time during the hour following these observation times. You will also note other "SM"

listings -- SMCN for Canada, SMSA for South America, SMCA for the Caribbean area, etc.

STATIONS AND FREQUENCIES

These are the stations and frequen-cies with 60 WPM data:

WSY7O - New York - 5940, 8110, 13620, 16250.5 and 20907KHz.

WBR7O - Miami - 6855 and 8105KHz.

WSY7O lists its frequencies during its station I.D. while those for WBR7O are as measured on my receiver. WBR7O undoubtedly has other frequen-cies in use. Both stations transmit 45.45 baud RTTY with 850Hz shift. Both shift down in frequency on space for nor-mal lower sideband copy.

U.S. GOVERNMENT HANDBOOKS

Complete information for reading the synoptic surface reports can be obtained from two U. S. Government publications:

1.) National Weather Service Com-munications Handbook No. 4 Index Numbers for North and Central America

2.) Federal Meteorological Handbook No. 2 Synoptic Code.

Both are available from the Supt. of Documents, U. S. Government Printing Office, Washington, D. C. 20402. They cost $0.65 and $1.50 respectively. This article is a summary of the informa-tion contained in these handbooks.

DATA FORMAT

In 1966 the World Meteorological Or-ganization (WMO) adopted a few changes in the form of message and the tables used in the synoptic reports from land and ship stations when reporting weather. They became effective on Janu-ary 1, 1969 and the report form is now in use. These changes allowed for uni-form reporting around the world while allowing individual member countries to meet their own special requirements for weather data.

The synoptic report format used in the 49 Continental United States is as follows:

IIiii Nddff VVwwW PPTTT NhClhCmCh TdTdapp (99ppp) 6PoPoPoPo (7RRRts) (8NsCHshs) (9SpSpspsp) (2R24R24R24R-24) (3PwPwHwHw) (dwdwPwHwHw) (4T-xTxTnTn) (Additional Plain Language Data)

This is called the primary synoptic report and contains all possible data. You will notice that WBR7O sends this sort of format. WSY7O, however, sends a report referred to as the intermediate synoptic report which is an abbreviated

form of the above. It only contains the first eight groups of the above listing -- i.e., up to and including the 6PoPoPoPo data.

The groups in parentheses are optional or supplementary groups. They may or may not be included in the primary report for various reasons. For example, if the phenomenon has not occurred they would be omitted. The first figure of each of the supplementary groups is the group identifier so that any of them can be dropped from the message while still being able to identify others which might be included. They are transmitted in order as shown 7, 8, 9, 2, 3, and 4.

TYPICAL DATA

Here might be a typical line of data from WBR7O:

NNNNZCZC
SMUS1 KSTL 110000
72465 80907 74216 22905 855// 02307
68927 70110 20001 44428;

Note that the only supplementary groups transmitted here are the "7", "2", and "4" groups. The semi-colon at the end of the line is the message separation signal. It is defined as Signal No. 22 (figures case position) of the International Telegraph Alphabet No. 2. On amateur communications machines this prints out as a semi-colon. On weather machines it is the symbol for a scattered sky condition.

The following text covers interpreting the above report in terms of the code mentioned above.

STATION IDENTIFIER – IIiii

72465 -- this is the identifier for Goodland, Kansas. The first two digits in this number specify the country or area of the world in which the station is located. These are called block numbers. Each block contains 1000 station numbers from 000 to 999. Block numbers for the U.S. and Canada are 72 and 74. In block 72 the numbers from 000 to 200 and 970 to 999 are presently not assigned. The numbers in block 74 are used whenever it is necessary to assign a new location where all the numbers appropriate in block 72 have been used. The station number of the nearest station in block 72 is subtracted from 999 and this number is assigned to the new station with a 74 block number. For example see JFK airport in New York which is number 74486.

A fairly complete listing of these identifiers is included at the end of this article.

SKY COVER * WIND GROUP – Nddff

80907 -- this group gives the amount of sky cover, the direction and speed of

the wind. In this particular case it is overcast with wind at 90 degrees (east) and at a speed of 7 knots.

The first figure, N, gives the total fraction of the celestial dome covered by cloud, irrespective of the cloud types.

0 -- No clouds
1 -- 0.1 or less but not zero
2 -- 0.2 or 0.3
3 -- 0.4
4 -- 0.5
5 -- 0.6
6 -- 0.7 or 0.8
7 -- 0.9 or more
8 -- Overcast
9 -- Sky obscured or amount cannot be estimated

"dd" gives the wind direction in even tens of degrees from true north. 36 indicates a north wind. Calm or no wind is indicated by 00. In 80907 above "09" indicates 90 degrees.

"ff" gives the wind velocity in knots. For calm conditions a 00 is sent. From 0 to 99 knots the velocity is coded direct. If the wind is 100 knots or more, 50 is added to the numbers for the wind direction and the speed over 100 knots is sent for the velocity. Of course wind speeds in excess of 100 knots are extremely rare. 1 knot is equal to 1.1508 miles per hour.

VISIBILITY * WEATHER GROUP – VVwwW

74216 -- This indicates a visibility of 24 kilometers or about 15 miles. The present weather indicates rain within the hour before the observation. The weather for the past six hours since the last report has generally been rain.

VV gives the horizontal visibility direct in kilometers and tenths of a kilometer up to 5.0 kilometers. Thus a visibility figure of "24" would indicate 2.4 kilometers. Note that since 0.1 kilometers is very nearly equal to 1/16th of a mile the visibility numbers below 50 can also be read in 1/16ths of a mile. Thus "24" would be about one and one half miles. Above 5.0 kilometers and up to 30 kilometers visibilities are reported in whole kilometers starting with 56 indicating 6 kilometers, 62 indicating 12 kilometers, etc. 80 then indicates 30 kilometers. Then from 81 through 88 the numbers jump by five kilometers -- thus 81 is 35 kilometers, 82 is 40 kilometers, etc. A figure of 89 indicates a visibility greater than 70 kilometers (43-3/4 miles).

Visibility numbers between 90 and 99 are only used in reports from stations at sea such as ships and weather buoys.

90 less than 50 meters
91 50 meters

92 200 meters
93 500 meters
94 1 kilometer
95 2 kilometers
96 4 kilometers
97 10 kilometers
98 20 kilometers
99 50 kilometers or more

The two digits for "ww" in the visibility weather group indicate the present weather and in some cases the weather within the hour preceding the observation. In general, numbers from 00 to 49 indicate there is no precipitation at the station at the time of observation. Numbers from 50 to 99 indicate precipitation at the time of observation.

Reports of 00, 01, 02 and 03 when sent give the characteristic change of the state of the sky during the past hour.

00 Cloud development not observed or not observalbe.
01 Clouds generally dissolving or becoming less developed.
02 State of sky on the whole unchanged.
03 Clouds generally forming or developing.

These numbers are often reported when there is no significant weather at the time of observation.

Other code numbers for present weather are included in a separate table at the end of this article.

The last digit of the visibility weather group describes the general character of the weather during the last six hour period.

0 Cloud covering 1/2 or less of the celestial dome throughout the period.
1 Cloud covering more than 1/2 of the celestial dome during part of the period and covering 1/2 or less during part of the period.
2 Cloud covering more than 1/2 of the celestial dome throughout the period.
3 Sandstorm, duststorm, or blowing snow.
4 Fog, ice fog, thick haze, or thick smoke.
5 Drizzle.
6 Rain.
7 Snow, rain and snow mixed or ice pellets.
8 Showers.
9 Thunderstorm, with or without precipitation.

The term ice pellets is synonymous with the U.S. term "sleet".

PRESSURE – TEMPERATURE GROUP – PPPTT

22905 - this indicates a pressure of 1022.9 millibars and a temperature of 5

degrees Celcius.

The first three digits "PPP" code the air pressure directly in millibars and tenths of a millibar. For pressures above 1000 millibars, the "10" is omitted from the reading. Likewise for pressures under 1000 millibars the first 9 is omitted. For example a report of 988 would be 998.8 millibars. Note that this pressure reading is reduced to sea level. This is the pressure reading given in TV weather reports and puts all pressures into a common reference for comparison. The group starting with a 6 described later gives the true station pressure.

The last two digits of this group give the temperature reported in degrees Celcius. For temperatures below zero, 50 is added to the absolute value of the reading and reported. Thus minus 8 degrees would be reported as 58. 72 would be a temperature of minus 22 degrees Celcius. Minus 50 degrees is reported as 00/ and temperatures below this are reported in the amount they exceed 50 below.

CLOUD GROUP – NhClhCmCh

855// in the report above. This group gives data on the specific clouds at the time of observation. The study and classification of clouds is more complex than might be supposed. The character of the cloud cover is constantly changing and no two clouds ever seem to be exactly the same. As a result, the complete coding and description for this group is fairly lengthy. A general coverage is presented here, and those with additional interest will find more data in Federal Meteorological Handbook No. 2 listed above.

The first digit Nh gives the amount of sky cover due to the Cl (low clouds) or the Cm (middle clouds). Ch in the above indicates high clouds, and these are never included in the value for Nh. If low clouds are present, the N value gives the sky cover due to these. If middle clouds are present only Nh gives the cover for these. The codes for Nh are the same as for N listed above under the Nddff group. Note that Nh reported here can be equal to or less than the value of N in the Nddff group. For example if both low and middle clouds are present, Nh only reports the cover due to the low clouds whereas, N in Nddff reports the cover due to all clouds in the sky regardless of type or height. In general heavier clouds are described by increasing numbers. If there are no clouds in a given range, a zero is reported.

The middle digit of this group, h, reports the height of the lowest cloud base according to the following code:

0 -- 0-149 feet
1 -- 150-299 feet
2 -- 300-599 feet
3 -- 600-999 feet
4 -- 1000-1999 feet
5 -- 2000-3499 feet
6 -- 3500-4999 feet
7 -- 5000-6499 feet
8 -- 6500-7999 feet
9 -- 8000 feet or higher or no clouds

Low clouds less than 6500 feet, middle clouds 6500-20000 feet and high clouds above 20000 feet.

You will note that this particular report 855// contains slash bars for the middle and high clouds. This indicates that no data was available for them. That is they were not visible because of the low cloud cover probably. In this and all other groups of data in the report, a slash bar indicates the absence of data for one reason or another. In the above cloud group, the sky was completely covered for one reason or another. In the above cloud group, the sky was completely covered by low clouds (8) and these low clouds were Stratocumulus with their bases (lowest cloud base) at 2000 to 3500 feet.

DEW POINT - PRESSURE TENDENCY GROUP - TdTdapp

02307 - This indicates a dew point of 2 degrees Celcius and the pressure now higher than three hours ago by 0.7

02307 - This indicates a dew point of 2 degrees Celcius and the pressure now higher than three hours ago by 0.7 millibars. The first two numbers code the temperature of the dew point in degrees Celcius exactly as for the station temperature as described in the PPPTT group.

The center digit, a, gives the pressure tendency during the past three hours.

0 - Increasing, then decreasing; pressure the same or higher than 3 hours ago.
1 -
2 -
3 - Pressure has increased in the last three hours.
4 - Barometer steady - pressure same as 3 hours ago.
5 - Decreasing then increasing pressure the same or lower than three hours ago.
6 -
7 -
8 - Pressure lower than 3 hours ago
9 - An indicator figure to note that the next two numbers describe something other than the pressure change during the last three

hours. It often indicates that the next two figures give the pressure change for the last 24 hours. This sort of report is given by U.S. stations in some areas.

The last two digits give the amount of pressure change during the last three hours in units and tenths of a millibar. Thus 07 above is 7/10ths of a millibar in the last three hours. For values above 9.8 millibars change see the following special group.

EXCESSIVE PRESSURE TENDENCY GROUP -- (99ppp)

If the pressure has changed 9.9 millibars or more, the last two digits of the regular group are coded "99" and this group is then immediately sent. It simply reads out the amount of pressure change in tens, units and tenths of a millibar. The first two nines in this supplementary group are indicators and the last three digits give the pressure change. If the pressure changed by say 15.7 millibars, the supplementary group would be 99157. A pressure change over 10 millibars in three hours is rather unusual.

STATION PRESSURE GROUP -- 6PoPoPoPo

68927 -- This group in the report indicates an actual station pressure reading of 892.7 millibars before reduction to sea level pressure. For pressures 999.9 millibars and below the pressure is coded directly. If the station pressure is 1000 millibars or more, the hundreds digit is sent as a "3" followed by the remaining digits in the pressure. For example, a station pressure of 1027.6 millibars would be sent as 63276. 10000.0 would be sent as 63000.

INTERMEDIATE SYNOPTIC REPORT

As mentioned above, WSY7O sends the abbreviated form or intermediate synoptic report. It contains data up to the Station Pressure group. Thus you will note that only the groups discussed so far are sent by WSY7O. This is somewhat unfortunate since some of the remaining supplementary groups contain interesting data such as precipitation figures and maximum/minimum temperature readings. However, you will find that the reports from WSY7O cover a somewhat broader range of the U.S. and in this respect are more useful for obtaining barometer readings, etc. The two situations somewhat balance, depending upon the particular data you are interested in receiving.

PRECIPITATION GROUP - 7RRRts

70110 -- this indicates precipitation in the amount of .01 inches during the

past six hours. This occurred during the past hour (see also "21" for present weather in the report) and there is no snow on the ground.

The first number of this group is the identifier and is always a "7". The next two numbers (01 in this case) give the amount of precipitation in hundredths of an inch. If the precipitation during the past six hours has exceeded .99 inches, the precipitation group is immediately followed by a plain language word indicating the whole number of inches. For example if the amount were 2.55 inches in the last six hours the report would be 75510 TWO -- the "TWO" added to indicate the amount was actually 2.55 inches.

The fourth digit indicates the time the precipitation began or ended. Specifically, when precipitation is occurring at the time of observation, or has ended during the hour preceding the observation this digit gives the time the precipitation began. If precipitation is not occurring at the time of observation and has not occurred in the hour preceding the observation, it gives the time the precipitation ended.

If precipitation is only a trace, the code figures 00 are reported for the amount. Note that these amounts are the water equivalent for snow and other solid forms of precipitation.

The last digit, s, gives the total accumulated depth to the nearest whole inch of snow on the ground at the time

of observation. This includes all solid forms of precipitation; i.e. snow, hail, ice pellets (sleet), etc. Zero indicates no snow on the ground. A trace of snow is reported by a "9".

When there are 8 or more inches on the ground, a 9SpSpspsp group is transmitted to report the total depth. Also, when there is more than a trace of snow on the ground at the 1200GMT observation, this special group is transmitted even though the 7RRRts might not be called for. (No precipitation in the past six hours). This special group for total snow always starts with 904 and the last two digits indicate the total snow. If there were 14 inches, it would be 90414. If it were 8 inches, the precipitation group would indicate 8 and the special group would also indicate 8 -- 90408.

24-HOUR PRECIPITATION GROUP 2R24R24R24R24

20001 -- this indicates a total precipitation in the 24 hours preceding the observation of .01 inches. Note that this is the same as reported for the last six hours in the group just described; i.e. All of the .01 inches fell during the last six hours. The 24 hour precipitation is coded directly in tens, units and hundredths of an inch. 6.45 inches would be reported as 20645. Again this refers to the water equivalent of solid forms.

CONTINUED NEXT MONTH.

*****
RTTY IDENTIFIER   Part 2

MIKE SIMS, K4GMH
8408 Cherry Valley Lane
ALEXANDRIA, VA. 22309

Programming the PROM
The Message - Composing and Organizing

The message should be composed with the RTTY identification put into the first half of the memory and the CW identification placed into the second half of the memory. The RTTY message can have a "DE" with proper spacing. However, on CW, anything other than the call is usually superfluous. An example message can be seen in Figure 8.
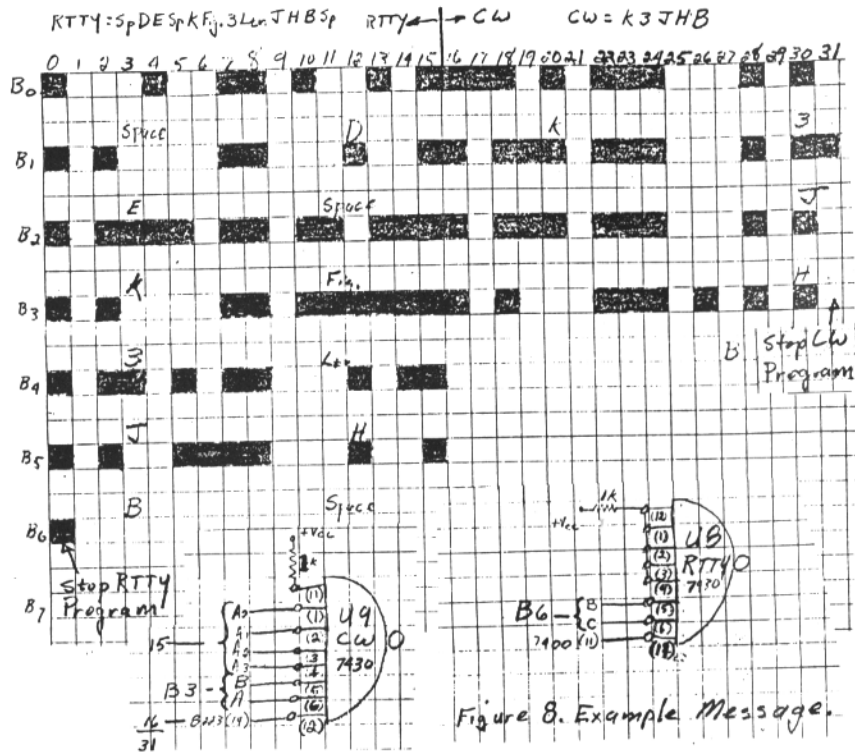
Once the identification message has been composed, a programming sheet should be selected. A suggested form can be made by dividing a piece of paper into 32, 1/4 inch columns and 24, 1/4 inch rows. The 1st, 4th, 7th, 10th, 13th, 16th, 19th and 22nd Row are numbered B0, B1, B2, B3, B4, B5, B6 and B7 respec-

tively. The columns are numbered 0, 1, 2, 3, 4, --- 31.

Fold the program sheet lengthwise between the 15th and 6th columns. The 0-15 columns, Row B0 through B7 represent the RTTY portion of the memory and columns 16-31, Rows B0 through 7 are the CW portion of the memory.

The letter or character to be programmed in the B0 Row, 1 to 8 Columns is written in the 3rd Row, Column 4. The second letter or character in the message is written in the 3rd Row, Column 12, 3rd letter or character in the 6th Row, Column 4 and 4th letter or character in the 6th Row, Column 12. This is repeated every 3 rows until the RTTY message is completed.

Figure 9 is a Baudot Chart that can be consulted to determine which are "1s" and "0s". The "1" and "0" correspond to "mark" and "space" respectively. Note that Columns 0, 7, 8 and 15 are all "1s" and Columns 1 and 9 in all rows are a "0"

Figure 8. Example Message.

Figure 10. Programmer Diagram.

Figure 11. plus 12.5VDC for the Programmer.

The columns in the 2nd, 5th, 8th, 11th, 14th, 17th, 20th and 23rd Row are to be checked off as each bit is programmed during the actual PROM programming.

The second portion, Columns 16-31, of the programming sheet is now considered. This represents the CW portion of the memory. A dot is a "1", one bit long. A dash is three consecutive "1s". Spacing between consecutive keying elements in a letter or character is one "0" bit. Spacing between letters is three consecutive "0s" and four consecutive ""s" is the spacing between words.

The CW message, in "1s" and "0s" should be placed on the Programming Sheet. There will be no repetitive pattern as in the RTTY portion of the Programming Sheet, but the CW will be in dots and dashes so it can be easily checked.

A suitable power supply for the Programmer can be constructed from the power supply previously described with the addition of an extra LM309k and four resistors. (See Figure 11.)

The power supply circuit should be adjusted for a plus 12.5VDC output with a 390 ohm load. With the load either connected or removed the voltage should re-main within plus 0.5V of the desired plus 12.5V level. The supplies plus 5V is used for the plus 5V required for the Programmer.

Programming

Once the Programmer and Programming Sheet have been thoroughly checked (ask a knowledgeable friend to go over both) you are ready to start. The following steps should be reviewed and thoroughly understood before starting the programming.
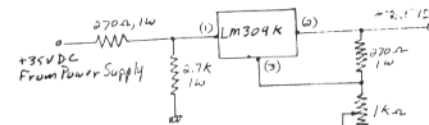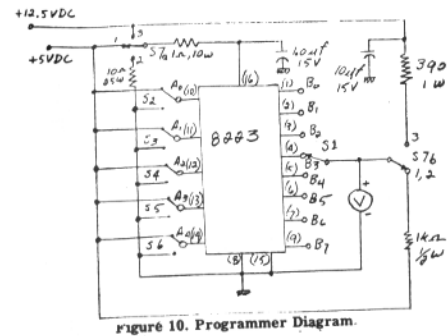
1. With the PROM removed and the power supply(s) connected and turned "on" to their respective voltages; switch S7 should be in position 2; switches S2-S6 in the "0" or grounded position and switch S1 in position B0.

2. 5VDC should be read on V when S7 is in position 1 or 2 and 12.5VDC when in position 3. Return S7 to position 2.

3. Place the PROM in the Programmer's socket.

4. Place S7 in position 1. V should read less than 1 volt. This means that Column 0, Row B0 is a "0".

5. If your Program sheet calls for Column 0, Row B0 to be a "1", switch S7 should be turned to position 3 and imme-diately (1/2 second at most) returned to position 2 and then (1/2 second minimum) returned to position 1. V should now read 5V. This indicates that Column 0, Row B0 is now a "1". Place an "X" in the box im-mediately below this Column 0, Row B0 bit on the Programming Sheet.

6. S1 should be switched to B1 and steps 4 and 5 repeated if a "1" is called for in Column 0, Row B1 on the Programming Sheet. If you are programming a Baudot message, the Column 0 in all the rows will be a "1".

7. After Column 0 for all rows in-volved in the message are programmed and checked off on the Programming Sheet, Column 3 (00011) should be ad-dressed by placing switches S2 and S3 to a "1" (5V) position. Note: Column 2 in all the rows is a "0" as this is the "start" pulse. A line is drawn down Column 2 to show that this Column has been consid-ered during the PROM programming.

8. The Programming Sheet should be consulted to determine if a "1" or "0" is required in Column 3, Row B0. If a "1" steps 4 and 5 should be repeated. If a "0" an "x" should be placed on the Program-ming Sheet in the row immediately below this Column 3, Row B0 bit.

9. Place S1 to B1 and follow step 8 ex-cept now, look at Row B1 on the Program-ming Sheet. This programming by column is repeated for all the columns and rows until the PROM is programmed.

10. When the PROM is programmed, return S7 to position 2 and remove the PROM.

PARTS LIST:

The parts are not critical. A good quality capacitor (Mylar, R Polystyrene, etc.) should be used for the 0.22 and 0.68 uf oscillator capacitor. The oscillator's 50K variable should be a multiturn unit to ease the timing adjustment. The diodes are silicon similar to 1N914 except for the power supply. The resistors, except for the power supply, are 1/4 watt. Switches S1 and S2 are pushbutton. The relays are DPDT, plus 24VDC, crystal can relays obtained from surplus.

CONSTRUCTION

No special construction requirements are necessary. A RTTY Identifier has been built on perfboard rising wire wrap IC sockets. A double sided drilled printed circuit board is available from the author, for $6.00 (postage paid U.S.). RTTY only drilled double sided board is also avail-able at the same price. The author can al-so furnish 256 bit PROMs, programmed to your call or message for $8.00 (postage paid U.S.) as long as supply lasts.

A jumper is necessary from U2's pin (3) to U3's pin (14) on the pc board. The components should be soldered both on top and bottom of the board.

ADJUSTMENT

Only two adjustments are required. The first adjustment is to place the jump-ers for the program stops. This is best done with No. 30 insulated wire. In the Ex-ample Message, Figure 8, U9's inputs are connected to A0, A1, A2, A3, B, and A; U8's inputs are connected to B and C. The placement of the jumpers will depend on the message, but in general the RTTY "stop" bit will be the last bit in the last character's "stop" pulse. In CW, the mes-sages "stop" bit will be the bit that follows the last "1" bit. Remember, that you are counting in binary; A0 equals 1, A1 equals 2, A2 equals 4, A3 equals 8, A4 equals 16, and A equals 1, B equals 2, C equals 4.

The second is to set the oscillator's period to 22 milliseconds with the 50K ohm variable. A counter is best for this job. A calibrated oscilloscope can also be used. (Note: 60 HZ has a period of 16.67 milliseconds.) The counter or oscillo-scope should be connected to U2's pin (3).

OPERATION

The RTTY Identifier is rather simple to operate. It will take a little thought at first to get used to not having to type your call, but one evening of operation is all that is required.

CONCLUSION

The RTTY Identifier is a rather basic unit. The design can be easily expanded to include larger memory devices, adding additional 256 bit memory devices, etc.

***

Two RTTY Vagabonds in Europe

By "Bud" Smith, W2LFL.

On the evening of last September 27th, after several months of planning, Knobby, W2PLQ and myself were aboard a 747 jetliner enroute to Europe as RTTY's unofficial ambassadors of good will. This was the start of a whirlwind three week trip thru ten countries, and meetings with some 40 hams.

Arriving in London next morning we were welcomed to Europe by Robin, G8LT at Heathrow Airport. This was followed by a very complete tour of the city in his car. Points of interest included Buckingham Palace, Westminster Abbey, Houses of Parliament, and then a visit to Robin's QTH.

The following morning, Sid, G4CTQ met us and we were off to visit Reg, G6JF in the southern part of England. On the way a stop was also made at historic Stonehenge. That evening we arrived at Reg's QTH on Yabbacombe Farm for a very delightful stay.

Next afternoon we were off again by train. This time our destination was Paris. Via London to Dover we crossed the English Channel to Dunquerk, France. Here our EURAIL passes were activated.

A few hours later, as we arrived in Paris by train, we were met by Jean, F6BEX (ex-FM7AJ), an old friend of many of us. By car, Jean took us on a tour of the city which included a visit to the Cathedral of Notre Dame, and of course the Eifle Tower. That evening we all were invited to spend the evening at the QTH of Claude, F9LC in Nogent-Sur-Marne. The following afternoon Jean saw us off as we boarded the train to Switzerland.

In Zurich we were met by Paul, HB9AVK. Here we stayed the night after rag-chewing till the early hours of the morning. The next day Paul made contact with Dirk, DK3OT at 4U2ITU on RTTY to inform Hans, DJ8BT that Knobby and I would be arriving in Geneva the following day. Later, Willy, HB9HK met us at Paul's QTH and the three of us then drove to Kuessnacht. There we were joined by Bert, HB9GS. Then an auto drive up the mountain overlooking Lake Luzern at night. Willy's 2nd station is on the mountain, and at this QTH a RTTY QSO was had with Bob, WB8JEY. Next morning a visit was made to the QTH of Bert, followed by a tour of Luzern with Willy. Luzern is a very old and interesting city.

That afternoon we were off again by train, our destination, Geneva. Arriving in Geneva, arrangements were made for accommodations, and we then went directly to the ITU building where 4U1ITU is located. At this point I must explain something; the reason the station was signing 4U2ITU during the week-end of the C.A.R.T.G. Contest was to commemorate the World Telecom '75 Exhibition and conferences being held in Geneva at that time. At 4U2ITU we met Dirk, DK3OT, Rupert, DL3NO and Juliano, I1GMF. At a restaurant near the exhibition building there was a gathering of many of the conferees, and here we met Jean, LX1JW, Hans, DJ8BT, and Lucien, HB9ADM among many others.

The following day, after attending the exhibition, we departed by car with Juliano, I1GMF who was driving to his home in Torino, northern Italy. The snow-capped Alps presented some very beautiful views as we approached them via the southeastern part of France. Arriving in Torino, we were hosted by Juliano, and stayed the night as his guests.

Early next morning, Knobby and I were off again by train to San Remo on the Italian Riviera of the Mediterranean. Here we were to meet Attilio, I1BAY for a very nice visit. During our stay we toured the area which is sub-tropical and viewed many greenhouses and fields of carnations and roses. San Remo is the "carnation capital" of the world. Attilio also took us around to meet Rosy, I1PXC, Mario, I1Rub, and Bruno, I1YS.

The next day Knobby and I were on our way again. This time to Munich, Germany. We had originally planned to visit Vienna, Austria, but since it was a full day's travel by train, and time was short, we regretfully decided to cancel our plans to visit that city. We did however cross southern Austria on our way to Munich. We had not planned any visits, so took a bus tour of Munich and Olympic City, and did some shopping. That evening we departed Munich by train. Our next destination was Wuppertal in the southwestern part of Germany.

Early the next morning Juergen, DL2AK met us at the railroad station in Wuppertal. During the day Juergen took us by car to the city of Cologne. Here we visited the great Cathedral and the Roman Museum. Later, back at the QTH, a QSO was had on 20 M. RTTY with John, W3KV. During the evening Juergen in-

vited Paul, DJ5PN and Wolf, DK5JF over for a little get together.

Next day, Knobby and I were on our way again as we bade goodbye to Juergen, and boarded the train to Luxembourg. In the city of Luxembourg we were met by Jean, LX1JW who promptly took us on a very interesting tour. This was followed by a visit to his home. Jean's radio shack, like that of Reg, G6JF, is separate from the house. Here there is also a large assortment of antennas. During this visit a RTTY QSO was had with Alex, 9H1ER on Malta.

The following morning we departed with Jean by car for Verviers, Belgium where we met Georges, ON5WG. At this time we said goodbye to Jean. Georges was going to Brussels and offered to drive us directly to the QTH of Bob, ON4CK in Ruisbroek. At Bob's QTH we admired the 100 percent home-brewed station, including the tower and quad antenna. Later, Bob, Knobby and I drove to Houdengaimeries to meet Arthur, ON4BX. While there we were joined by his son, Bernard, ON4CX, Chris, ON4CZ and Hector, ON5QL. The next day, Bob took us on a tour of Brussels which we found to also be a very old and interesting city.

In the afternoon we were again on our way by train. Our destination was now Amsterdam. Unfortunately, not having made any pre-arranged plans to visit hams in the Netherlands, no meetings came about. I did however talk to Paul, PA0RZ in Amersfoort by telephone. Both Knobby and I enjoyed our visit by taking the canal boat tour, eating the Dutch food, and stocking up on souvenirs in the shops.

The following day we were enroute to Hamburg, Germany. It was quite late in the evening when Uli, DK3CU met our train. From there we drove to his QTH in Scheesel. Next morning there was much to see as we toured the city of Hamburg, and the great harbor. That evening we met Werner, DK5BA, and the four of us started out for a night on the town. I don't believe that Knobby and I will ever forget the visit to the Reeperbahn in St. Pauli, the walk down Herbert Street, or the visit to the night club!! Next day arrangements had been made by Werner for Uli, Knobby and I to visit the facilities of the Messerschmitt-Bol-Kow-Blohm aircraft plant as guests. Werner is an instructor at MBB. This included a 30 minute flight in a small plane over Hamburg, which was followed by a tour of the plant, and a visit to the MBB Club Station DK0HX. Other hams we met at the station were DK3UE, DJ8JB, DK5JF, DJ7DG, DC6YL and

DC2HK. That evening we visited the QTH of Wolf, DL8VX in Tostedt followed by a return to Uli's QTH by the whole gang.

The next morning we were on our way again. This time our destination was Odense, Denmark, where Sigurd, OZ2X and Preben, OZ8GA met us at the railroad station. In Sigurd's car we visited several points of interest including the birthplace of Hans Christian Anderson, and Preben's "mini-brewery" for a stein of "home-brew". Later, at Sigurd's QTH we all enjoyed a very pleasant evening. That night, Knobby and I stayed at Preben's QTH, and next morning he and Sigurd saw us off on the train as we departed for Copenhagen.

In Copenhagen we were greeted at the railroad station by Gus, SM7CLZ, who had travelled from Kristianstad, Sweden by car and boat to meet us. Crossing from Copenhagen to Malmo by hydroplane ferry, where Gus had parked his car, we then drove to his QTH. Our visit was very pleasant, and during this time we saw a little of the Swedish countryside by car, visiting a park of Swedish Kings, a small country store, a very old farmhouse, and the beaches on the Baltic Sea.

We unfortunately had to cancel plans to visit Norway since time was running short. A solid days travel back to England was still ahead of us, and we wanted to visit Sid, G4CTQ.

Bidding Gus goodbye we departed Kristianstad, and ultimately arrived in Van Hoek, Netherlands. At this point we boarded the ferry for Harwich, England. Several hours later we arrived in Lincoln, and Sid met Knobby and I at the railroad station. A very enjoyable visit was had with Sid. Points of interest visited included the very old Lincoln Cathedral. There are also many old Roman ruins in this area. Contacts made on RTTY from G4CTQ were many. Some of them were John, W3KV, Steve, WA2DHF and Mark, W5EUN.

Our junket was just about over as Knobby and I boarded the train for London. The following morning we were on our way home. I would like to say that for both Knobby and myself it was one of the most wonderfully enlightening and richly rewarding experiences of our lives. We were readily welcomed into every home visited with a very warm and sincere hospitality. All our many friends went out of their way to make our trip unforgetable. For that we shall never forget them.

***

VHF RTTY NEWS

RON GUENTZLER, W8BBB Editor
212 GRANDVIEW Blvd.
Ada,   Ohio 45810

We've seen a bit more VHF information recently than in quite a while. Glad to have the information.

Jack Smith, K8ZOA, secretary of the Downriver Control Group (Detroit) presented the following information: "The DRCG is currently operating a 146.22 in, 146.82 MHz out RTTY repeater. The incoming 2125/2975 tones are demodulated and electronically regenerated in a homebrew regenerator using CMOS logic. Speed is limited to 60 WPM only. The 7.0-unit tape machines are not usable due to the choice of selection interval in the regenerator. Modulation on the input channel should be limited to 3.5 to 4 kHz deviation. The output uses standard 2125 and 2975 AFSK frequencies, with deviation of 3.5. kHz.

"The machine is located in downtown Detroit on a building with a resultant HAAT of 250 feet. The current ERP of the machine is 45 watts, but plans are in the works to increase the ERP to near the limit for the given HAAT.

"At the present time there are about a dozen users of the machine over a 40 to 60 mile radius. (The current roster included with the letter listed 17 regular users and 12 occasional users - Ed.) The user calls up the repeater by sending DCRG on the input. The repeater then comes up and is available for use. At the end of the transmission, the user turns off the machine with the NNNN shutdown sequence. Tone is removed by NNNN, but the carrier will remain on for a few seconds. The repeater will also shut down should more that three line feeds being sent without an intervening character. This insures some degree of paper conservation. Also, more than three minutes without a character being sent will shut down the repeater.

"146.820 was chosen in lieu of .700 as .820 has been a Detroit RTTY channel for at least 15 years. At the present time, some .820 phone repeaters are experiencing "interference" from stations using RTTY on .220 going thru the WR8ABN machine. However, the phone repeater builders were quite aware of the 146.820 MHz RTTY simplex operation, conducted with high power to cover extended distances, and apparently accepted the chance of potential interference, not caring about the degree of disruption caused to local RTTY autostart operations by their voice repeater. . . ."

Steve Roth, WA4IKU (Ex CE3YO), presented information about a forthcoming repeater for the Washington, DC, Baltimore, MD, area: "AMRAD (Amateur Research and Development) a McLean, VA, based club is nearing completion of a two-meter NBFM RTTY repeater. Initial testing has taken place, and modifications are now being performed. We plan to have the repeater permanently installed in the near future. The repeater will be installed at Tyson Corner, VA, and should cover the Washington, DC, Northern VA, Baltimore area quite well.

"Initially, the repeater will be carrier operated with the audio being directly repeated. Future plans are to have it autostart activated and the audio regenerated. The standard 170 Hz tones of 2125 and 2295 are being used with provision for 850 Hz shift.

"Some discussion is being held on including a minicomputer and/or UART for operational and control purposes. Control of the computer and/or the UART could be controlled by the repeater user and not necessarily by a control operator. We still need assistance on permanent controls and solicit input from RTTY repeater groups. Any information on controls, features, and problems encountered would be greatly appreciated. Please send any information or inquiries to me."

Larry A. Simoneau, WA1QFP, inquiries about VHF RTTY operation in Rhode Island: "As far as can be determined only W1ZXA and WA1QFP are active on two meter RTTY in RI. We have made inquiries with other hams in the state and are trying to start a two meter autostart net. Have found two other hams who are setting up two meter RTTY stations and will be operational soon. Would like to hear from any others in the area who are interested in joining us in an autostart net for general RTTY ragchewing. Contact either W1ZXA or WA1QFP."

Herb Drake, WB6IMP, once again has a contribution: "How about a RTTY Repeater directory in the VHF column? I'd sure enjoy seeing in one neat tabulation what the fellas are doing in other parts of the country. I would suggest that you could get the data by asking for information on RTTY Repeaters in a couple of consecutive issues, indicating your intentions to make such a compilation.

"I suggest you list repeater call, trustee (or other contact for further information, by call), frequency of input and output, modulation (AM, FM and deviation, etc.), Mark/Space tone frequencies, access (carrier access, tone access, etc.), whether open (all hams welcome) or closed (members only), whether shared with non-RTTY modes, geographical area, and number of autostart and intermittent users.

"Our RTTY Repeater has just celebrated its third year serving the Bay Area (WR6ACR, formerly WR6ABG), and I know of two others in CA alone." How about it? Info, please!

Russ Smith, W6ONK, has some information and a question: "A new RTTY Repeater group has been formed to sponsor a teleprinter only repeater in the San Joaquin Valley. The name chosen for this group is Central California Amateur Teleprinter Society. It will be abbreviated CCATS and pronounced "Seacats." Seven directors have been chosen to represent the seven counties in the coverage area of the repeater. It will be located 30 miles east of Fresno on Bear Mountain at an elevation of 3700 feet. Frequencies will be 146.100 MHz in, 146.700 MHz out, with the standard 170 Hz AFSK shift. The Mark tone will key up the carrier to transmit. Pat, W6YEP, will be trustee of the repeater.

"Next meeting will be JAN 17. The repeater will be operational in DEC.

"Is it possible to operate an SBE SB-144 on reduced power? - say one watt instead of 10 to stay cool under continuous key down condition for use with the 2 meter RTTY repeater. The factory is of no help." Has anyone had experience with reducing the output power on the SBE SB-144? If so, please let Russ, Box 5212, Fresno, CA 93755, or me know - RG.

Ted Double, G8CDW, BARTG Contests and Awards Manager, just sent the results of the 7th BARTG VHF RTTY Contest. The winner was DC3OZ with 82 points, 12 contacts, and the best DX of 352 km. Only three countries were represented in the list of entrants, Germany, England, and Sweden, but one lone PA showed up to give points. "The contest attracted a larger entry than in 1974 and, although there were a greater number of G operators, there were no entries from the north of the country. Is there any VHF RTTY activity north of Northhamptonshire? We sometimes wonder.

We always get the announcement of the contest about two days after the SEP deadline, so can't get the info out in time. Is this enough advanced warning?

The latest "Static from Murray Hill" contains a very interesting article by John Sheetz, K2AGI, concerning the UT-4 and the ST-6 and some serious distortion problems caused by the ST-6.

On the "current awareness list" is: "RTTY Line-End Indicator," Robert Mendelson, W2OKO, Ham Radio, vol.8, no. 11, pp. 22-26, 1975 NOV.

Well, that's it for this month. Keep the information coming. Let's have updates on the various RTTY repeaters reported here in the past. Also, let's have info on any not reported here in the past. Finally, let's have just plain VHF RTTY activity information. 73 ES CUL, RG.

***

RTTY·DX

JOHN POSSEHL — W3KV
Box 73   Blue Bell, Pa., 19422

Hello there. . .

The closing days of 1975 brought a "rush" of requests for the W A C single band Merit Award and congratulations are extended to the following stations on this accomplishment.

WAC 14 mhz Nr. 20 - Wolfgang Punjer - DL8VX
WAC 14 mhz Nr. 21 - Ed Bruns - W3EKT
WAC 14 mhz Nr. 22 - Rev. Leo Brand - WØJCO
WAC 21 mhz Nr. 5 - Wolfgang Punjer - DL8VX
WAC 21 mhz Nr. 6 - Ed Bruns - W3EKT

A unique feature of the two band WAC by W3EKT is that it was accomplished by contacting only six stations for twelve QSL cards. Contrary to the "listen for my signal on 15 etc" these cards confirm contacts in different months and in some cases different years.

In the tradition of saving good things until last we take great pleasure in making the following announcement.

Plaque Nr. 18 for 100 RTTY DKCC Countries Confirmed
TO
F. Norman Davis W1GKJ
and in addition
W.A.S. Nr. 5 F. Norman Davis W1GKJ

Norm submitted all the pasteboards for both Awards in early December and it is the culmination of several years of effort on RTTY.

Licensed in 1933, Norm first became interested in RTTY in 1963 and started out with the popular Model 15 machine and a Twin City TU. He later acquired a Model 28 which he still keeps in the loop for hard copy. The present gear consists of the HAL ST-6, RVD-1002 Video Printer, and DKB-2010 Dual Keyboard. On the RF end a Drake R4-A has the receiving with a Drake T-4XC exciter driving a pair of 813's as a linear amplifier. The beam is a TA-33 at 50 feet with inverted vee's for 80 and 40. In 1936 Norm received ARRL WAS certificate Nr. 159, the first issued to an amateur in the State of Maine. Now 40 years later, he has the first RTTY WAS issued in the same state. He has also received W A C certificate Nr. 59 issued by RTTY Maga-

zine, predecessor to the RTTY Journal. Norm comments that now he has to start working toward WAS all over again for the Contest and at a much accelerated pace, but with signals from Maine few and far between on RTTY we are sure he will have many callers.

The recent Volta Contest appeared to be a great success with a good turn-out and fair to excellent conditions. Band openings on 15 meters were quite good for longer periods than has usually been the case of late and of course 80 and 40 got a good work out during the dark hours. Conditions were just not good enough to spend too much time on 10 but some of the boys made some ground wave contacts for a few multipliers. For a first Contest effort PJ3AR in Aruba seemed to be active on all bands with excellent signals. The west coast reported ten or more stations active from Japan and good propagation to VK/ZL. Andy, ZS6BNF was very QRV from South Africa. Andy signs SM4CNN when at home but expects to be down under for several months with possible side trips to some of the other exotic prefixes in that area, time and conditions permitting. QSL to
. . . Andy Larsson
520 Rupert St.
Brooklyn, Pretoria
TVL Rep. South Africa

HR6SWA gave many a new one on 80 and 40 and a big surprise was activity by Henri, ex-LU2ESB, using his FO8BS call while on holiday in Tahiti. He was active on 20 and 15 meters in the contest. Henri is still located in Brazil with his work but thus far he has not been able to obtain a PY call, although he is still trying hard.

Apparently the new Volta Contest scoring system was designed to keep pace with the rate of inflation as we have had reports that some of the final scores when posted may be up close to 40 million points!!!

Reports persist that operation of 8P6GW was PHØNY and since no QSL's have been forthcoming this allegation may be true. Take heart though, 8P6AY may soon be booming out to all points and this operation will be "legit".

Back in the CARTG Contest, Paul, HB9AVK made a surprise trip to Liechtenstein for the week end and promises to repeat the operation sometime in the Spring when the snow is off the mountains.

A place quite rare in any mode is the Republic of San Marino. Ivo, M 1 I was quite active over Christmas with excellent signals into the States. QSL via IØBNZ. . . . Roberto Carignano
Via Silvestri 221
00164 Rome, Italy

With the ringing out of the old year and the coming in of the new RTTY activity got under way for the W A S Contest. From the way things were going I am sure that some of the boys are intent on making short work of what once was an extremely difficult thing to do.

Some year end activity. . .OX3KS, ZS6JR, ZS6IY, FM7AA, OK3KFF, EA7FY, EA8IT, EA8FE, 4X4MR, GM3XWJ, 5L2FC, KL7HDY, KL7HFV, WBØIHA (N. Dak.), WBØIQK (S. Dak.), WA7PLK (UTAH).

73 de John

*****

2 Mods for the UT-4

RONALD LIGHT, WØNSD
1129 N. Geyer Rd.
KIRKWOOD, MO. 63122

Here are two modifications that will add a couple of "extras" to the UT-4's operation. The first is what I call the "auto-speed" and it's purpose is similar to that of the auto preload.

When typing and the Fifo's become empty, the circuit will cut back the speed control to a "slow" condition (similar to running the speed control down) and will remain in slow until the fifo's have gained several characters, then returning to normal (or what I call "fast") condition. The "slow" speed of transmission is determined by the user by adjusting R2 to whatever he likes. The front panel speed control (shown as RI!) remains on the front panel and still controls the overall output speed.
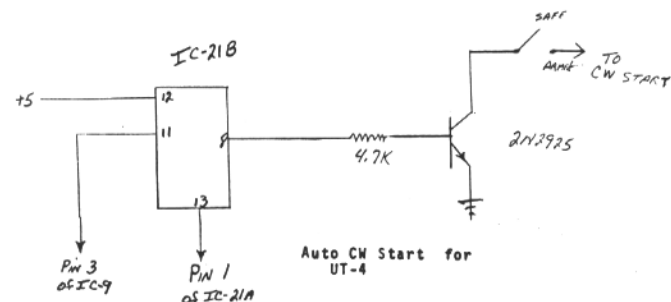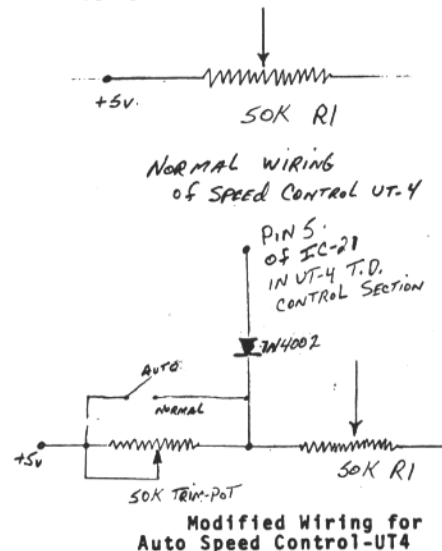
It is for automatically starting the CW ID'er, and the second modification uses the unused second half of IC-21, an added transistor and SPST switch. During normal typing the switch is left in the "safe" condition. But when finished with a given turn of transmission, the switch is set in the "armed" condition. Now when the fifo's become empty, this circuit will automatically activate whatever C.W. keyer is being used. Once the C.W. keyer has started, the switch should be returned to the "safe" condition. Good typing -73-
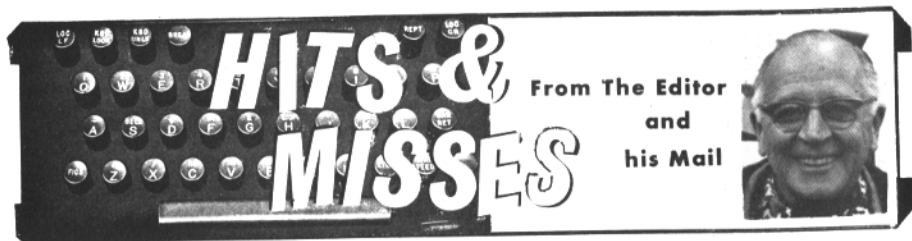

Modified Wiring for Auto Speed Control-UT4

Auto CW Start for UT-4

*****

14   FEBRUARY   1976

FEBRUARY   1976   15

We are often questioned if there is any index for the Journal articles that have been published. The answer is no unfortunately. In 1969 we published an index for 1967-68 but back issues have long since been exhausted. We mention this just in case there is an ambitious, scholarly reader among our subscribers; that might want to compile one. We our -- self often have to thumb through a number of issues to find some particular article. When we do we are surprised at the number of good articles we had forgotten all about. Any professional loafers that want a job without pay?. . .

★★★

A common request is "I wish you would notify me when my subscription expires".

Unfortunately 9¢ for a post card plus the great amount of work involved rules out any individual notice. However for a number of years we have been stamping - in red - on the back page of the Journal - This is the last issue on your present subscription. -- occasionally this is missed but if you have not received the magazine for a while check your last issue for the stamp.

Each stencil is also coded with expiration date. Usually to the right of your name will be either a month and number such as 5/5 or May 5, this indicates that May of 75 is the last issue. If renewed another number is on the stencil say-6, indicating that the expiration date is May 1976. We admit that after a number of renewals the numbers can get confusing and we are gradually making new stencils to replace them. The best bet is to check the back page for the rubber stamp if in doubt.

Occasionally we fail to code a renewal, if you do not receive your magazine after a short delay let us know. We do make errors but are always glad to correct them.

Unfortunately recent issues have been used up even though we have increased the number printed each month. This often makes it impossible to fill in a lapsed subscription after a short time.

We are still increasing the copies printed and hope to be able to have back issues but to be sure, try and get renewals in on time.

★★★

The post office, zigged - zagged and then zipped again, after the zag we scrounged around for 10¢ stamps, found some and then the zig came and now we need another value. Since we use about $100 worth of stamps each month you may find some odd combinations on some of your mail. Odd part is that the post office has no printed forms of the rate increases, the answer is what rate do you want and we will give it to you. Since we use just about every class of mail and weights guess I will have to spend a day at the post office copying them off. Odd thing is we could take the Journal across the river to Windsor, Canada and mail them for a nickel a copy less.

Under the new postal rate changes we are charged 25¢ for each change of address furnished us. At the old charge of 10¢ we could afford the dozen or so a month we received. However we are taking off the "Address Correction Requested" and will have to depend on notification by the subscriber. If you are moving let us know.

★★★

We plan on a short trip to Florida soon after mailing this issue. This means the mail piles up again so have patience if you write us. For a number of reasons we have been behind for the last couple of months. We hope to catch up before we go.

★★★

Not too early to start making plans for Dayton, April 23-24-25. Our hospitality room will be at the same place - Kings Room (formerly the South room) at the Imperial North Motel, Needmore Rd. and I-75, Dayton, Ohio. An early room reservation is suggested.

★★★

"Pete"W6KS advises that Ceramic FIFO-33512 are now available. Same price- See past ads.

★★★

From Chadless to Chad Tape Punch.

DAN NOLAN,K4CFJ
265 Kenlock Dr.
LEXINGTON,KY. 40503

When the Teletype Corp. began producing it's reperf's in the chadless variety it was obviously hailed as an inovation to rid the world of the noxious little circles that seem to be present everywhere when a chad type punch was around. In amatuer service as opposed to commercial service we tend to save tapes like CQ's brag tapes, and pixs. The chadless tape does not wind well, takes up more space when wound and occasionally will not read correctly if the little tabs of paper get stuck back in the holes.

I searched high and low for a chadtype typing reperf at low cost to no avail. I had a chadless in the station and ahd hoped to buy a conversion kit to chad type---much too expensive.

Another local ham said he converted his using as a top die the punch pin guide plate from an unused punch block assembly in the junk box. I found one for sale for $5; there appears to be a good supply of them around.

The punch is disassembled in the following order:

1. Remove the typing ribbon guide and lift the ribbon out of the way.
2. Loosen the tape advance level pivot screw so the two screws that hold the punch block in place can be removed.
3. The punch block moves back toward the keys and then up and out.
4. The two screws holding the punch block together are removed and the chadless die is pryed off carefully so as not to damage the punch pins.
5. The guide plate from another punch block assembly is simply put in the place of the original chadless die. (some shortening of the two screws may be necessary)
6. Reassemble in the reverse order.

I recommend testing with characters E, T, space, car return, and line feed since they each represent a one hole punch in the tape. This will identify any potential sticking of the punch pins in the new chad punch plate. If the pins do stick a bit of polishing with fine emery paper of the like should cure the problem.

The final step requires a bit more design engineering - putting together something to carry away the chad. Thin flashing copper, copper sheet, or very thin PC board material soldered together and mounted with the same screws that hold the punch block assembly together does the job well. A small cup or other home brew container in the small space above the on-off switch just inside the case of the Model 14 Reperf hold the chad until emptying is necessary.

My "fix" has been working for about a month without a single jam or mispunch noted on off-line punching or copying at 60 WPM from the TU.

★★★

BACK ISSUES -

New subscriptions and classified ads are cash in advance as we have no method for billing. New subscriptions will be started with the current issue and one back issue, if requested. Please do not ask us to start any further back than this. Back issues - if available - may be ordered at 30¢ each at time of subscription. The JOURNAL is mailed about the 20th of the month preceding the dated month. May and June are a combined issue and July-August is a combined issue.

The ONLY back issues available are listed below. 30¢ each.

1972-SEPT.-OCT.-NOV.-DEC.-[4]
1973-ALL ISSUES- [10]
1974-Feb.- [1]
1975-OCT.- DEC.- [2]
1976-Jan.- [1]

RTTY BINDERS---$4.00

BEGINNERS HANDBOOK- $2.50

UART REPRINTS- 50¢

CLASSIFIED ADS-- 30 words $2. Additional words 4¢ ea.

Cash with copy, Deadline 1st of Month.

MORE RTTY! ONLY HAM RADIO MAGAZINE consistently brings you more RTTY articles and better RTTY articles than any other general amateur magazine. You need RTTY Journal, but you need HAM RADIO also. $10.00 per year, $20.00 for 3 years. Ham Radio, Greenville, NH 03048.

ST-5 DEMODULATOR, NEW switchable 170/850, meter, loop supply, all usual features plus autostart. vinyl woodgrain finish case. $125 UPS prepaid 48. Fred Firestone, WB9IEE, 806 N. School St., Normal, IL 61761 309/452-4032.

HAL COMMUNICATIONS CORP. is closing out the RKB-1 RTTY Keyboard. A limited number of un-assembled units are available. Write for details of this offer. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373.

PC BOARDS FOR THE UT-4, double sided, thru-hole plated, plug-in edge connectors. Write for details. AK-2 kit for $19.95, XK-2 STAL AFSK kit $34.95, ELECTRONIC DEVELOPMENT, INC., P.O. Box 951, SALEM. OREGON 97308 (503) 399-9660

HAL COMMUNICATION CORP: Replace those machines with the HAL electronic RTTY RVD-1005 Visual Display Unit and DKB-2010 Dual Mode Keyboard. You'll have a quiet, reliable system allowing you to transmit and display Baudot code at all four standards speeds. Full details available in our data sheets. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373.

ANY ISSUE OF RTTY JOURNAL reproduced $1.00 PP. I have a complete file of all issues. R. Wilson, WBØESF, 4011 Clearview Dr. Cedar Falls, IA. 50613

HAL COMMUNICATIONS CORP: Headquarters for electronic RTTY equipment. In demodulators, choose from the incomparable ST-6 or, for a low cost beginning in RTTY, the ST-5. Tailor either to your requirements by selecting the 425 Hz press discriminator, the XTK-100 or AK-1 AFSK oscillators and the ST-5AS autostart for the ST-5. Full details available in our current catalog. Compare before you buy. BankAmericard and Master Charge plans available. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373.

WANTED: 32 and 33 ASR's. Also perfs, readers UCC's, etc. Highest cash prices. PO Box 1219, South Station, Newark, N.J. 07114 (201) 824-1300

FOR SALE: 28 ASR's. Good working condition. 40 units available at $999 each. Call Henry Holder, (817) 429-3021.

DOVETRON MPC-1000 MULTIPATH-DIVERSITY RTTY TERMINAL UNIT with automatic MULTIPATH CORRECTOR and IN-BAND DIVERSITY (automatic Mark-only for Space-only), 2 inch CRT Cross Display, continuously variable Mark and Space channels (1500 to 3200 Hz), active IC channel and low pass filters (no toroids), noise correlator, dual autostart (Mark or FSK), phase-continuous sine-wave AFSK tone generator (1200-3200 Hz), EIA and MIL voltage level FSK outputs, CW ID provisions for AFSK and FSK, internal RY Generator, automatic mark-hold, anti-space, anti-CW and anti-mark/fade (AMF), automatic threshold selector, adjustable 130 volt loop supply, keyboard actuated with timeout delay, Signal Loss Indicator (LED), Loop Keyer Monitor (LED), rear panel provisions for external scope, dual-diversity, Uart/FIFO interfaces and remote control of TU and xmtr/rcvr. One year warranty. 17" x 3.5" x 9", 10 pounds. 110/220 VAC, 50-400 Hz, $495.00 FOB, 30 days ARO. Commercial Model (MPC-1000C) also available. Your QSL will bring complete specifications. DOVETRON, 627 Fremont Avenue, South Pasadena, Calif., 91030. (213-682-3705).

NEWS-NEWS-NEWS - Amateur Radio's Newspaper. "Worldradio", Trial subscription - Two issues for one dollar. "Worldradio" 2509-F Donner Way, Sacramento, Calif. 95818.

SALE: FEMALE JACK Panels containing 144 jacks to a 19 inch panel...$14.00; Female jack panel containing 24 Jacks, Fahnestock type 218A. . .$5.00; Rack cabinets 24 inches wide 82 inches high 26 inches deep, open front and rear door, Blue with Aluminum trim $50.00; Tuning forks 96.19 vps or 120 vps unused $2.00 each; Mite motor, type PD/82U 115 VAC 60 Cy Unused $28.00; TT socket wrench 7/16 inch on 12 inch handle 1.00; Kleinschmidt allen wrench on 12 inch handle 1.00; Gears for model 14 T.D. with 1800 rpm syn motors 60 wpm unused $8.50 Set; Model 14 Typing Reperf. 60 wpm gears $7.75; Perforator tape 11/16 inch, Box of 10 rolls 4.90 or case of 40 rolls $14.90; Red and Black ribbons nylon, 6 for $6.00 or dozen for $9.00; Roll paper $2.00 per roll; Copyholder for model 28 printer unused $3.95; Distortion test set, type TDA-2 containing scope $39.00; Model 15 platen unused $5.50. Also available model 14, 15, 19, 32, 33 machines. Send us a list of your Teletype requirements. Atlantic Surplus Sales Co. 3730 Nautilus Ave., Brooklyn N.Y. 11224 Tel. (212) 372-0349

TTL 7400N 6/$1.00, 7402 5/$1.00, 7406 $0.43 each, 7450N & 7453N 4/$1.00, 74121 2/$1.00. 75453 peripheral drivers 3/$1.00. 1000V 1 amp diodes 10/$1.00, 14 pin IC sockets 5/$1.00, 18 pin edge connectors 2/$1.00. National CMOS Data Book $1.00 each. Mod-U-Line Cabinets ST-6 style. Example: ST-6 Cabinet MCP3-17-12 $24.36. All sizes and styles available. Send your size needs and SASE for quote. Free Catalog. Some quantities limited, all products guaranteed. NuData Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056.

RTTY PICTURE PERF TAPES. Over 400 to choose from. Chad (fully punched, no lids) 11/16 inch standard Amateur 5-level tape. Guaranteed COMPLETELY error-free. Run times from 2 minutes to 10 hours. Wide range of subjects including works of art, landscapes, pinups, animals, cartoons, as well as all of the 1974 RTTY Art Contest entries. Send 16¢ in STAMPS for listing. Joe Dickens, WA9UGE, 601 S. Dodson St., Urbana, IL. 61801.

MODEL 28 ASR. Remote R-T, ansbk, type. reperf. $875. TT/L with TT-63A. $175. No Shipping. J.A. Prest, 18704 Glastonbury Rd., Detroit, Michigan, 48219 313-538-1204

TELEPRINTER GEARS, COMPONENTS, Modification kits, tools, manuals, parts, ribbons, supplies, paper. Toroids SASE for list AB. Typetronics, Box 8873, Ft. Lauderdale FL 33310. We buy all unused parts and late unused machines.

TELETYPE PAPER; NEW; FRESH from the mill. 4 1/2" rolls white or canary. For all friction feed Teletype machines. $20.00 case of 12, Buy 5 cases, only $18.00 each. ZTY-RTTY Paper Co. PO Box 147, Corunna, MI 48817

MINI-MANUALS ON FOLLOWING EQUIPMENT, $2.95 each -- M15/19 Wiring Hints and Diagrams. CV-89/URA-8 FSK Converter. TDA-2 Stelma Teletype Distortion Analyzer. AN/SGC-1 FSK Converter. Teletype Gear Guide for all teletype Corp. equipment. SASE for surplus list. Jim Cooper W2BVE, POB 73, Paramus, NJ 07652.

FOR SALE; FSK CONVERTER CV-278-GR and transmitter modulator MD-203 GR. Get on RTTY with the T-195 transmitter with these units. Used very little, sale or trade. L. Belcher, 112 Sheila, Glasgow, KY 42141.

USING SBE SB-144 FOR RTTY?? Send particulars to Russ Smith, W6ONK, Box 5212, Fresno, CA. 93755

Give your ASCII-Baudot keyboards, Morse Code keyboard generators, or keyswitch oriented master control stations a distinct professional appearance with the Univue keyboard and control center enclosure. The 24 x 12 1/2 x 3'' Univue enclosure gives you dimensional flexibility with a modern low profile appearance. The blank 23 x 8'' removable aluminum front panel is easily cut to accommodate virtually any keyboard or control arrangement. Over 200 cubic inches of space in the rear is available for housing additional circuitry, allowing a complete and handsome desk top unit. The Univue enclosure body is precision machined welded steel, and is primed and surfaced light gray, ready for the color coordinated finish of your choice. Shipped complete with panel, heavy duty non-skid rubber feet, plated mounting hardware, and Money-Back Guarantee. $29.95 plus $4.50 shipping/handling. Send stamp for complete information and pictures to: Advanced Data Sciences, P.O. Drawer 1147A, Marion, Ohio 43302.

MAGNETIC MEMORY DRUM manufactured by Magne-Head, division of General instruments. Hawthorne, Calif.: Model 8C-161. Size 17 inches x 14inches x 12 inches, weight about 40 pounds. Drums appear to be in excellent condition complete with connectors. Price $275.00 each. Magnetic memory drum cabinets 24 inches x 82 inches x 26 inches complete with Drum Model 8C-161, 4 power supplies providing plus and minus 12 volts, printed circuit cards, and blower unit. Cabinets appear to be complete and in very good condition. Magnetic Memory Drum with cabinet. . .$390. Photo available for $1.00. Atlantic Surplus Sales Co., 3730 Nautilus Ave., Brooklyn, N.Y. 11224 Tel: (212) 372-0349

WANTED: Model 32 or 33 TTY. Any quantity, any condition for cash or will trade. Call: Ken Payne, (214) 252-7502.

OA-5 SOLID-STATE TU includes autostart and AFSK oscillator. See February and September 1974 issues of "RTTY Journal". Drilled and plated boards. $15.00; board with parts, $110.00; completed unit, $225.00. FOB. Ken Simpson, WA8ETX, 3700 Mountview, Alliance, Ohio 44601.

TELETYPE MODEL 28 KSR's: Good working condition, over 200 available at $350 each. Call: Henry Holder, (817) 420-3021.

HAL COMMUNICATIONS CORP. announces the DS-3000 and DS-4000 series of KSR Video Display Terminals for Baudot and/or ASCII code. Offering error correction capability, multi-speed operation, and 16 lines of 72 characters per line, these terminals employ the 8080 microprocessor in what we believe is the first microprocessor based product offered to the amateur radio communications market. Request data sheet for full information. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, IL 61801. Phone 217-367-7373

HAL COMMUNICATIONS CORP. thinks you'll need the ST-6 to win those Dovetrons. If you aren't already using the ST-6, write for details. HAL Communications Corp., Box 365RJ, Urbana, IL 61801. Phone 217-367-7373.

HAL ST-6, TABLE TOP CABINET, 850-170 shift with AK-1, Mint $250.00 PP. Altec Model 14477A 600 ohm attenuators, strapable in 1 DB steps from 1DB to 35DB, new in factory sealed cartons, $9.95 each PP. Model 28 manuals NAVSHIPS 93788 Vol. 1-2-3, $35.00 PP. Volumes 1-2 $26.00 PP. EICO 753 80-20 meter transreceiver with AC and DC supplies and mobile mount, $185.00 PP. B & K model 1460 10 MHz scope with probe, $295. Mint. Gonset 903A 500 watt 2 meter linear, mint, $265.00 PP. 220 watt output 432 Mhz linear using a colins cavity, complete with power supply. $185.00 PP. KH6IHP, 2050 Komo Mai Drive, Pearl City, Hawaii, 96782.

HAL COMMUNICATIONS CORP. announces the XTK-100 AFSK oscillator for those applications requiring the extra stability of crystal controlled tones. Tone pairs may be anywhere in the range from 1000 Hz to 3300 Hz with high or low tone pairs standard and others optional at extra cost. Constructed on a 3'' x 6'' PC board with pin-out identical to the AK-1 so that the XTK-100 is a direct plug-in replacement for the AK-1. Request data sheets for full details. HAL COMMUNICATIONS CORP, Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373.

EXPERT REPAIR WORK. Any Teletype Corp. model. Repair work $15.00 plus parts no matter how long it takes. Rebuilding by estimate. Write K9WRL or phone (312) 392-2358, ask for Neil. Chicago Area.

RTTY VIDEO DISPLAY UNIT -- 1000 characters, plugs into loop or logic circuits, ASCII or BAUDOT available. Kit $395, assembled $495. Leland Associates. 18704 Glastonbury Rd., Detroit, Michigan. 48219

DRILLS - DRILLS - DRILLS Carbide and high speed steel for PC board work. Send SASE for Information. Bob's Electronics Box 393 Bay City, MI 48706

TECH MANUALS -- $6.50 each: TT63A/FGC, CV-591A/URR following manuals $8.50 each: TT-47/48, R-388/URR, USM-50, 51J4, FR114/U; fol lowing manuals $10.00 each: R390A/URR, SRR-11, 12, 13, USM-32, URR-35C. Special manuals (limited quantity): TM-03315-15 TGC-14/14A $10, Navships 95898 TT-298A/B, TT-299A/B $12.50, Navships 0967-170-8010 UGC-38, 40, 41 $12.50. Model 14 TD manuals $2.50 each. Thousands more in stock. Send 50¢ (coin) for large list. W31HD, 7218 Roanne Drive, Washington, DC 20021.

NS-1A (Journal 1/76) Wired/tested $29.95 ppd. Drilled and plated board $4.75 ppd. Parts kit $15.00 ppd. Fla. orders add tax. Stamp for further info. Nat Stinnette Electronics, Tavares, FL 32778.

25th DAYTON HAMVENTION at HARA Arena April 23, 24, 25, 1976. Technical forums, exhibits, and huge flea market. RTTY Forum on the 25th. Program brochures mailed March 8th, to those registered within past three years. For accomodations or advance flyer, write Hamvention, P.O. Box 44, Dayton, Ohio 45401.

THE JUNK BOX looking for parts, surplus info, selling, buying or trading gear? Use the junk box. Send S.A.S.E. for info or 50 cents for sample copy to THE JUNK BOX MAG, P.O. BOX 872 PEABODY, MASS. 01960.

HAL COMMUNICATIONS CORP. will display THE line of RTTY equipment ORLANDO :WHEATON See you at the show!

WANTED - INOPERATIVE COLLINS R 390A. Need for parts to repair and maintain my R390A. Ed Wagner, 1018 Birch Haven Cir. Monona, WI. 53716

UPDATE YOUR RTTY STATION with Hale Electronics' new solid-state character generator, Model CG-256. Uses ROM to generate RTTY message up to 32 characters long, or CW ID or message to 256 bits. Perfect for WRU or CW ID. Directly compatible with ST-6, adaptable to any installation. 3x4 inch PC board contains all parts except power supply (requires 5vdc @ 150 ma). CG-256R - reed relay output - $34.95 wired, $26.50 kit. CG-256 - open collector and TTL outputs - $31.95 wired, $23.50 kit. PC board, memory, and manual - $16.50. Board and manual only - $7.00. All kits (except board only) include custom programmed ROM. QSL card brings complete details. Hale Electronics, P O Box 682, Cape Girardeau, MO 63701.

Additional Classified