

Chapter 1

Introduction

1.1 What is CWTERM?

CWTERM is a complete CW operating environment. It consists of a set of programs that provide the amateur radio operator with automated terminal node control, logging, and message generation. CWTERM.EXE, the primary TNC program, is a 'C' program which provides the user with a menu oriented interface to the CWTERM. It also has links to the other programs which provide the operator with a full set of data base functions.

- . TNCED.EXE - full screen editor
- . LOGBOOK.EXE - dBase-III(c) compatible data base for logbook maintenance
- . COUNTRIES.EXE - callsign/country lookup program with great circle distance & bearing computation
- . HAMGRAM.EXE - NTS message generation and database

1.2 Flexibility

- CWTERM may be configured to provide CW input/output to either of ports COM1, COM2, LPT1 or LPT2
- Fully configurable color selection and file location are just a few of the adjustable parameters.
- Provides all of the common file handling functions of the popular communications programs including ASCII file transmit and receive, and screen buffer captures,
- Supports both CW and MCW modes.
- Allows the transmission of FARNSWORTH type code formation.
- Useable for automatic transmission of code practice sessions using automatic file transmission with imbedded command strings.

1.3 Ease of Use

- Pull down menus provide complete access to all internal and external functions.
- Fully scrollable receive buffer of 800 lines. Receive buffer may be written to disk file of users choice.
- Receive function operates independent of transmit buffer. Create outgoing text while the other op' is transmitting.

1.4 Distribution of CWTERM

CWTERM is public domain software. W1HKJ, David Freese <w1hkj@w1hkj.com> retains copyright to all programs contained on in this distribution including:

CWTERM.EXE
TNCED.EXE
TNCEDINS.EXE
LOGBOOK.EXE
HAMGRAM.EXE
COUNTRY.EXE.
PORTTEST.EXE
PARSE.EXE

1.5 This software was written by Dave Freese, W1HKJ, who hereby places all of the software and documentation in the public domain. Source files are no longer available for the software, but you are free to copy, use and distribute this software without restrictions.

1.6 Disclaimer

W1HKJ, David Freese and Clermont Computer Consultants make no warranty, expressed or implied, concerning this program's merchantability or fitness for any particular use. In no event is David Freese liable to you for any damages resulting from your use of the program.

Chapter 2

Getting Started with CWTERM

2.1 System Requirements

CWTERM has the following minimal requirements:

- IBM PC, XT, AT, PS-2 or compatible with at least 320 K bytes of memory.
- DOS 2.0 or later (may execute in a DOS emulator)
- Either COM1, COM2, LPT1 or LPT2 available for CW interface.

2.2 CWTERM installation

CWTERM is distributed with the following files:

CWTERM.EXE Executable file which interfaces to the selected port.

CWTERM.CFG Sample configuration file

PORTTEST.EXE I/O port test program. Helps to determine access to keyline, ptt-line, and receive data input pins.

PARSE.EXE Text parsing program used to create code practice sessions from ordinary ASCII text files.

SAMPLE.QST Sample practice session produced by PARSE.EXE.

SCRIPT.FST Sample script file for use with PARSE.EXE.

PRACTICE.EXE Program to automatically invoke CWTERM with a date stamped source file.

COUNTRY.EXE Stand alone prefix/country lookup program

COUNTRY.LST ASCII text file containing the Prefix/Country list as found in the 1991 Call Book. This file is used by COUNTRY.EXE.

TNCED.EXE Full screen editor, colors and keyboard reconfigurable. Edits file up to maximum of available computer memory.

TNCEDINS.EXE Installation program for TNCED.EXE. Allows color, and keyboard reconfiguration.

LOGBOOK.EXE dBase-III compatible database for keeping amateur radio log. Includes both date and callsign indexing of the database.

HAMGRAM.EXE dBase-III compatible database of National Traffic System messages. Builds NTS messages with proper pre and postambles, and word count.

2.3 First-time Setup of CWTERM

HARD DISK I suggest you create a directory called \HAM. Copy all of the files to this directory and include the directory name in your path definition.

FLOPPY DISK Simply make a working copy of the distribution disk to use as a working disk. If you have a two floppy drive system you may modify the configuration file to direct all log and other data files to the second disk. See the configuration file specification below.

2.3.1 CONFIG.SYS - no changes to your config.sys file are necessary.

2.3.2 AUTOEXEC.BAT - Add the directory name of your CWTERM files to your path statement.

2.3.3 Before executing the program, you should prepare the CWTERM.CFG file for your specific installation. The TNCED editor may be used to modify the included sample configuration file.

2.3.4 The CWTERM.CFG file contains the following configurable items.

Type of CPU:

CPU=SLOW change to MEDIUM or FAST as the CPU allows.

Code Generation defaults:

WPM=20 code speed, words per minute
FARNSWORTH=0 Farnsworth code speed, 0 = disable
WEIGHT=3.0dash/dot ratio

Transmitter Control / Receiver Data Port Specification:

PORT=0 0=LPT1, 1=LPT2, 2=COM1, 3=COM2
Active state of control lines
KEYOUT=0 >0 = 0/-12 v, 1 = +5/+12 v
RCVINP=0 >"
PTTOUT=0 >"
XMTCOMP=0 Key line compensation in milliseconds

Mode specifiers:

MCW=0PTT output for VHF xmtrs; 0=OFF, 1=ON
PTTDELON=0.10 Time between PTT and Keyline closure
PTTDELOFF=1.00 Time between last char & PTT open
DUPLEX=HALF or FULL, Simultaneous Xmt/Rcv

Miscellaneous Parameters:

TONES=1 Computer Speaker monitor; 0=OFF, 1=ON
FREQ=800 Monitor frequency

BUFFERFILE=CWTERM.BFR Default buffer file - loaded at startup

Child process definitions:

LOGPROG=LOGBOOK.EXE NOTE: child process may be specified
LOGBOOK=LOGBOOK as: d:\path\program_name
COUNTRIES=COUNTRY.EXE
COUNTRYLIST=COUNTRY.LST
NTSPROG=HAMGRAM.EXE
EDITOR=TNCED.EXE

Color definitions: (suitable for monochrome monitor)

STATUS_FG=BLACK
STATUS_BG=WHITE
RCV_FG=WHITE
RCV_BG=BLACK
XMT_FG=WHITE
XMT_BG=BLACK
VIEW_FG=BLACK
VIEW_BG=LIGHTGREY
MENU_FG=BLACK
MENU_BG=LIGHTGREY
POP_FG=LIGHTGREY
POP_BG=BLACK
POP_HI=WHITE

```
ERROR_FG=BLACK
ERROR_BG=LIGHTGREY
NOTICE_FG=BLACK
NOTICE_BG=LIGHTGREY
MESSAGE_FG=BLACK
MESSAGE_BG=LIGHTGREY
```

If you have a logbook program that you prefer to use, it may be specified on the LOGPROG= line. If that program expects to be passed a parameter it may be specified on the LOGBOOK= line. If no drive or path is given then CWTERM will expect to find them in the default directory.

If the CWTERM.CFG file is deleted the program will use the default configuration values shown above. SAVING the configuration values will generate a properly formatted CWTERM.CFG file which may then be edited.

2.4 Executing CWTERM.

The following sequence is recommended when using CWTERM and the CWTERM interface:

1. Turn computer on.
2. Turn interface on.
3. Turn transmitter/receiver on.
4. Change to drive and directory containing CWTERM programs and execute CWTERM.EXE.

2.5 Time of Day Clock

CWTERM displays the time of day in hours-minutes-seconds format corrected to GMT if the environment variable TIMEZONE is set. The program reads the TIMEZONE environment variable, and the DOS time-of-day ONLY ON PROGRAM STARTUP. Thereafter, the time of day display is internally updated in CWTERM and no further reference is made to the DOS clock. This is necessary to avoid conflicts with the BIOS-ROM code.

2.5.1 TIME ZONE Environment Variable

Enter the following either in your AUTOEXEC.BAT file or from the DOS command prompt:

```
SET TIMEZONE=4 ( a range of -11 to +11 allowed)
```

If the TIMEZONE variable is missing from the environment or its value is 0 then no correction is made to GMT.

Chapter 3

Main Display & Operating Modes

3.1 Main Display

3.1.1 The main display consists of a menu bar, a transmit window, a receive window and a status bar.

└─ Menu Bar
└─

Receive window

└─ Status Bar
└─

Transmit Window

3.1.2 Receive Window - This multi-line window will contain the most recently received characters. Incoming text is also stored in an 800 line text buffer.

3.1.3 Status Bar - The right hand portion of the status bar shows the present date time properly converted to Greenwich Mean Time. The left hand portion of the status bar shows the receive WPM rate, the transmit WPM rate, whether MCW mode is active, whether the capture or receive file is open, and if a text file is being transmitted.

3.1.4 Transmit Window - The transmit window is a multi-line scrollable area for entering transmitted text. When transmit data is taken from external files it is shown sequentially in the area.

3.1.5 Pull Down Menus - All program operations are available through a pull down menu system. The menu system is activated by pressing the F10 key or the ALT-key selection. Menu selection is accomplished by use of the arrow and Enter keys. Some menu selections will open submenus or dialog boxes for data entry.

3.2 Operating Modes

3.2.1 Transmitter Tune - select this function by highlighting it and pressing ENTER. The keyline output will become active and will remain so until any keyboard key is pressed.

3.2.2 Send Dits - select this function by highlighting and pressing ENTER. The program will send a continuous stream of 'E's to the transmitter. This can be useful when measuring the keying characteristics of your transmitter. Press ESC to return to the menu.

3.2.3 Modulated CW - CWTERM provides the capability of transmitting using MCW with the proper interface. Both a PTT line and a CW keyline are activated in sequential order. This allows the use of the program with a VHF or UHF transmitter using MCW transmissions, or with an older CW transmitter requiring separate transmit enable.

NOTE: in the MCW mode a delay will occur between the PTT line activation and the sending of CW via the KEY line output. If you experience a delay between typing and initial xmtr keying check to see whether the MCW mode is ON or OFF.

The MCW operation is shown on the status bar as a MCW just to the right of the transmit WPM indicator.

It is necessary to set the push-to-talk-ON and push-to-talk-OFF delays. These are also found on the 'Modes' menu. The ON delay specifies the length of time between activating the PTT line and the transmission of the first CW character. The OFF delay specifies the length of time between keyboard inactivity and release of the PTT line.

3.1.4 Half / Full Duplex - CWTERM is capable of simultaneous transmit and receive. This mode only makes sense when the station is equipped with a separate transmitter and receiver or a transceiver which is capable of full QSK operation. In HALF DUPLEX mode the detection of received characters is disabled when transmitting. In FULL DUPLEX mode the receive function remains enabled and you may see full or partial detection of your own transmission depending on your transceiver performance.

3.1.5 Receive Case selection - The program may be configured to display the received text in all UPPER or all lower case. This selection is found on the MODES pull down menu.

3.1.6 Transmit/Receive speed lock - The transmit and receive WPM settings may be operated independently or in lock-step. If the speeds are locked and the transmit WPM is changed, the receive WPM will be re-initialized to the transmit rate. If the speeds are independent, they both may be changed without affecting the other.

3.3 Automatic File Execution

The program can load a text file for automatic transmission. To do this invoke the program as:

CWTERM filename, where filename specifies the text file.

The textfile can contain imbedded commands which can be used to alter the characteristics of CWTERM. The commands should be placed on separate lines within the text. The recognized commands are:

Wnn change WPM to nn
Fnn change Farnsworth WPM to nn
Dnn delay transmission nn seconds
Q exit back to operating system.

The sample file, SAMPLE.QST, demonstrates the use of these commands to produce an automated transmission of a code practice session. The author uses a product called HDM, Hard Disk Manager, a share ware product which allows the timed execution of a selected program.

During automatic operation all transmitted characters are displayed in the transmit buffer area. The control code sequences are NOT displayed.

The automatic transmission capability can be extended by using PRACTICE.EXE. This program searches the active drive/directory for a file with the name MM-DD-YY.QST, for example: 09-21-91.QST. It then invokes the CWTERM program for automatic operation with this source file specified. By producing a series of '.QST' files with a timed execution of PRACTICE, you can provide automated, timed, code practice sessions in your area. Cape May County enjoys this service on 147.585 MHz. Any person with a scanner can copy the code practice sessions.

3.4 CONTROL P and CONTROL X control keys

CONTROL P (ctl P) will temporarily halt the transmission of outgoing text. This acts as a toggle. The status bar ON will change to OFF. You may continue to enter text into the transmit buffer. This allows QSK operation from the keyboard. You can use the CONTROL P toggle to disable outgoing text during reception. This will allow you to prepare a response during the incoming message. Toggling CONTROL P will begin the transmission of the text in the transmit buffer.

CONTROL X (ctl X) will immediately halt the transmission of outgoing text. It will be necessary to re-enter any text not sent from the transmit buffer. This is not a toggle. If you begin entering text and the CONTROL P function shows ON the transmitter will immediately begin keying.

3.5 Received CW Auto Tracking

The program is capable of automatically tracking the incoming CW wpm rate. This is implemented using the digital equivalent of a low pass filter. The wpm rate is derived from the signal timing of dots and dashes. The performance of the wpm filter is dependent on the quality of the detected CW. The received CW detection algorithms provide some protection against burst noise, but under very noisy conditions the wpm rate will become unstable. The CW Auto Tracking function can be toggled ON and OFF using the 'ALT A' key combination. When the program is in the autotrack mode the status bar will indicate

AR

on the left side. The AR indicates auto-track-receive and is followed by the detected WPM rate. When autotrack is toggled OFF the 'A' is replaced with a graphics line character and the WPM is locked to the transmit WPM rate.

If you find that you prefer leaving the program in the autotrack mode and the detected wpm becomes unstable you can reset the filters by pressing ALT_A twice. This will reset the filter to the transmit WPM and then restart the tracking filter.

Under normal QSO conditions (ie: fixed WPM rates) you will obtain best performance by disabling the autotracking filter.

3.6 FAST CHANGES IN WPM SPEEDS

The function keys F5 and F6 decrease or increase the receive WPM rate by 1 respectively for each keypress. Holding either down will cause the smooth transition from the present to a new WPM rate.

The function keys F7 and F8 decrease or increase the transmit WPM rate by 1 respectively for each keypress. Holding either down will cause the smooth transition from the present to a new WPM rate. If the transmit and receive WPM rates are set for LOCKED operation both the transmit and receive WPM will be forced to same value for each keypress. Pressing F7 F8 (or reverse) in sequence therefore has the same effect on the tracking filter as pressing ALT_A twice.

Chapter 4

Menu System

4.1 A pull-down / pop-up menu system is used to access all function of the program. In addition, certain functions can be quickly brought up by alternate hot keys. On the menu system these are shown by the <K> symbol where K is the access character.

4.2 The menu system is activated by pressing function key <F10> or the alt-F, alt-B, alt-G, alt-P, alt-M, alt-D key combination. The top line of the display contains the names of each menu section and the leftmost menu will be active.

4.3 You can move between vertical menu items by pressing the bold character or by using the up and down arrow keys. Movement between horizontal menus is obtained by use of the left and right arrow keys only. The selected item is indicated by reverse field. Press <ENTER> to activate that function.

4.4 For example, to enable the capture buffer press <C> and then <ENTER>. You could also have directly enabled the capture buffer by ALT-C key combination. Hot keys of this type are shown by the <key> symbol to the right of the menu item.

4.5 The menus are:

```
Files Buffers IoG/NTS Parameters Modes DosApps
L
Capture <C>
Receive <R>
Transmit
```

```
Files Buffers IoG/NTS Parameters Modes DosApps
L
clrRcvWindow
clrXmtWindow
clearBoth
ij
Eras RcvBuff
Save RcvBuff
View RcvBuff
ij
Load XmtBuff
Mod XmtBuff
Trsmt Buffer
```

```
Files Buffers Log/NTS cOlors Parameters Modes DosApps
L
Country
Logbook <L>
NTSmsgs
```

Files Buffers Log/NTS Parameters Modes DosApps

L

Wpm <W>

wEight

cOmp(msec)

Farsnworth

ij

Colors

ij

Tone on/off

tone fReq

ij

t/r Port

ij

Load kbd map

sAve kbd map

ij

Save params

View params

Files Buffers Log/NTS Parameters Modes DosApps

L

Xmtr Tune

ij

Send Dits

ij

ptt Enable

ptt On delay

ptt oFF delay

ij

Full/Half Duplx

Rcv Case Set

xmt/rcv Track

Files Buffers Log/NTS Parameters Modes DosApps

L

Dos

Editor

eXit <X>

4.6 ALTERNATE and CONTROL Keys

The following Alternate and Control Key combinations will invoke the specified action:

- alt 0 - Transmit the buffer specified by the designated number . key,
.
- alt 9
- alt A - Toggle Receive Auto Track filter
- alt B - Activate the BUFFERS pull down menu,
- alt C - Open (or close, a toggle) the log file, CWTERM.TXT,
- alt D - Activate the DOSAPPS pull down menu,
- alt F - Activate the FILES pull down menu,
- alt G - Activate the logG/NTS pull down menu,
- alt L - Invoke the child process LOGBOOK, LOGBOOK.EXE (or the one specified in the configuration file, CWTERM.CFG),
- alt M - Activate the MODES pull down menu,
- alt P - Activate the PARAMETERS pull down menu,
- alt R - Open a user specified receive data file, or close the file if previously opened,
- alt W - Open a prompt box for a new WPM entry,
- alt X - End the CWTERM session.
- ctl P - Pause toggle, for transmitter keying. Useful for QSK operation,
- ctl X - Dump the transmit type-ahead buffer.
- F7- Decrease Transmit & Receive WPM by 1
- F8- Increase Transmit & Receive WPM by 1
- PGUP - Open the Receive Buffer View Window

4.7 SPECIAL KEYS

The following keys are used both for transmission and display of the designated special CW character:

ASCII CHAR CW Equivalent

> AR . _ . _ .

< AS . _ . . .

\$ or = SK . . . _ . _

[KN _ . _ . .

- (hyphen) BT _ . . . _

_ (underscore) THT _ _

! AAA . _ . _ . _

Chapter 5

Transmit Buffers

5.1 Ten transmit buffers are available for quick insertion into the transmit data stream. These buffers are read from and written to the file CWTERM.BFR unless otherwise specified. Transmit buffer maintenance is found under the Buffer pull down menu.

5.2 Transmitting a buffer - You may select a transmit buffer by one of two methods.

(1) Using the pull down menus, select "Tnsmt Buffer". The entire set of 10 buffers will be displayed. Using the UP and DWN arrow keys, select the desired buffer and press ENTER. If you change your mind you may abort the selection by pressing ESC.

(2) Select a transmit buffer by using the alternate key combined with a number key. For example: buffer number 3 is inserted into the transmit stream by pressing alt<3>.

5.3 Viewing and Modifying Buffers - Access the buffers by selecting ModBuffer on the Buffer pull down menu. Specify the name of the buffer file. The default editor will be called with the specified file. Change the text as desired and exit the editor using <alt>X (if using TNCED). The ten buffers will be updated on return to TNC.

5.4 Loading a new set of buffers. Select the LoadBuffer function on the Buffer pull down menu. Specify the name of the desired buffer file. If the file is found the ten buffers will be overwritten with the file data. The buffer view window is immediately opened if the load has been successful. Select a buffer for transmission as specified above.

5.5 Modifying the buffer file directly - Each buffer file is a simple text file containing ten lines where each line does not exceed 80 characters. You may modify the file using a text editor. Make sure that the editor treats the file as a non-document.

NOTE: FILE SELECTION

At any file name prompt you may enter a sequence of wildcards in the file name. For example:

```
*.TXT ..\TEXT\BUFFERS.?91 c:\WP\BUFFER?.WP
```

When a wildcard is entered a pick list will be displayed showing all matching file names. The actual list may be longer than the display so you can scroll past the end of the display. Move to the desired file using the UP and DOWN arrow keys and select it by pressing <ENTER>. If the file is not found, press <ESC> to return to the file name prompt. If only one matching file is found, its name will be entered into the file name prompt and no pick list will be displayed.

Chapter 6

File Transmission

6.1 Plaintext (ASCII) files can be transmitted in any mode. This function is found on the Files menu. You will be prompted to enter the name of the file for transmission. Include the drive and path if necessary. Characters will begin transmission immediately and are displayed in the transmit window. Transmission can be terminated by pressing <ESC>.

Chapter 7

Receive Buffer

7.1 The receive buffer in CWTERM consists of 800 lines of 80 characters each. The receive window only shows the last several lines in the buffer. Access to the entire receive buffer can be made by pressing the Page-Up key or via the Files pull down menu. The receive window will then show the receive buffer beginning with the first line of text received. Movement through the buffer is made with the up and down arrow keys. When you are finished press <ESC> to return to the normal transmit/receive screen.

7.2 Saving the Receive Buffer - Access the save receive buffer function on the Buffers pull down menu. You will be prompted for a filename in which to save the buffer. The default is CWTERM.BFR.

Chapter 8

Data Base Use

8.1 CWTERM uses and maintains three distinct data base files:

DEFAULT NAME USE

LOGBOOK.DBF DBASE-III compatible file provides full log keeping functions using a pop up menu.

HAMGRAM.DBF DBASE-III compatible file containing a complete message generation and storage system.

COUNTRY.LST ASCII text file containing cross reference data of Prefix to Country. Much faster than using the callsign book.

8.2 LOG BOOK DATA FILE

LOGBOOK.DBF is the default log book file. You may alter the log name in the CWTERM.CFG configuration file. This file is a DBASE-III compatible file containing the following data dictionary:

FIELD NAMETYPE SIZE

DATE DATE 8

TIME CHAR 4

CALLSIGN CHAR 15

RSTINCHAR 3

RSTOUT CHAR 3

FREQ NUMBER 8:4

MODE CHAR 3

COMMENT CHAR 29

QSLSENT DATE 8

QSLRCVD DATE 8

8.2.1 LOGBOOK INDEX FILES - Two index files are maintained by the logging procedures. A DATE-TIME index and a CALLSIGN index. These index files are fully Dbase compatible. If you modify (add, delete, or sort) the LOGBOOK.DBF file using DBASE, FOXBASE or some other general purpose data base program the INDEX files will be corrupted. The index files have the filename LOGBOOK.DTM and LOGBOOK.CLL. If the index files become corrupt - DELETE the files at the DOS prompt. The program will automatically rebuild the index files the next time you run it.

8.2.2 Accessing the Logbook Data - The logging function is accessed on the Log/NTS pull down menu or by pressing <alt>L. The following form will overwrite the lowest lines of the screen.

Date Time Callsign IN OUT Freq MOD Comments RecNbr

Add Bottom Delete Edit Find Index Next QSL pack Prev Top eXit [DATETIME]

8.2.3 A new database will always show a RecNbr of 0 and blank fields with the exception of Freq which will be 0.0000. Each function is invoked by the first capital letter in the command word. To record a logbook entry use the Add function. To modify an existing entry use the Edit function. When done either Adding or Modifying an entry return to the command mode by pressing ESC to discard the changes or ctrl-END to save them to the database. For additions to the database the Date and Time will be entered from the system date-time corrected to GMT in accordance with the environment variable TIMEZONE.

8.2.4 Pressing <I> for index will toggle the index between callsign and date-time. The date-time is the default index and the last entry in the log book will be the one shown on initial entry.

8.2.5 The <F>ind function performs the search based on the callsign indexd. I usually use this to find a previously worked callsign. My log now has over 2000 entries covering a period of three years. Finding a previously worked station is instantaneous! The find may be for an entire callsign or a partial. For example: entering W4 for the search string will put you at the first W4 callsign in the logbook. If a W4xxx entry does not exist, then the next record in order

after W4 will be displayed.

8.2.6 <D>delete a record only marks the record for deletion in the database. This function is a toggle and the effect can be reversed by subsequent re-entry of 'D'. Deleted records are indicated by an asterisk to the right of the record number, ie: 235* -> 235 deleted. Actual removal of the record from the database is accomplished by the pack command. The database and both index files will be modified to reflect the removal of all 'deleted' records.

8.2.7 Return to the calling program (TNC or COMMAND.COM) BY pressing eXit.

8.2.8 Separate LOGBOOK maintenance. The program LOGBOOK.EXE can be executed from the DOS command line. Multiple logbooks can be maintained and are accessed by specifying them on the command line extension:

C:\HAM\LOGBOOK LOGBOOK to access the CWTERM logbook C:\HAM\LOGBOOK CONTEST to access the logbook named CONTEST

8.3 NTS MESSAGE DATA FILE

8.3.1 CWTERM maintains a data base of NTS messages which have been transmitted. These messages are in a DBASE-III compatible file with the following data dictionary:

DATA FIELDTYPE SIZE

```
MSG_NBR C 4
PRECEDENCE C 1
HANDLING C 1
HANDL_EXT C 5
STATION C 10
ORIGIN C 15
FILE_TIME C 4
FILE_MONTH C 3
FILE_DAY C 2
ADDRESSEE C 25
ADDR1 C 25
ADDR2 C 25
CITY C 25
STATE C 2
ZIP C 5
PHONE C 13
TEXT_1 C 65
TEXT_2 C 65
TEXT_3 C 65
TEXT_4 C 65
TEXT_6 C 65
SIGN C 25
SIGN_ADR1 C 25
SIGN_ADR2 C 25
SIGN_CITY C 25
SIGN_ST C 2
SIGN_ZIP C 5
SIGN_PHN C 13
```

8.3.1 NTS Data Base Access - You access the NTS data base via the Log/NTS menu. The transmit/receive screen will be replaced with a data entry form which relates directly to the NTS message format. The last message sent (or a blank message for a new data base) will be in the fields.

8.3.2 Data entry and movement through the data base is very similar to making log book entries. The main difference is that prompts and selectable data entries are provided. The casual preparation of an NTS message does not require much of a learning curve. The word count is performed automatically.

8.3.3 Data Entry Format:

Nbr P Handling Inst OrigSta Place of Origin Time Mon Day

J

HX

J

To: Phone #

J

J

From: Phone #

J

Word Count :

N)ext P)rev T)op b(O)t G)o S)rch E)dit A)dd D)el B)row Pa(C)k W)rite Q)uit
<F1> for HELP

8.3.4 Writing the message to an ASCII file. Pressing the <W> select key will write the message in NTS format to a file name MSGnnnnn where nnnnn is the assigned message number in the data entry form.

8.3.5 Return to the transmit receive screen by pressing <Q> for quit.

8.3.6 The file MSGnnnnn may now be sent as a plain text file transmission.

8.4 COUNTRY

8.4.1 COUNTRY.EXE is a fast retrieval program for locating countries when the callsign prefix is known.

8.4.1 The file COUNTRY.LST is an ASCII file with the following format:

```
;Prefix Country/State/City sDD.MMsDDD.MM
;{Local}Cape May NJ 38.57 74.50
A2 BOTSWANA -22.00 -24.00
A3 TONGA IS -20.00 175.00
A4XOMAN 22.00 -58.00
A5 BHUTAN 27.30 -90.06
```

Comment and special data lines begin with a semicolon. The program will default to computation of distance in nautical miles. To change to another standard delete the appropriate leading semi-colon from the appropriate one of the lines which specify statute miles or kilometers:

```
::{Earth major axis st.miles 3906.5
::{Earth major axis in kilometres} 6387.388
```

Each line of data must conform to the specified format.

Prefix Country/State/City sDD.MMsDDD.MM

Your own latitude and longitude is specified on the ";local" line as shown above.

The entry for Cape May NJ, the authors QTH is:

```
;{Local}Cape May NJ 38.57 74.50
```

The entry for Cedar Rapids would be:

;{Local}IOWA, CEDAR RAPIDS 41.58 91.40

8.4.2 Accessing Prefix/Country list - Select Countries from the Accessory pull down menu to call up the COUNTRY.EXE program. You may also access this program from the COMMAND.COM prompt.

8.4.3 Quick location of a prefix can be obtained by pressing the first letter of the prefix.

8.4.4 Search by name of country is obtained by pressing CONTROL-S. This opens a request window for the search string. The search string is not case sensitive, for example INDIA, india, and India will all locate the same entry. The light bar will be placed on the first entry found containing that string, or left in place if not found.

8.4.5 The file can be maintained using a non-document editor. Be certain to observe the limitation of line size and format. You should also maintain the alpha numeric sort of entries. Adding or deleting lines will not effect the program operation.

Chapter 9

Capturing Incoming Text

9.1 Three methods are available for capturing incoming text. The receive buffer may be saved to a text file as previously described. The incoming text may also be sent to a file as it arrives. This is accomplished by pressing alt<C>. The capture file is always named CWTERM.TXT and will be in the default directory. A separately named file may also be saved by pressing alt<R> or from the Files menu.

9.2 Incoming text will continue to be sent to the file until the next alt<C> (or alt<r>) is pressed. The file will be closed.

Chapter 10

Modifying Program Defaults

10.1 SCREEN COLORS

10.1.1 Screen colors may be changed and saved to the configuration file along with the other pertinent data.

10.1.2 COLOR SELECTION SCREEN The color selection screen is available as a choice on the Parameter Menu. The function keys are used to change the foreground and background colors of each screen area used by CWTERM. The colors selected by any one function key will rotate continuously through the available choices as the key is pressed.

10.2 TRANSMIT PARAMETERS (Parameter menu items)

10.2.1 WPM Rate

The transmit (and default receive) code speed in WPM is set by using the WPM entry or pressing alt<W>. Either method opens up a dialog box showing the current WPM and allowing you to enter a new value. Pressing <ESC> or <ENTER> retains the present value. The range of allowable values is 1 to 150 wpm. Values above 80 should be only be used on computers capable of MEDIUM or FAST operation. Values above 100 should only be used on computers capable of FAST operation.

10.2.2 Transmit Key Weighting

The wEight entry opens a dialog box showing the current dash to dot ratio (weight). The default is 3.0. You may vary the weight from 2.0 to 4.0 in increments of 0.1.

10.2.3 Transmitter Compensation

Many QSK transmitters such as the TS440 will cause the keying waveform to be shortened by the t/r relay. This shortening is usually on the order of milliseconds and will not be noticable until you transmit at greater than 30 WPM. The Comp(msec) entry opens a dialog box allowing you to specify a fixed compensation interval in milliseconds to correct for these transmitters. The range of allowable values is -25 to +25 milliseconds. Note that you should not expect a negative compensation which would cause the keydown time to go less than zero. The following table shows the relationship between WPM and Dot Interval in milliseconds:

WPM	Dot Interval	WPM	Dot Interval	WPM	Dot Interval
5	240.0 msec	45	26.7 msec	85	14.1 msec
10	120.0 msec	50	24.0 msec	90	13.3 msec
15	80.0 msec	55	21.8 msec	95	12.6 msec
20	60.0 msec	60	20.0 msec	100	12.0 msec
25	48.0 msec	65	18.5 msec	105	11.4 msec
30	40.0 msec	70	17.1 msec	110	10.9 msec
35	34.3 msec	75	16.0 msec	115	10.4 msec
40	30.0 msec	80	15.0 msec	120	10.0 msec

10.2.4 Farnsworth Keying

The program can correctly increase both the inter-character and interword intervals to allow the element rate to be sent faster than the effective WPM rate. Access to this function is via the Farnsworth entry in this menu. For instance: WPM can be set to 20 and Farnsworth to 8. Outgoing text will be at 8 words per minute, but the characters will be sent at the 20 words per minute rate. An entry of 0 for Farnsworth rate will disable this mode. The Farnsworth rate is also disabled if the WPM is specified as slower than Farnsworth.

10.2.5 Tone Toggle and Tone Frequency

The program can produce keying tones on the PC speaker at a desired frequency. The tones can be toggled ON/OFF via the Tones item, and the frequency dialog box is opened with the 'tone fReq' menu item.

10.2.6 Interface Port

The program can send and receive CW via one of the following: COM1, COM2, LPT1, or LPT2. The port is selected via the 't/r Port' menu item. This will open up a "pick list". Select the desired port using the arrow keys and press <ENTER>.

The port i/o pins are:

Default Setting

LPT1 or LPT2 pin 11 - CW Input 0 v = keydown
pin 14 - PTT Output 0 v = PTT closed
pin 16 - CW Output 0 v = keydown
pin 18-25 GROUND

COM1 or COM2 pin 4 - RTS, CW Output -12 v = keydown
pin 5 - CTS, CW Input -12 v = keydown
pin 8 - DCR, PTT Output -12 v = PTT on
pin 7 - GROUND

After selecting the port, three more windows are opened in sequence allowing the setting of keying polarity for the three lines. Select the voltage level that represents the active state for that line.

10.2.7 Load/Save Keyboard map

CWTERM maintains an internal set of ASCII (keyboard) to MORSE translation tables. These tables can be written to a file using the "sAve key map" function. This file is a plain text file with one entry per line as:

```
hh|Q|--.
```

where the hh is the hex character code, Q stands for the ASCII letter, the vertical bar is a separator, and --. represents the MORSE code for that letter. You may add to or modify this file using the editor. The new keymap file may then be loaded back into CWTERM. This keymapping must be done manually each time CWTERM is brought on line, NO automatic sense and load is provided at this time.

If you desire to include additional keys which transmit a space you can specify this substitution in the key map file as:

```
hh|L|SP
```

The SP tells the program that this letter represents a space. The space bar WILL ALWAYS be set to the inter-word space character. This provides an alternate keyboard character(s) for the space.

10.2.8 View/Load/Save Parameters

The Parameter set may be viewed by selecting the View menu item. They may also be saved into the default file CWTERM.CFG (or another specified file). Previously saved parameters may be loaded as well. The program will look for the file CWTERM.CFG on startup and load the parameters found therein.

**** IMPORTANT NOTE ****

The CPU parameter may only be set by editing the CWTERM.CFG file. This parameter is used to properly set all of the timing constants and to alter the clock interrupt rate of your computer. The program has been tested successfully on the following:

CPU type	Clock Speed	CPU Parameter
----------	-------------	---------------

8088	4 MHz	SLOW
80186	8 MHz	SLOW
80286	12 MHz	MEDIUM
80286	16 MHz	MEDIUM
80386SX	20 MHz	MEDIUM
80386DX	25 MHz	FAST
80386DX	33 MHz	FAST
80486	33 MHz	FAST

The default CPU speed is SLOW. Experiment on your computer by using MEDIUM and then FAST to see if performance is affected. If you experience sluggish keyboard behavior, especially when transmitting code and using

the editor simultaneously, then you should use the SLOW parameter. If you do not plan to transmit at the very high CW speeds then the SLOW parameter is preferred for all CPU's.

Chapter 11

DOS Applications

11.1 You may temporarily exit CWTERM by selecting Dos from the DosApp menu. The program will bring up a temporary COMMAND.COM from which you can execute DOS commands or other programs. You may be constrained by the amount of memory available. Try checking by using the MEM command. On a 286 laptop computer with 640 K RAM there is 397 K of memory available at this temporary DOS prompt. If you specify a different COMSPEC file in your autoexec.bat be certain that it is a full specification including drive and directory. The program will call up your specified command file if it is found.

Return to CWTERM by entering 'EXIT' at the dos prompt.

11.2 EDITOR The editor specified in the CWTERM.DEF file can be invoked with a specified edit file by selecting Editor from the DosApp menu.

11.3 PROGRAM TERMINATION - The program can be terminated in two ways - by selecting the eXit line on the DosApp menu, or by pressing the <alt>X key. In either case you will be required to enter a 'y', or 'Y' to confirm the termination.

Chapter 12

TNCED Editor

TNCED is a full screen editor that is distributed with a Word Star [™] compatible keyboard interface. It is capable of editing multiple files with a tiled window for each file. The total size of all files and temporary buffers cannot exceed the size of available memory. A 640 K computer under DOS 4.0 can handle a single file of approximately 400,000 characters.

The program is invoked from the command line as:

```
TNCED file1 (file2 file3 file4 ...)
```

to open and edit multiple files.

The program is less than 60K in size and therefore is a convenient editor to use when invoked as a child process from another program. This is the way it is used when called by CWTERM.

The program is completely configurable by the install program:

TNCEDINST.EXE.

Keyboard primary and secondary control sequences can be changed to suit the individual user (emulate NE or QED or any other editor of your choice). They can be modified for your individual taste. As distributed the primary control sequences are WordStar (tm) compatible.

GRAPHICS EDITING

The editor can be put into a graphics mode by pressing either <F10> or <alt G>. You return to the text mode by pressing the same key.

The top line of the screen will show the present graphics characters available. Press <G> a few times to observe the full set of graphics characters available. Pressing <A> toggles between automatic and manual selection of cursor movement. When the AUTO is shown on the top line the direction will change each time a corner is inserted into the text. Normal motion is clock-wise. You can force the cursor movement to change direction by pressing the <D>.

The <SPACE>, cursor keys, HOME, END, PageUp, and PageDn all behave the same as when in a text mode. The <INSERT> key is disabled and the editor will only perform in a type over mode.

You insert graphic characters by the use of the numeric keypad. For example the following set of graphics corresponds directly to the numeric keypad as:

	GRAPHICS	KEYPAD
7	8	9
4	5	6
1	2	3
0	.	

The distribution copy of TNCED is installed for B&W displays with a standard set of control key sequences.

The arrow keys are specified as Lft, Rgt, Up and Dn.

The control key is specified by the carat (^). For example the key sequence control page up would be:

```
<^PgUp>.
```

L:
STANDARD SET - CONTROL FUNCTION PRIMARY SECONDARY

⌞
Character left <Lft> <^S>
Character right<Rgt> <^D>
Word left <^Lft> <^A>
Word right<^Rgt> <^F>
Line up <Up> <^E>
Line down <Dn> <^X>
Scroll up <^W>
Scroll down <^Z>
Page down <PgDn> <^C>
Page up <PgUp> <^R>
⌞
Top of window <^PgUp> <^Q><^R>
Bottom of window <^PgDn> <^Q><^C>
Cursor to left side <Home> <^Q><^S>
Cursor to right side<End> <^Q><^D>
Top of screen <^Home> <^Q><^E>
Bottom of screen <^End> <^Q><^X>
Go to line<^J><^L><alt N>
Go to column <^J><^C>
Previous cursor position <^Q><^P>

L:
STANDARD SET - CONTROL FUNCTION PRIMARY SECONDARY

⌞
Abort Command <^U>
⌞
Undo last deletion <^Q><^U><alt U>
Restore line <^Q><^L>
Tab <^I>
Insert control char <^P> char
New line <^M>
Insert line <^N>
Delete current character <^G>
Delete left character <^H> <^Bks>
Delete right word <^T>
Delete line right <^Q><^Y>
Delete line <^Y>
⌞
Find pattern <^Q><^F><alt F>
Find and replace <^Q><^A><alt R>
Find next <^L>
⌞
Graphics toggle<F10> <alt G>

L:
STANDARD SET - CONTROL FUNCTION PRIMARY SECONDARY

⌞
Log drive/path <^J><^D>
Show TNCED version <^J><^V>
Show available memory <^J><^R><alt M>
Toggle inster mode <^V> <Ins>
Toggle autoindent mode <^Q><^I><alt I>
Set undo limit <^J><^U>
Set default extension <^J><^E>

L:
STANDARD SET - CONTROL FUNCTION PRIMARY SECONDARY

↓
Abandon file <^K><^Q><alt Q>
Read file into window <^K><^R>
Save and continue edit <^K><^S>
Save to file <^K><^N>
Save and exit to DOS<^K><^X><alt X>

↓
Add Window<^O><^A><alt W><alt W>
Resize current window <^O><^S><alt W><alt S>
Next Window <^O><^N><alt W><alt N>
Previous Window<^O><^P><alt W><alt P>

↓
Begin block <^K><^B><alt B><alt B>
End block <^K><^K><alt B><alt E>
Top of block <^Q><^B>
Bottom of block<^Q><^K>
Copy block<^K><^C><alt B><alt C>
Move block<^K><^V><alt B><alt M>
Delete block <^K><^Y><alt B><alt D>
Toggle (hide) block display <^K><^H><alt B><alt H>
Mark curenent word <^K><^T>
Write block to file <^K><^W>

L:
STANDARD SET - CONTROL FUNCTION PRIMARY SECONDARY

↓
Set marker 0 <^K>0
Set marker 1 <^K>1
Set marker 2 <^K>2
Set marker 3 <^K>3
Set marker 4 <^K>4
Set marker 5 <^K>5
Set marker 6 <^K>6
Set marker 7 <^K>7
Set marker 8 <^K>8
Set marker 9 <^K>9

↓
Hide/Unhide marker <^K><^M> <alt B><alt H>

↓
Jump to marker 0 <^Q>0
Jump to marker 1 <^Q>1
Jump to marker 2 <^Q>2
Jump to marker 3 <^Q>3
Jump to marker 4 <^Q>4
Jump to marker 5 <^Q>5
Jump to marker 6 <^Q>6
Jump to marker 7 <^Q>7
Jump to marker 8 <^Q>8
Jump to marker 9 <^Q>9

Chapter 13

CODE PRACTICE PARSER

13.1 The program, PARSE.EXE, will generate a control/text file suitable for use with CWTERM for automatic code practice sessions. A feature of MSDOS called indirection is used for specifying the source and output for PARSE.EXE.

13.2 Begin by creating an ASCII text file which will be the source used for the code practice session. W1AW usually transmits its code practice sessions using text for QST. I prefer to use the Sunday edition of the local paper, as most non-hams have access to this source. The sports section provides a nice mix of characters, numbers, and punctuation marks. This source should be approximately 50 lines of text with 64 characters per line, or 3200 characters in length. I suggest you use the editor, TNCED.EXE, to create this file. If you use Word Perfect, Word Star, or some other word processing program be sure that the file is save as ASCII (or PLAIN) text.

13.3 Assuming you have named this file, NEWS, you invoke the parsing processor as:

PARSE SCRIPTFILE SOURCEFILE DESTFILE

13.1 Two sample script files are included on the distribution disk, SCRIPT.FST and SCRIPT.SLW. These generate code practice sessions for 5, 10 & 13 and 13, 18 & 24 wpm respectively.

13.2 The lines containing "%spd nn tt" instruct the parsing program to insert text from the SOURCEFILE at nn WPM for tt minutes transmission time.

Chapter 14

AUTO CODE PRACTICE TRANSMISSIONS

14.1 The program, PRACTICE.EXE, will allow the automatic transmission of a date-stamped file with a name specified as:

MM-DD-YY.QST, where
MM - month, 01 - 12,
DD - day, 01 - 31,
YY - year, 00 - 99.

14.2 You transmit the code practice of the day by simply running PRACTICE. The program looks for the date-stamped file and invokes CWTERM with that file specified as the text source.

14.3 There are several very good disk manager programs available which allow the operator to specify timed execution of one or more programs. HDM, Hard Disk Manager, is a share ware program with this capability. Combining CWTERM, PARSE, PRACTICE and HDM will allow you to create daily code practice sessions for transmission in your local area.

APPENDIX

AUTO CODE PRACTICE SAMPLE TRANSMISSION

----- transmit file begins -----

|M
|D1
|W18
|F13
QST DE W1HKJQST DE W1HKJQST DE W1HKJ
|D1
CODE PRACTICE TONIGHT AT 15, 20, 25, AND 30 WPM
|D1
TEXT FROM PAGE
|W18
|F13
|D2
15 WPM FOLLOWS
|F15
|D2
vvv
|D2
VINELAND - BUENA REGIONAL AND VINELAND HIGH SCHOOLS HAD NOT MET ON THE
FOOTBALL FIELD SINCE 1982. AFTER SATURDAYS CLASH, IT MAY BE NINE MORE
YEARS UNTIL ANY TWO TEAMS MATCH THE SHOW THE CHIEFS AND THE CLAN PUT ON
AT GITTONE MEMORIAL FIELD. JUST ASK ANY OF THE 2,500-OR-SO FANS WHO
SAY IT. VINELAND PREVAILED IN THE THRILLING INTERDIVISIONAL CAPE-ATLANTIC
LEAGUE GAME 13-11, BUT NOT BEFORE SURVIVING A DAZZLING BUENA RALLY. THE
CHIEFS,
|W18
|F13
|D2
20 WPM FOLLOWS
|W20
|F0
|D2
vvv
|D2
TRAILING 13-3 MIDWAY THROUGH THE FOURTH QUARTER, SCORED A
TOUCHDOWN WITH 4:29 LEFT. THEN THEY GOT REALLY SERIOUS. WHILE THE CLAN
WAS RUNNING OUT THE CLOCK (AND FORCING BUENA TO USE UP ALL ITS TIME OUTS)
IN THE LAST MINUTE, BURLY FULLBACK DEANDRE JONES TOOK A HANDOFF FROM
QUARTERBACK ART BARUFFI, TOOK A HIT AND FUMBLE THE BALL. BUENAS ROBERT
ALLEN GOBBLED IT UP. FIRST DOWN, BUENA AT THE CLAN 22 - 33 SECONDS TO
GO. DRAMATIC, RIGHT? READ ON. ON FIRST DOWN, CHIEFS QUARTERBACK DAN
TORRES MISSED A CONNECTION WITH TOTALLY UNGUARDED END WILFREDO ANDUJAR
IN THE
|W18
|F13
|D2
25 WPM FOLLOWS
|W25
|F0
|D2
vvv
|D2
FLAT. ON SECOND DOWN, RON ROBERTS SNARED A TORRES HEAVE AFTER IT
BOUNCED OFF HIS HANDS AND THE HANDS OF TWO DEFENDERS. FIRST DOWN, BUENA
AT THE 10-YARD LINE. WITH 14 SECONDS LEFT, ANOTHER ATTEMPT AT A TORRES-
ANDUJAR HOOKUP WENT AWRY. ENTER PLACE-KICKER BRIAN ROVANI - WHO HAD BOOTED
A 25-YARD FIELD GOAL AT THE END OF THE FIRST HALF - WITH 10 SECONDS TO GO.
THE SNAP WAS GOOD, THE BALL SAILED TOWARD THE GOAL POST, AND FADED A
COUPLE OF FEET WIDE TO THE RIGHT. GOODBYE, BUENA. GOOD TRY, BUENA. FROM
MY ANGLE IT LOOKED LIKE IT WAS OFF, BUT I HAD MY FINGERS CROSSED, VINELAND
COACH RON DERUCHIE SAID WITH A SMILE. WHEN MY GUY (JONES) FUMBLE, OF

COURSE I WAS WORRIED. I THOUGHT IT WAS OVER FOR US. YOU

|W18

|F13

|D2

30 WPM FOLLOWS

|W30

|F0

|D2

VVV

|D2

WORRY ANY

TIME YOU GIVE UP THE BALL. HE WAS CARRYING PEOPLE ON HIS BACK ALL DAY AND HE WAS BREAKING TACKLES ALL DAY, SO WE GAVE HIM THE BALL. I CANT BLAME HIM.

I WISH I HAD 10 MORE ATHLETES LIKE HIM. VINELAND, KEEPING THE BALL ON THE GROUND EXCEPT FOR A 13-YARD HOOKUP BETWEEN BARUFFI AND JONES ON A SCREEN PASS, TOOK A 7-0 LEAD IN THE FIRST PERIOD ON A 57-YARD DRIVE. JONES, 5-FOOT-11, 225 POUNDS, ACCOUNTED FOR 20 OF THE RUSHING YARDS IN THE POSSISSION, WHICH ENDED WHEN QUICK BACK CARLTON SAVAGE SPRINTED 18 YARDS TO THE END ZONE WITH A PITCHOUT. DONALD BUNTON ADDED THE EXTRA POINT.

BUENA, UNABLE TO MOVE THE BALL FOR MOST OF THE HALF, GOT GOING IN THE LAST MINUTE BEFORE HALFTIME WITH A HURRY-UP DEFENSE. ROBERT ALLEN PICKED UP 10 YARDS UP THE MIDDLE. TORRES CONNECTED WITH RUNNING BACK CLIFFORD FOSTER FOR 25 YARDS AND WITH ANDUJAR FOR

|W18

|F13

|D4

THIS ENDS W1HKJ CODE PRACTICE

|D2

QST DE W1HKJ \$

|Q

----- transmit file ends -----