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° SUGGESTED SHAREWARE CONTRIBUTION - \$20 ° °

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## FOREWORD

Super Morse was written primarily to help prospective hams overcome what many perceive to be the biggest obstacle to obtaining an amateur radio license--learning the Morse code. When I began to write Super Morse in 1986, there were only a few simple Morse code tutorial programs available for the IBM-PC and compatibles. However, they were very limited and are often written in BASIC, which requires a clumsy interpreter. In writing Super Morse I sought to create a full-featured program which provides a variety of modes for learning and practicing the code and which takes full advantage of the computer as a teaching tool.

My specific goals in writing Super Morse were:

1. Professional appearance and operating characteristics.
2. Comprehensive program covering all aspects of Morse code learning and practice.
3. Create new methods of learning and practicing the Morse code.
4. Provide ample opportunities for customization by the user.
5. Use the unique capabilities of the microcomputer to teach and learn Morse code.

Super Morse is directed primarily to the United States amateur radio community, but it can be used by commercial operators. Amateur radio uses a special subset of the International Morse code, but Super Morse supports several of the more common characters used in commercial radiotelegraphy. In addition Super Morse supports four Nordic characters used primarily in Scandinavia.

M. Lee Murrah  
Cedar Rapids, IA September, 1992

## I. The Morse Code

### A. What Is the Morse Code?

Morse code is a communication code, named for Samuel F. B. Morse, the inventor of the telegraph, which uses combinations of timed sound elements to represent the characters of the alphabet. Morse code was originally used in land telegraphy and comprised a series of timed clicks. Today, however, it is usually sent via radio by turning a radio transmitter on and off to produce the timed code elements.

Some have stated that Morse code is an obsolete mode of communications in this age of digital and satellite communications. However, modern communications require complex equipment and could easily be knocked out of service in times of war or natural disaster. It is the simplest, most basic form of radio communications available today, and it has always been recognized that Morse code can "get through" when voice communication is impossible.

One of the biggest advantages of Morse code is that it can be transmitted using very simple, inexpensive equipment. Modern voice and digital communications equipment can now be built only in sophisticated manufacturing facilities, but a Morse code transmitter can be built at home by even the newest amateur using readily available parts. Incredibly, some very low power Morse transmitters have been constructed from a single TTL logic gate integrated circuit and one or two external components!

Morse code is also a useful skill even outside radio communications. Ex-prisoners of war held incommunicado in solitary confinement in North Vietnam report that they communicated by tapping messages in Morse code on the walls of their cells. Morse code was the only way that the prisoners were able to communicate with their fellows, and it helped them to retain their sanity during several years of imprisonment. Further, like a foreign language, learning Morse code is a mental challenge that keeps the mind active and improves thinking skills.

Today Morse code is most widely known for its use in amateur radio, but it is also used in military and commercial communications.

In the United States it is now possible to obtain a limited amateur radio license without passing a Morse code test. However, the license is limited to the Novice class which has limited frequency bands and privileges. In order to obtain access to the full range of privileges and frequency bands, you must pass a Morse code test.

### B. How Morse Code Is Defined

#### 1. DITS and DAHS

Morse code is a sound language that uses two tones of differing lengths in various

combinations to represent all the characters of the Morse alphabet. These two tones are distinguished by their length, one a "short" tone and the other a "long" tone. The short tone is phonetically referred to as "DIT", and the long tone as "DAH". You will often see the short tone represented as a "." (dot) and the long tone as a "-" (dash), but it is commonly agreed that use of these symbols encourages a visual approach to the code, which slows code learning. You should never think of the Morse code as dots and dashes or write it in that way!

The original Morse code as used in landline telegraphy was represented by a combinations of timed clicks. However, when radio came into use, the code was revised to use tones which are more suited for radio use. The original Morse code is used in land telegraphy is called the American Morse code, but the code now commonly used in radio is called the International Morse code.

## 2. Morse Characters

### a. The Morse Character Set

Amateur radio uses a reduced character set of the 26 letters, the 10 numerals, 4 punctuation marks and 5 special procedure signs.

### b. Characters

The letters are as follows:

A DIT DAH	N DAH DIT
B DAH DIT DIT DIT	O DAH DAH
C DAH DIT DAH DIT	P DIT DAH DAH DIT
D DAH DIT DIT	Q DAH DAH DIT DAH
E DIT	R DIT DAH DIT
F DIT DIT DAH DIT	S DIT DIT DIT
G DAH DAH DIT	T DAH
H DIT DIT DIT DIT	U DIT DIT DAH DAH
I DIT DIT	V DIT DIT DIT DAH
J DIT DAH DAH DAH	W DIT DAH DAH
K DAH DIT DAH	X DAH DIT DIT DAH
L DIT DAH DIT DIT	Y DAH DIT DAH DAH
M DAH DAH	Z DAH DAH DIT DIT

The numbers are as follows:

1 DIT DAH DAH DAH DAH	6 DAH DIT DIT DIT DIT
2 DIT DIT DAH DAH DAH	7 DAH DAH DIT DIT DIT
3 DIT DIT DIT DAH DAH	8 DAH DAH DAH DIT DIT
4 DIT DIT DIT DIT DAH	9 DAH DAH DAH DAH DIT
5 DIT DIT DIT DIT DIT	0 DAH DAH DAH DAH DAH

The punctuations is as follows:

. DIT DAH DIT DAH DIT DAH  
, DAH DAH DIT DIT DAH DAH  
? DIT DIT DAH DAH DIT DIT  
/ DAH DIT DIT DAH DIT  
- DAH DIT DIT DIT DIT DAH

### b. Procedure Signs

Morse code communications uses several special characters that convey procedural information. These are often longer characters that can be viewed as combinations of alphabetic characters without and intervening character space. Following are the most common procedure signs, or "prosigns", used in amateur radio:

<u>Prosign</u>	<u>Meaning</u>
<AR>	End of message
<SK>	End of contact
<AS>	Wait, stand-by
<KN>	Over-specified station only
<BT>	Double Dash ("=")

### c. Non-English Characters

The following Nordic characters are supported by Super Morse in some modes:

<u>ASCII</u>	<u>Identification</u>
129	{Double dotted "u"}
130	{Forward accented "e"}
143	{Dotted "a"}
146	{Double dotted "a"}
157	{Double dotted "o"}

## 3. Code Weighting

The duration of the elements of Morse code have a standard relationship among themselves. The DIT is assigned the shortest duration and is defined as being one time unit in duration, and a DAH is 3 times as long as a DIT, or 3 time units in duration. The silence between DITs and DAHs in a character, which we will call an "element space" is the same



length as a DIT, i.e., one time unit in duration. The silence between characters, which we will call a "character space", is 3 time units in duration. Finally, the space between words, which we will call a "word space" is 7 time units in duration.

Perfectly sent code uses these standard relationships, but code is not usually perfectly sent except when a computer is used. Each person who sends code manually, develops a weighting slightly different from the standard, and this unusual weighting is said to constitute the operator's very recognizable "fist".

Operators who use automatic keyers can usually set the weighting as a personal preference. Weighting very far from the standard become choppy and hard to copy.

#### 4. Code "Speed"

##### a. How Speed is Determined

The speed of Morse code is measure in words per minute, which is normally abbreviated as WPM. Code speed is an elusive measure since words are of various lengths; and when random characters are being sent, there are no words at all!

Code speed has therefore been arbitrarily defined by standard words. The standard word for plain text is "PARIS", which, if you add up the time units in all the code sound elements used to send "PARIS" (DITs, DAHs, and spaces between the DIT's and DAHS, characters and words), you will find that it is 50 units of time long. One word per minute is defined as sending "PARIS" using code elements timed to fill one minute, including the word space following the last word. Ten words per minute would be sent at a speed necessary to send "PARIS" 10 times. The code elements are calibrated at any particular speed against "PARIS", and when text is sent at, say, 10 words per minute, greater or fewer actual words may be sent depending upon their length.

The word "PARIS" will not work for random characters since the average Morse code character used to send English text is shorter than the average character used to send random characters. This is because English does not use all the letters in equal numbers and because Morse code assigns the shortest codes to the most frequently used letters in English. The most frequently used letter in English is "E", and it is assigned the shorted code, the DIT. A less frequently used letter such as "Q" is assigned a longer code, DAH DAH DI DAH.

For random characters, therefore, the standard word "CODEX" was chosen. If you analyze "CODEX", you will find that it contains 60 code elements. The effect of this difference is that the DITS and DAHS in randomly sent characters should sound about 20% shorter than those in plain text at the same nominal speed. Randomly sent characters therefore should sound 20% faster that plain words.

##### b. The "Farnsworth" Method"

Morse code is usually sent with the standard relationship between character spaces and

the elements which make up the character. In other words, the DITS, DAHS and element spaces are sent according to the same speed standard. However, Farnsworth discovered that code learning can be speeded up if the DITs, DAHs and element spaces are compressed as if the code were being sent at a high speed while the character spaces are expanded increased to maintain an overall lower send speed. This is called the "Farnsworth method", and it is endorsed by the ARRL as the best way to learn the code.

The Farnsworth method is supported and is used as the default method by Super Morse. Two Farnsworth speeds are provided. The "Lo" Farnsworth speed, preset at 18 WPM, is used at send speeds below 20 WPM; and the "Hi" Farnsworth speed, preset at 26 WPM, is used above 20 WPM. Beware, however, that not all code tests are given in the Farnsworth format! Check with your testing coordinator to determine which method will be used, and then use that system when studying with Super Morse.

### C. Learning the Morse Code

There is no one best way to learn the Morse code. As with foreign languages (to which Morse code is similar in some ways), some people can learn the code faster than others. The best attribute that one can possess in learning the code is persistence.

Super Morse implements one method of learning the Morse code. If you follow the lessons provided in the Learn phase, you should have no trouble in learning the Morse code in a few weeks or months.

In addition to the method provided by Super Morse several general tips on learning the Morse code can be provided as follows:

1. Learn the characters by sound, not by sight. Each of the characters has its own characteristic length and rhythm. Do not memorize the characters using the visual dot and dash symbols. That will only slow you down and create bad habits that will be hard to break!
2. Set the character speed to 13 words per minute or higher (the ARRL uses 18 WPM) and the send speed at whatever lower speed you desire. (Super Morse automatically sets the character speed to 18 WPM). Since your ultimate goal is 13 words per minute, it is much better to learn the sounds of the characters at the higher speed even though they are spaced at a lower speed. As stated above this is called the Farnsworth method, and it helps to eliminate the "hump" that most people experience around 10 words per minute.
3. Study every day, but if you feel you are stuck and not making progress, take a few days off. It's amazing how this will sometimes clear your head.
4. Try to copy code in you head as much as possible.
5. Obtain access to a ham receiver and try to copy real transmissions off the air. Some general coverage short wave receivers permit reception of Morse code, but in general they are harder to tune in on a Morse code signal.

6. As soon as possible learn the sounds of whole words. You will find that whole words have characteristic lengths and rhythms that distinguish them from all other words.

7. Turn on the Super Morse Build/Groups function and let the computer send in the background while you are doing something else, such as reading a book or working on a construction project. Try to identify characters while doing the other activity. This will help your brain shift to "automatic" and will help the code sounds become a natural "part of the wallpaper."

8. Although the code test no longer requires that you demonstrate an ability to send Morse code, you should get a code practice oscillator and practice your sending. Note that Super Morse can be used as a code practice oscillator using one of several keys on the keyboard or an external telegraph key.

9. As soon as you pass the novice test, get a rig on the air and operate on the novice bands. Nothing will increase your speed and concentration as well as the pressure of an on-the-air contact. Don't worry about being perfect--the other guy is probably in the same boat as you.

## II. Super Morse Basics

### A. Conventions Used in Manual

This manual uses words or characters in pointed brackets, such as "<x>" or "<yyyy>" to indicate that the key denoted by the text or character should be pressed. Following are several examples:

<A>	- Press the "A" key
<F1>	- Press the function key "F1"
<CTRL-E>	- Press the "Control" and "E" keys simultaneously
<ALT-G>	- Press the "ALT" and "G" keys simultaneously
<ESC>	- Press the "ESCAPE" key
<RETURN>	- Press the "RETURN" or "ENTER" key
<SHIFT>	- Press the "SHIFT" key

Brackets are also used in examples to represent textual information that should be present or entered in a command line.

References to Super Morse menus are often shown in the form Setup/Code/Speed Factor. This means that the Speed Factor selection is listed in the Code menu, which itself is a selection in the Setup selection from the main menu.

### B. Super Morse Program and Data Files

#### 1. Distribution File

Super Morse is distributed as a self-extracting archive file bearing a filename of the form SMnnn.EXE, where nnn is the version number. For example, version 4.01 is distributed as SM401.EXE. The archive file contains all the files necessary to run Super Morse. To extract the files, at the DOS prompt simply enter:

```
SMnnn <RETURN>
```

In some cases Super Morse may be distributed as a plain ZIP (not self-extracting) file. In that case you must use the Shareware de-archiver program PKUNZIP which is available on computer bulletin boards and from Shareware distributors.

If you share Super Morse with a friend or want to upload it to a computer bulletin board system, please upload or share the archive file in its original condition. Do not add or remove files, since that can create confusion to other other users. In addition, do not distribute or share the files in de-archived form since you may omit an important file!

#### 2. Files in Distribution File

The Super Morse distribution file contains the following files:

<u>Description</u>	<u>Name</u>	<u>Needed to Run?</u>	
	ANTENNAS.SM - Names of antennas for QSO feature		Yes
BUILD.HLP	- Help file for Build phase	Yes	
BYE.HLP	- Sign off message	Yes	
CITIES.SM	- Names of cities for QSO feature	Yes	
CLASSES.SM	- Definition of license classes	Yes	
ENHANCE.HLP	- Help file for Enhance phase	Yes	
GROUPS.SM	- Code groups for Learn phase	Yes	
GROUPS.1	- Alternate code group for Learn phase	No	
GROUPS.2	- Alternate code group for Learn phase	No	
HAMWORDS.SM	- List of "ham" words for receive feature	Yes	
HOME.HLP	- Help file for control keys	Yes	
JOBS.SM	- Name of occupations for QSO feature	Yes	
LEARN.HLP	- Help file for Learn phase	Yes	
MAIN.HLP	- Main help file	Yes	
MEASURE.HLP	- Help file for Measure phase	Yes	
MORSE.HLP	- Help file for Morse characters	Yes	
NAMES.SM	- Names of operators for QSO feature	Yes	
ONLINE.HLP	- Help file for the Modem feature	Yes	
OP.HLP	- Help file for the Operate phase		Yes
Q&A.SM	- Sample question and answer file	Yes	
QSO1.SM	- QSO template for Measure phase	Yes	
RADIO.HLP	- Help file for radio terminal feature	Yes	
README.1ST	- Important information about setup		No
REGISTER.FRM	- For user registration and suggestions	No	
REGWORDS.SM	- List of "regular" words for Receive feature	Yes	
RIGS.SM	- Names of radio equipment for QSO feature	Yes	
RUNS.SM	- Character runs for Learn feature	Yes	
SM.EXE	- the main executable file		Yes
SM.DOC	- This documentation file	No	
SM.PIF	- Program information file for Windows		Yes*
STATES.SM	- States	Yes	
STEPS.SM	- Character pairings for Learn feature	Yes	
WHATSNEW.nnn	- New features in version nnn	No	

\* Needed for Windows use only

### 3. Special Super Morse Versions

Versions of Super Morse which have an "N" after the version number are distributed by the National Amateur Radio Association and contain additional files relevant to that organization. Versions which have a "G" after the version number are for use by the United

States Government only.

## C. Equipment and System Requirements and Limitations

### 1. General Requirements

Super Morse can be run on the IBM-PC and compatibles having 384K of memory and one floppy disk drive. A hard disk is not required, although you will find that a hard disk will enhance operation of this and any other program.

Super Morse supports a Microsoft mouse. In some configurations, Super Morse uses two serial ports. If you use a serial mouse, there may be a conflict. To fully use all Super Morse features, three serial ports are required.

Your CONFIG.SYS file should authorize at least 20 files.

This can be done with the following statement:

```
FILES = 20
```

CONFIG.SYS may be edited using a word processor in the ASCII output mode or a text editor.

### 2. Code Speed Calibration

In order for Super Morse to send properly-timed code, calibration to each computer is required. Calibration is affected primarily by the computer clock speed and memory resident programs.

Super Morse uses two different calibration methods, clock and loop, in order to handle various types of PC designs and operating systems. The method is selected from the Setup menu. If the clock calibration method is used, Super Morse automatically calibrates each time it loads, and the speed should be independent of your computer clock speed. However, if you use the loop method, you must manually calibrate Super Morse in the Setup menu. You must also recalibrate Super Morse each time you add or remove a memory resident program if you use the loop method.

The loop method must be used if your computer does not implement the system clock chip in the same way as the original PC design. Super Morse is initially set for the clock method; but if the code is erratic or choppy on your computer, you should change to the loop method.

You must also use the loop method if you are running Microsoft Windows or a PC emulator on a McIntosh!

### 3. Video Display Card

Super Morse supports CGA (color), MDA (monochrome) and HGC (Hercules) video displays. The proper display adapter can be selected from the Setup menu.

#### 4. Disk Cache Programs

Super Morse saves changes in the program parameters when you exit the program. If you are using a disk cache program, the parameters may be saved to the cache area in memory and thus may not permanently be saved to disk. If you are having this problem, you should try disabling any disk caching program which you have installed on your system.

#### 5. Floppy Disk Write Protect Tabs

If Super Morse is run from a floppy diskette, a write protect tab should not be used! Super Morse must be able to store configuration and user information to the diskette.

#### 6. WINDOWS Capability

Super Morse is written as a DOS program, but it will run under Microsoft Windows under certain conditions. The author has confirmed that it will operate under the 386 Extended mode (i.e., a 386 or 486 computer is required) using the loop timing method. You must set up a PIF file, and set the background to foreground ratio to 10000 to 1 and set Execution to "Exclusive". These are available as Advanced options in the PIF editor menu. To save you time a PIF file to run Super Morse under the conditions stated is provided on the distribution diskette. You should select either the loop or clock timing method for best operation.

#### 7. Speaker Volume

The volume produced by the PC speaker is very low on some PC's, but unfortunately there is no way to increase it without an external amplifier. Some relief can be obtained by changing the speaker tone since speakers are frequency dependent.

#### 8. Sound Boards

Super Morse now supports the Sound Blaster card and compatibles. Super Morse initializes for use of the PC speaker, and the Sound Blaster must be selected in the Setup/Code menu.

### D. Installation

#### 1. In General

In versions of Super Morse prior to 1.04, it was necessary to create a special subdirectory and copy all data files into that directory. That is no longer required! The only current restriction on the location of files is that the files having HLP and SM extensions must be in the same subdirectory as the SM.EXE file.

Super Morse may be run directly from the distribution diskette if diskette is 720K or larger, or it can be copied onto another diskette or to a hard disk. If you wish to use another floppy diskette, simply extract the program files and copy all the files on the distribution diskette other than the original archive file.

If you install Super Morse on a hard disk, you may wish to place the program in a special subdirectory of your choosing. Simply create the subdirectory as described in your DOS manual, and copy all the files from the distribution diskette to the selected subdirectory. A subdirectory named "\SM" is suggested.

If you run Super Morse from a floppy disk, do not write protect the disk! Super Morse periodically writes to the diskette, and write protection will cause a disk write error.

## 2. Upgrading from CW or Earlier Super Morse Versions

The structures of the configuration (SM.CFG) and user (SMn.USR - SM now supports up to 10 users and their associated files) files which record the current status of certain program information have changed several times during the evolution of Super Morse. If you are upgrading from a version earlier than 4.01, you will need to erase the current version of the configuration and user files using the following commands:

```
DEL SM.CFG <RETURN>
```

```
DEL SM.USR <RETURN>
```

and reinitialize Super Morse. If you fail to do this you, will either get a "Disk Read" error or the program will operate improperly.

## E. Printing the DOC File

To print SM.DOC (this file) enter the following command:

```
COPY SM.DOC PRN: <RETURN>
```

You can also use the PRINT.COM program which comes with DOS or a word processor program.

## F. Morse Code Considerations

### 1. The Morse Character Set

#### a. Standard Character Set

Super Morse implements the standard Morse code character set used in amateur radio. This includes the 26 letters, 10 numbers, the comma, period, question mark, the slash mark, and the prosigns. In addition, Super Morse supports Nordic characters and non-amateur punctuation(colon, semicolon, left parenthesis, and right parenthesis). The non-amateur punctuation are available only in functions using the keyboard and disk files and are not part of the character set for automatic sending by the computer.



Several Morse code procedure signs ("prosigns") are not printable as ASCII characters. These characters are usually represented as a combination of two printable ASCII characters as follows:

<u>Prosign</u>	<u>ASCII Representation</u>	<u>Meaning</u>
<AR>	+	End of message
<SK>	\$	End of contact
<AS>	!	Wait, stand-by
<KN>	#	Over-specified station only
<BT>	=	Double dash

When prosigns are printed on the screen, they are represented in their double letter form surrounded by pointed brackets. Prosigns may be entered either as a single ASCII character or as a character combination. To enter as a character combination, depress the <SHIFT> key as both characters of the combination are entered. Make sure that the <CAPS LOCK> key is "off" when using the keyboard to enter Morse characters since the status of the <SHIFT> key is used to distinguish between prosigns and regular characters. Prosigns will be displayed on the screen in the mode in which they are entered. In some parts of the program the ASCII representation are used for display purposes only.

Except where standard characters have been defined, the ASCII characters used to represent prosigns are chosen to provide at least some association with or suggestion of the double-letter representation of the prosigns. '\$' suggests the 'S' in '<SK>', and '!' the staccato DIT DIT of the 'S' in '<AS>'. '#' suggests the run-together combination of 'K' and 'N' in '<KN>'.

#### b. International Characters

In addition to support of the standard U.S. character set for all operations, Super Morse also supports the following additional international characters.

#### ASCII Identification

129	{Double dotted "u"}
130	{Forward accented "e"}
143	{Dotted "a"}
146	{Double dotted "a"}
157	{Double dotted "o"}

Only the U.S. character set is supported for internally generated exercises. It is up to you to set up your computer to input and display these characters as provided in the DOS manual.

## 2. Code Speed

### a. Speed Standards

The PARIS standard is used for all but the Build/Groups functions where the CODEX method is used. As a consequence, that function will seem to be faster than the other functions, but do not be alarmed. That is the way it should be! You can toggle the code speed standard at any time by pressing <ALT-S>

#### b. Character, Send and Word Speeds

Super Morse provides control over three aspect of speeds. The "character" speed is the speed at which individual elements comprising the Morse characters (DITS, DAHS, and inter-element spacing) are sent. Normally, the spacing between characters is sent at the same speed as the characters elements. However, when the Farnsworth method is used, the spacing between characters is sent at a slower speed than the characters themselves.

The Farnsworth method is implemented in Super Morse by permitting you to control the "send" speed, which takes into consideration the present character speed and increases the inter-character spacing to provide the indicated overall send speed.

Super Morse provides a further refinement in permitting you to also control the "word speed", which controls the spacing between words or character groups. This is, of course, available only when words or character groups are being sent. It is especially useful for advanced users who are learning to recognize the sounds of entire words. Beginner users are not likely to find any need for this setting.

### **III. Getting Started with Super Morse**

#### A. Starting and Quitting Super Morse

## 1. Starting Super Morse

To run Super Morse enter the following command at the DOS prompt:

```
SM <ENTER>
```

## 2. Title Screen

The first screen to appear after Super Morse is started is the title screen. Super Morse will indicate first near the bottom of the screen that it is loading data files and then it will ask you to enter a user number.

## 3. User Number

After all files are loaded Super Morse asks you to enter your user number at the bottom center of the title screen. The user number is a unique number which you should select in the range 0 to 9. Super Morse supports up to 10 users, and each user is assigned a separate user file used to record statistical information. For example, user 1 is assigned the file SM1.USR, which is the default. The contents of the currently used file can be accessed from the Setup menu with the Stats command.

In order for your statistics to be correct, you should choose and use a number that is not used by anyone else. If you are the only user, you are assigned the default user no. 1, and you can simply press <ENTER> to automatically enter that number. You will then be taken to the main screen.

## 4. Quitting Super Morse

Before continuing you should know how to exit Super Morse. You may do so by selecting the QUIT option from the main menu, by pressing the ESC key, or by pressing the right mouse button. If program parameters have been changed, you are given an opportunity to save the new ones.

The Morse code exit message can be cut short by pressing ESC (although you would be deprived of the unsurpassed pleasure of hearing WD5CID's call sign yet again).

## B. Super Morse Organization

### 1. Organizational Philosophy

Super Morse is organized in a series of menus based upon the five phases of the Morse code learning process: (1) learning the characters, (2) building speed, (3) enhancing skills, (4) measuring progress, and (5) operating. These five phases are reflected in the commands available from the main menu.

## 2. Menus

### a. Pull Down Menus

Super Morse uses a pull-down menu system with a bar type main menu and submenus which "pull down" from the main menu. In some cases the submenus have their own submenus that normally overlay the submenu. The pull-down submenus each comprise a character followed by a selection name. The main menu does not use selection characters.

The current selection in all menus is indicated by a highlight bar. The highlight bar can be moved using the left and right arrow keys in the main menu and the up and down arrow keys in the submenus, or by moving the mouse pointer to the selection and pressing the left mouse button. The highlighted selection can be chosen by pressing <RETURN> or by pressing the left mouse button. If the mouse is used to choose a selection that is already highlighted, the left mouse button must be clicked twice. Most menus have a HELP selection which provides a brief explanation of the other selections.

The last selection in each menu is normally QUIT, which exits the menu and returns to a lower level menu. The same result can be attained by pressing <ESC> or by pressing the right mouse button.

### b. Line Menus

When Super Morse leaves the pull-down menus and begins to use the main display area, it sometimes presents choices in the form of line menus which are integrated into the text display. Selection may be made using the right and left arrow keys, the mouse, or the first letter of the selection.

## 3. The Super Morse Main Display

### a. The Message Line (Top)

At all times while Super Morse is running, the top line of the screen is used to identify the current function and the key necessary to abort that function. Most functions can be exited at any prompt using the <ESC> key.

### b. The Main Menu Line

The second line displays the main menu of Super Morse's pull-down menu system, which provides the following selections:

```
Learn Build Enhance Measure Operate View Setup Help EXIT
```

The current selection is indicated by a highlight bar, which can be moved using the left and right arrow keys or by pointing to the menu name with a mouse and double clicking. The pulldown menu for the menu name can be displayed by pressing the <RETURN> key. A

selection can also be made by pressing the first letter of the menu name.

Currently Super Morse's pulldown menus do not support moving from menu to menu by pressing the right and left arrows as do many other programs. In order to move to another pulldown menu after one has been opened, you must exit the menu with the "EXIT" selection or by pressing <ESC>, moving to the menu name on the main menu bar and pressing <RETURN>.

#### c. The Status Lines (Bottom)

Likewise, the bottom three lines display important program parameters as follows:

```
Wt: 3.0 Std: Txt Zoom: N Eff: ** ETim: 0:00 Ch:  
ABCDEFGHIJKLMN OPQRSTUVWXYZ1234567890  
Txt: Show Spk: Y SSp: 5 Csp: 18 WSp: 5 Class: Novice Tone: 730
```

The upper status line displays from left to right the code weighting ("Wt"), whether text or random code speed is used ("Std"), whether the zoom mode is active ("Zoom"), and the elapsed time for the current session.

The middle status line displays the currently active character set ("Ch"), whether code text will be displayed ("Txt"), and whether the speaker is active ("Spk").

The lower status line displays the code send speed ("SS") in words per minute, the code character speed ("CS") in words per minute, the code word speed ("WS") in words per minute, the license class represented by the speed ("Class"), and the oscillator tone ("Tone").

When the PC speaker is used for sound output, the tone is displayed as the tone frequency in Hertz; but when the Sound Blaster card is selected, the tone is shown as a musical note.

The first character in the effects display shows the status of interference and the second digit the status of speed jitter. The meanings of character speed, send speed and word speed are defined later in this document.

### 4. Super Morse Help

#### a. Help Screens

Help screens for each menu are available by choosing the HELP selection. Help for the control keys is available by pressing HOME.

#### b. Quick Key Help

The definitions of the function keys and ALT keys can be displayed at any menu by pressing the HOME key.

### c. Displaying the DOC File

This DOC file may be displayed with the Setup/DOC command from the main menu.

## C. Super Morse Audiovisual Cues

### 1. Code Output

Super Morse outputs code sounds either via the PC speaker or an optional Sound Blaster card. Super Morse also provides alternative output with a flashing light square in the upper right hand corner of the screen. The flashing light output permits use of the program in environments where the sound output would be inappropriate.

### 2. Audio Confirmation and Alerts

When a selection is made, Super Morse make a "diddle" sound to indicate that it is complying with the command. When an erroneous entry is made, Super Morse will make a "buzz" sound.

### 3. Repeating Characters and Words

In features which send a character or a word and prompt for a keyboard response, the character or word can usually be repeated by pressing the <SPACE> bar. In some word features, the word can also be repeated by pressing the <SPACE> bar.

### 4. Visual Cues

In some features Super Morse provides visual cues by printing DITs and DAHs when a character is sounded. Unless DIT is the last element in a character, it is usually spelled DI since this is a more accurate representation of its sound under those circumstances. This feature can be disabled in the Setup menu.

## D. Program Control

### 1. The <ESC> Key

At any time code is being sent, the current operation can be aborted by pressing the <ESC> key.

### 2. Pause

During the middle of a code exercise, you may wish to pause for some reason, e.g., answer the phone. You may do so by pressing the <ALT-P> key combination. Note that you will lose a character if you are in the midst of it when you invoke the pause. Note also that pause will affect timed functions. Pressing any key continues the previous function.

### 3. Screen Control

#### a. Hiding the Text

If you want to hide the text so that you are not tempted to peek while copying, press the END key. Pressing END again reverses the effect. The current status is displayed on the status line. With some functions the text will be hidden regardless of the setting of the hide subcommand.

The hide feature remembers up to 1792 characters sent when the text is hidden. When the text is unhidden, these characters are printed on the screen as they would have appeared if they had not been hidden.

#### b. Clearing the Screen

The screen may be cleared any time the screen is active (i.e., no menu is showing) by pressing the <ALT-C> key combination;

### 4. Timing a Super Morse Session

Super Morse includes a session timer which is displayed on the status line as "ET". The session timer is automatically zeroed when Super Morse is invoked, but it may be re-zeroed at any time by pressing the <ALT-T> key combination.

### E. The Session Buffer

Super Morse stores all the characters sounded in a session and makes them available for later use using the Review selection from the main menu bar.

The session buffer is stored in a file named SESSION.SM. This file may also be replayed using the Build/Disk function. The session buffer is limited to 4000 characters, which is about two full screens of text on an 80x25 display. Anything in excess of this is lost.

### F. Reviewing Program Information

#### 1. The Review Menu

The Review menu, which may be chosen from the main pull-down menu, permits you to review and examine various types of program information as follows:

- A - Session
- B - Keys
- C - Morse
- D - DOC
- E - Stats

F - HELP  
G - EXIT

## 2. Reviewing the Current Session

You can display all the characters sounded in the current Super Morse session using the Session selection. The Session selection displays the following menu:

A - View  
B - Play  
C - Erase  
D - Print  
E - File  
F - HELP  
G - QUIT

The session buffer may be displayed with the View command and replayed with the Play command. It can be printed with the Print command and filed to diskette with the File command. When finished with the session, you can erase it with the Erase command.

## 3. Viewing the Quick Keys

Super Morse permits you to use function and ALT key combinations to set and control various program parameters and functions. The functions of these keys can be viewed using the Keys selection from the Review menu. The quick keys can also be viewed by pressing the HOME key at any prompt.

The quick keys are discussed in detail in the Settings and Options section of this document.

## 4. Viewing the Morse Alphabet

You may wish review the definitions of the various Morse characters. You can do this with the Morse selection in the Review menu.

## 5. Viewing the DOC File

You can view this DOC file without leaving Super Morse with the DOC selection in the Review menu.

## 6. Displaying User Statistics

Several of the features in the Learn and Measure phases of Super Morse record information about your progress.

In character based lessons of the Learn section, Super Morse keeps track of your number



of consecutive correct answers. When Stats is selected from the Review menu, a color graph showing the number of correct answers for each character for the last 10 times the character has been sent to you. Also displayed at the bottom of the graph is a percentage goal figure. The goal referred to is to achieve 10 out of 10 correct for each letter, for a total of 450 net correct answers. A perfect score is 100, but you have to be VERY good to achieve it. Your score starts at 0 and slowly builds toward 100 as you get better. If you can come even close to 100, you KNOW the Morse characters!

In the Enhance section your maximum boost speed and keyboard copy speed are recorded and displayed in the user statistics. Also the number of Super Morse sessions and total time spent using Super Morse are shown.

The user statistics can be cleared with the <E>rase User command from the Stats display.

## **IV. Settings and Options**

### **A. Settings in General**

Super Morse parameters can be set using the Setup chosen from the main menu bar, quick keys, or external files.

## B. Quick Settings

### 1. The Quick Keys

Many parameters of Super Morse can be set from the main screen.

#### a. The Function Keys

The function keys are active at any input prompt, and while code is being sent. They are defined as follows:

F1 - Decrease SEND Speed	F2 - Increase SEND Speed
F3 - Decrease CHAR Speed	F4 - Increase CHAR Speed
F5 - Decrease WORD Speed	F6 - Increase WORD Speed
F7 - Lower Speaker Tone	F8 - Raise Speaker Tone
F9 - Decrease All Speeds	F10 - Increase All Speeds

The operations performed by these keys are discussed in more detail in several of the following sections.

#### b. The <ALT> and Other Control Keys

Super Morse parameters may also be set using <ALT> key combinations and other keys. Some are active while code is being sent and others only when an input is required.

The following <ALT> combinations and other keys are available:

- <ALT-B> - Toggle between code speed standards
- <ALT-C> - Clear the screen (not active during menu presentation)
- <ALT-E> - Set to Extra class Farnsworth speed (20,26,20)
- <ALT-F> - Set to User's favorite speed
- <ALT-G> - Set to General class Farnsworth speed (13,18,13)
- <ALT-H> - Context sensitive help
- <ALT-I> - Set Interference type
- <ALT-J> - Toggle code speed jitter
- <ALT-K> - Toggle speaker
- <ALT-N> - Set to Novice class speed (5,18,5)
- <ALT-P> - Pause
- <ALT-T> - Reset elapsed time clock
- <ALT-V> - Save new settings
- <ALT-Z> - Toggle "Zoom" mode
- <ALT-1> - Set class 1 speed

- <ALT-2> - Set class 2 speed
- <ALT-3> - Set class 3 speed
- <ALT-=> - Set cs,ss and ws to the same value
- <HOME> - Quick key help
- <END> - Hide/unhide text

The 18 WPM character speeds (middle number) indicated in <ALT-G> and <ALT-N> are the initial value and may be changed in the Setup menu chosen from the main menu bar.

## 2. Setting Code Speed

### a. Incremental Settings

The code speed can be set at any input prompt, and while code is being sent, using the function keys as follows:

- |   |   |
|---|---|
| F1 - Decrease SEND Speed                    | F2 - Increase SEND Speed                    |
| F3 - Decrease CHAR Speed                    | F4 - Increase CHAR Speed                    |
| F5 - Decrease WORD Speed                    | F6 - Increase WORD Speed                    |
| F9 - Decrease SEND, CHAR,<br>and WORD Speed | F10- Increase SEND, CHAR,<br>and WORD Speed |

You can set the speed at which a character is sent, separately from the overall send speed (the Farnsworth method). For example, you can set the send speed at a slow speed but the character speed using shorter DITS and DAHS which are equivalent to a much faster send speed. This is a highly recommended way to increase your speed since you will know the sound of the characters at the higher speed from the beginning. Super Morse is initialized for the Farnsworth method to a character speed of 18 WPM for for send speeds below 20 WPM and at 25 WPM for speeds above 20 WPM, but these values can be changed in the Setup menu.

Note that the word speed can be set separately from send and character speed. This helps you learn the sounds of whole words sent at high speeds but spaced at a slower speed.

The minimum code speed is permitted by Super Morse is 3 WPM, and the maximum is 99 WPM (good luck with that setting!). The send speed and character speeds are coupled so that the send speed will never exceed the character speed. Also in the speed test mode, the word speed is automatically set to the send speed so that the test is valid. In addition, upon entry into the Learn phase, the send and word speeds may be set to a special learn speed if enabled in the Setup menu. If selected, the learn speeds are set to the values used during the last learn session.

### b. Direct Speed Settings

You can quickly and directly set the code speed to the proper speeds for the various classes of amateur radio licenses using the <ALT> keys as follows:

- <ALT-N> - Novice class (5 WPM)
- <ALT-G> - General class (13 WPM)
- <ALT-E> - Extra class (20 WPM)

When these quick keys are used, the "send" and "word" speeds are set to the license speed standards as indicated above. However, the "character" speed is set to the user selected Farnsworth speed, which is set in the Setup/Code menu.

You can also set your favorite speed with the <ALT-F> key combination. The favorite speed is changed in the Setup menu.

For non-U.S. users who wish to redefine the names and speeds of the license classes as defined earlier in this document, the following alternative ALT keys are provided:

- <ALT-1> - Lowest class license
- <ALT-2> - Mid-class license
- <ALT-3> - Highest class license

These keys work exactly like <ALT-N>, <ALT-G> and <ALT-E>, and U.S. users can use them as an alternative if desired.

### c. Changing Code Characteristics

#### i. Code Weighting

The code weighting can be changed using the <ALT-W> command. Code weighting refers to the ratio between the lengths of the DAH and the DIT. Normally a DAH is 3 times as long as a DIT, but in some instances it is useful to change the weighting to some other ratio. Super Morse permits the weighting to be set in the range 2-6 in increments of 0.2. At present, changing the weight from that used for speed calibration causes a very slight change in speed. Thus, you should always calibrate speed at a weighting of 3, and understand that speeds at other weightings may be off by 1 WPM or so.

#### ii. Adding Speed Jitter

To make code sound more realistic, speed jitter can be added (or removed) by pressing <ALT-J>. This slightly varies the length of the DITS and DAHS in the way that human operators do.

### d. Zoom Mode

The File, Groups and Words functions in the Build section may be exercised using the zoom mode. In this mode a specified number of words or groups is sent at a specified starting speed, and then the send speed is bumped up by the specified WPM increment. This process is repeated until a specified end speed is reached. The zoom mode is enabled and disabled by pressing the <ALT-Z> key combination during any menu display. When the zoom mode is enabled, the following screen is displayed for parameter selection:

- 1 - Start Speed : 5
- 2 - End Speed : 14
- 3 - Char Speed : 18
- 4 - Increment : 1.0
- 5 - Num Words : 10

Each parameter can be changed by selecting the indicated parameter number and entering the information when prompted. The increment parameter specifies the number of WPM the speed is bumped after the specified number of words or groups is sent. Any one of four preset increment values may be selected: 0.1, 0.2, 0.5, and 1.0 WPM.

### 3. Controlling Audio

#### a. The Oscillator Tone

##### i. Changing Tone

When the PC speaker is in use, the oscillator tone can be set to suit your tastes with the function keys as follows:

F7 - Decrease Speaker Tone    F8 - Increase Speaker Tone

##### ii. PC Speaker

When the PC speaker is used for sound output, the tone is selected by frequency. The minimum tone frequency is 400 Hz., and the maximum is 2000 Hz. Unfortunately the volume of the PC speaker cannot be changed. Some tones are reproduced by the PC speaker better than others, however, and they seem louder. The default tone is 730 Hz. to approximate the 725 Hz. tone believed to be used for many VEC tests.

##### iii. Sound Blaster

When the Sound Blaster card is selected as the sound output device, the tone is selected as notes in the musical scale.

#### b. Adding Noise

To provide practice in copying code under difficult conditions, you can add background noise (known as "QRM" to hams) to the code by pressing the <ALT-I> key combination. Level 0 is no noise, and levels 1, 2, and are noise levels of different types. Background noise is available only in the Build and Enhance phases.

### C. Super Morse Setup

#### 1. The Setup Menu

The Setup menu provides the following choices:

- A - Code
- B - Chars
- C - Ports
- D - Colors
- E - Misc
- F - HELP
- G - QUIT

The "Code" selection sets code speed and other parameters. "Chars" is used to define the currently active character set. The COM port parameters for keying I/O interface with external devices are set with the "Ports" selection. Screen colors are set with the "Colors" selection, and other miscellaneous parameters are set with the "Misc" selection.

## 2. Setting the Code Parameters

### a. The Code Menu

Following is the code menu with example settings shown.

A - Timing Method : Timer	G - Farnsworth Lo : 18
B - Timing Factor : 1083	H - Farnsworth Hi : 25
C - Calibration : XXXX	I - Speed Lock : Off
D - Tone Split : On	J - SOund Device : Speaker
E - Set Fav. Speed : 5-14-5	K - QUIT
F - Learn Speed : On	

### b. Calibrating the Code Speed

#### i. Selecting the Calibration Method

Super Morse uses two different calibration methods that may be used depending upon your equipment requirements. The first is the Timer method, which directly uses the PC's clock chip. This method provides automatic calibration each time Super Morse is run and produces more accurate times and thus better sounding code. Unfortunately, not all PC's support the clock chip in exactly the same way, and therefore that method will not work on all PC's.

In addition, the Timer method seems to be incompatible with Microsoft Windows. Finally, the Timer method will not work with PC emulators for other machines such as the Apple McIntosh.

Due to these incompatibilities, Super Morse versions 4.01 and later reintroduce the software Loop timing method that was used in versions up to 3.10. This method should be compatible with all types of PC equipment, including McIntoshes running the PC emulator. It is also compatible with Windows provided that a special PIF file described elsewhere in this document is used. The disadvantage of the Loop method is that it requires manual calibration and must be recalibrated each time a memory resident program (including Windows) is added or removed.

When switching between the Timer and Loop timing methods, you will find that the timing factor is radically different. In some cases the calibration test may be so slow that you will have to abort it and guess at an appropriate timing factor. As a rough guide, a 386SX computer running at 16 MHz. requires a Timer timing factor of about 1100 while the Loop factor is roughly 8000. The timing factor will not change much with computer speed, but the Loop factor will increase approximately proportionately with computer speed.

#### ii. Manual Calibration

While the Timer timing method automatically calibrates each time Super Morse is run, you should adjust the timing factor the first time you run Super Morse using the Timing Factor selection from the Setup/Code menu. Once Super Morse is adjusted to your computer when using the Timer method, you should not need to change it.

If you use the Timer method, calibration must be performed manually using the Calibrate selection from the Setup/Code menu. Once calibrated, however, you will not need to change it unless you add or delete a memory resident program.

The accuracy of the current calibration may be determined using the Calibration selection in the Setup/Code menu. Super Morse tests calibration by sending the standard word PARIS the same number of times as the send speed shown on the status line. The send, character and word speeds can be set to any desired speed. If Super Morse is correctly calibrated, the test should be completed in exactly one minute. Super Morse times the test and displays the result along with a recommendation for a revised Timing Factor. If the recommended Timing Factor is different from the current setting by more than say 5, then the recommended new timing factor should be entered using the Timing Factor selection in the Setup/Code menu. The calibration should be repeated until the recommended and the current Timing Factor are very close.

So that you do not spend an inordinate amount of time seeking the perfect calibration, let's put the problem in perspective. For perfect timing the total time required for the Calibration test is 60 seconds. However, you will not likely attain that number, and you should seek an elapsed time of slightly under 60 seconds so that any errors will be on the too fast side of the indicated speed. If the speed test requires 58 seconds instead of 60, the code speed will be fast by only about 3 percent. This is only about 0.6 WPM at 20 WPM, and less at slower speeds. If you can attain a total time of 59 to 60 seconds, you will be very close to the actual speed.

#### iii. Setting Speed Standard

Super Morse supports both the PARIS speed standard for plain text and the CODEX standard for random characters. The currently active standard is shown on the command line. The text (PARIS) standard is indicated by the letter "T" (standing for "text"), and the random character standard (CODEX) by the letter "R" (standing for "random"). You can override the automatic standard selection using the <ALT-B> command at any menu to toggle between the two standards.

#### c. Splitting the DIT and DAH Tones

The tones for sending DITs and DAHs are normally the same, but as an additional aid in distinguishing between the two, Super Morse permits you to split the two tones such that the DAH is 10 Hz. lower than the DIT. This is accomplished using the Tone Split selection in the Setup/Code menu.

The tone split feature is not available when the Sound Blaster is used for sound output.

#### d. Code Speed Settings

##### i. Setting User's Favorite Speed

You can directly set the current speed to a speed that you commonly use by pressing the <ALT-F> key combination. The speed used by the <ALT-F> command is set to the current speed shown on the status line using the Set Fav. Speed selection in the Setup/Code menu. Thus, to set a favorite speed, set the speeds on the status line using the function keys and then press <ALTF>. The speeds shown in the menu are in the same order as on the status line.

##### ii. Setting Farnsworth Speed

The character speed for the Farnsworth method can be set for both low and a high speed ranges. The Farnsworth speed for send speeds below 20 WPM is set in the range of 13-30 WPM with the "Farnsworth Lo" selection; and for speeds above 20 WPM in the range 20-30 WPM with the "Farnsworth Hi" selection. The Farnsworth speed is also used in the quick speed settings, <ALTN>, <ALT-G>, and <ALT-E> (also in <ALT-1>, <ALT-2> and <ALT-3>). Test tapes prepared by the ARRL and widely used by Volunteer Examination Coordinators (VEC's) send at a character speed of 18 WPM in the low range. It is also the authors understanding that 26 WPM is commonly used for the Extra class code speed.

##### iii. Setting a Separate Learn Speed

Using the Learn Speed selection, you can determine whether Super Morse switches to special learn speeds when the Learn phase is entered or whether the speeds remain the same a for other phases.

##### iv. Speed Lock

When using Super Morse for classroom teaching, it may be helpful to lock the speed settings to prevent the student from changing them to an easier speed. This setting permits the



speed change keys to be locked and unlocked selectively.

#### e. Selecting the Sound Output Device

Super Morse permits selection of either the PC speaker or the Sound Blaster card for audio output, or a flashing light for a silent output, using the Sound Device selection. in the Setup/Code menu. The Sound Blaster card provides a much higher output level than the PC speaker and can easily be fed to an external amplifier if necessary. The flashing light option permits Super Morse to be used where the audio output is inappropriate.

### 3. Configuring the Character Set

The set of characters that you desire to receive may be set by choosing Chars in the Setup menu. This permits you to alter the currently enabled character set using the following screen:

A - Letters		G - Group 2		M - Default
	B - Numbers	H - Group 3		N - Type
	C - Punctuation	I - Group 4		O - All
	D - Prosigns	J - Group 5		P - QUIT
	E - National	K - Group 6		
	F - Group 1	L - Group 7		

The symbol directly below the character indicates whether the character is enabled, the "x" indicating that it is enabled, and the "-" that it is disabled. Note that the prosigns are represented by their single character ASCII equivalent character. The default character set has the letters and numbers enabled and the punctuation and prosigns disabled. The status of characters can be altered in groups or individually. The letters, numbers, punctuation, prosign, and national groups can be enabled or disabled by choosing the correspondingly named selection. The National command is active only when the special Nordic character set has been enabled.

The currently active groups 1-7 can be similarly enabled or disabled. Note that the alternate character groups file (GROUPS.2) has only six groups, and the "Group 7" selection will thus not be active if that file is used. To enable the default character set, choose the "Default" selection. To change the status of all characters, choose the "All" selection.

To change the status of individual characters, select "Type" and then press the desired keys. When you are finished entering individual characters, press <ESC> to exit back to the character menu.

The current status of the character set is saved at your option when Super Morse is exited or when <ALT-V> is pressed.

### 4. Configuring the COM Ports

### a. The Ports Menu

Super Morse uses two different serial ports, a "keying port" to interface with a keyer or other device and a "telephone port" to interface with a telephone modem. The setting for these ports are determined using the Ports menu shown as follows with example settings:

A - Phone Port	: COM1	H - RS-232 Input	: DSR
B - Baud Rate	: 1200	I - Input Sense	: +
C - No. Bits	: 8	J - Output Keying	: Off
D - Parity	: N	K - RS-232 Output	: DTR
E - Dial Type	: Tone	L - Output Sense	: +
F - Keying Port	: COM2	M - QUIT	
G - Input Keying	: ALT		

### b. Configuring the Telephone Port

#### i. Telephone Port Selection

Super Morse makes use of the PC serial communications ports for the On Line Practice feature in the Operate phase. You can set either COM1 or COM2 using the Phone Port selection. COM 3 and COM 4 are not available for this function.

#### ii. Setting Communications Parameters

The baud rate for the telephone port can be set at either 300, 1200, or 2400 baud with the Baud Rate selection, the number of bits can be set either at 7 or 8 using the No. Bits selection, and the parity can be set at either even, odd, or none using the Parity selection.

### c. Configuring the Keying Port

#### i. Keying Port Selection

Super Morse provides auxiliary CW signal input and output using a serial port. Either COM1, COM2, COM3, or COM4 can be selected using the Keying Port selection.

#### ii. Selecting Input Keying Source

The Build phase provides the ability to use a PC key as a manual Morse code sender comprising either a key on the computer keyboard or an external telegraph key. The ALT key is the default, but since memory resident programs often use the ALT key as a hot key the Super Morse Setup menu permits your to select either the ALT, CTRL, Left SHIFT, or Right SHIFT for the manual key. The EXTERNAL selection permits the telegraph key, an electronic keyer, or a radio receiver to be used. The radio receiver requires a special interface and is normally used with the <R>adio selection in the <O>perate phase. In addition, the left button on a Microsoft compatible mouse can also be used as a manual key.



## Sound

("beep") can be toggled on and off using the Prompt Sound selection from the Setup/Misc menu.

## Type

Super Morse automatically determines the video type used in your computer. However, this can be changed if necessary (e.g., you have two video cards installed) with the Video Adapter selection. Screen colors will be automatically set for the selected video card, and the new video setting is saved in the configuration file. The three choices available are MDA (monochrome), CGA (color graphics adapter), and HGC (Hercules).

## Disk Files

permits multiple spaces in a disk file to be skipped.

## Display

screen display of DIT and DAH to reinforce the audio. This feature can be turned on and off using the Show DIT/DAH selection.

Super Morse permits you to tie the send, character and word speeds above 20 words per minute for easy one-key settings. However, this can be disabled using the Tie Speeds selection.

### h. Clear Screen

Setting this choice to "On" causes the screen to be cleared when exiting a function.

## D. Saving Current Settings

### 1. Save Modes

The current values of the program settings (parameters) can be saved with the <ALT-V> key combination. If

### b. Controlling Prompt

The prompt sound

### c. Selecting the Video

At program invocation

### d. Jump Spaces in

The Jump Spaces selection

### e. Setting Boost Goal

The percentage of correct

### f. DIT and DAH

The Learn phase uses a

### g. Tying Code Speeds

the settings have not been saved during the current session, then you are given the opportunity to save them when exiting Super Morse. Several parameters (zoom status, interference status, jitter status and qrm status) are not saved and must be reset during every session.

## 2. The Settings Files

Super Morse preserves the most recently used or set parameters in a configuration file, SM.CFG, and one of several user files, SMn.USR.

### a. Configuration File

The most recently used values for parameters which are least likely to change during each session are stored in the SM.CFG file. If this file is not found when Super Morse is first run, it is created.

### b. User Files

The most recently used values for parameters which are subject to change during each session are stored in the SMn.USR file. Super Morse supports 10 users numbered 0-9 and their respective files. The user statistics files are given a number corresponding to the user number. For example, user 1 is assigned the file SM1.USR (the default).

## E. Customization of External Files

### 1. General

In addition to internal modifications, Super Morse permits customization by changing the contents of Super Morse's text files. Modifiable files all have the "SM" extension, such as NAMES.SM. These files can be edited using a text editor or a word processor. A simple, but very poor, text editor, EDLIN.COM, is usually provided with your DOS utilities, but other much better ones are available as Shareware.

If a word processor is used, the output must be ASCII text only! Most modern word processors output not only the text that you enter in the document but also formatting information which is not displayed on the screen. This invisible formatting information will cause Super Morse to produce garbage. If you use a word processor, be sure to check your user manual to determine how to save text in plain ASCII format without the formatting information. If you use WORD PERFECT or DOS, use the "Text Out" choice from the "Files" pull-down menu, or press <CTRL-F5>.

### 2. Data Files

Super Morse uses several files containing names, cities, and other information used in QSO generation (simulated radio contact), and other files for words used in word-based functions. If you are not satisfied with the contents of these files, you may change them to suit your tastes. Non-U.S. users will probably want to change the contents of the states file to include the provinces in their own country or other countries.

All data files require that only one item be placed on a line starting in column 1 (not at the left margin of a word processor file if the margin is shown!) and that no blank lines be inserted in the middle of the file.

### 3. License Classes File

The only data file having a special format is the CLASSES.SM file. This file contains three lines in a special order. The file distributed with Super Morse defines the United States license classes and speeds as follows:

05 Novice

13 General  
20 Advanced

The format is critical! It must contain three lines and start in column 1 (not the margin of a word processor file!). Each

line begins with a speed in words per minute in columns 1 and 2, followed by a space, followed in column 4 by the name of the license class beginning at that speed, not exceeding 8 characters in length. If a speed is less than 10 WPM, a "0" must be placed at the beginning. If only two license classes are used in your country, repeat the second class definition on the third line as in the following generic example:

07 Junior

11 Senior  
11 Senior

If you have only one class of license, place the same information on all three lines. If your country uses more than three classes of licenses, please let me know, and I will expand this file.

#### 4. Text Files

In some features Super Morse permits you to use a plain ASCII text file as input. An example in the Disk File command in the Build phase. These files should be created with a text editor or word processor in the ASCII output mode as described above. The lines in these files can be any length and can start in any column.

#### F. Interfacing External Equipment

The primary I/O for Super Morse code is via the computer

keyboard and the PC onboard speaker. Secondary output is provided by toggling either the DTR or RTS pin at the selected RS-232 communications port. Input is provided via either the DSR or CTS pin at the same port. You can select whether to expect either a high (+) or a low (-) voltage in the key-down condition and the opposite in the key-up condition. Output via DTR/RTS is available whenever code is being sent, but input via DSR/CTS is available only in the Manual key function of the Enhance phase and in the Operate phase.

I/O via either COM1, COM2, COM3, or COM4 can be selected

from the Setup menu selected from the main menu bar. With a proper interface DTR/RTS can be used to drive an external oscillator for making high quality code tapes or to key a transmitter. Likewise, DSR/CTS can be interfaced with a hand key, electronic keyer, or a receiver.

Code output to the speaker and COM port can be selected from the Setup menu. Code input can be selected from either one of several keys on the computer keyboard or the COM port using the Input Keying selection in the Setup/Ports menu.

A detailed explanation of how to use the DTR/RTS and DSR/CTS signals for the aforementioned purposes is beyond the scope of this manual and is left to your ingenuity. However, limited information is provided in Section XI. The author would like to receive diagrams of tested circuits designed by users to take advantage of COM port I/O.

## V. The Learn Phase

### A. The Learn Command

#### 1. Introduction

To help you learn the Morse code, Super Morse provides a Learn feature, which conducts a series of lessons to gradually and logically introduce the Morse characters. The Learn menu is as follows:

```
ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ;
                                     3           3
      3 A - DIT/DAH 3
3 B - Combos 3 3 C - Steps 3
      3 D - Runs 3
3 E - Groups 3 3 F - Levels 3 3 G - All
3
      3 H - User 3
      3 I - Flash 3
3 J - Oddball 3 3 K - View 3
      3 L - HELP 3
      3 M - EXIT 3
3           3
ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ
```

#### 2. The Super Morse Teaching Method

Unlike standard Morse code teaching methods, Super Morse does not begin by introducing characters. Instead Super Morse starts with sounds only -- characters are not taught or displayed in the early lessons. The idea is to emphasize that Morse code is a sound language and to teach the fundamentals of code sounds without the added complication of visual stimuli. Two sound-only exercises are provided. First, the basic DIT and DAH sounds are taught. Second, Super Morse puts the basic sounds together into the four fundamental two-sound combinations.

Only after the basic sounds and sound combinations are taught does Super Morse start identifying characters. Before the standard code groups are introduced, code "steps", which are groups of two similarly sounding characters, are sent to gradually introduce the characters in pairs. The idea is to teach the student to distinguish similar sounding characters from the beginning, such that those which do not sound so much alike will fall into place by themselves. Also the characters are slowly learned in an indirect fashion in that the student is encouraged to concentrate on the differences rather than the content of the characters themselves. Only when the steps are completed are the standard code groups

introduced.

The Learn selections are <A> through <G> are ordered to slowly build up your



knowledge of the characters in a very logical way. It is recommended that the Learn subcommands be used in the same order as the selections are presented.

### 3. Repeating Characters

In the <L>earn mode (except Flash) characters can be repeated by pressing the <SPACE> bar at any prompt.

### 4. Feedback in the Learn Phase

To enhance the learning experience, Super Morse provides feedback after each response in the Learn mode in the form of a report of the number of answers correct, the number of answers incorrect, a percent score, and the number of consecutive correct answers for the current session. Also, if an answer is wrong, the correct answer is displayed and a brief review is provided. The consecutive answers report is useful in determining when you should go on to the next step in the Learn mode.

### 5. Character Speed in the Learn Phase

Super Morse permits you to use special speeds in the Learn mode as determined by a selection in the Setup menu. This forces characters to be learned at speeds which permit you to more easily reach the General class speed. Initially, the speeds are set to (5,18,5), and these speeds are automatically selected if the learn speed mode is selected. These values are automatically replaced by the last values used in the learn mode.

#### B. Lesson <A> - DITS and DAHS, the Basic Code Sounds

Lesson <A> teaches the basic DIT (short) and DAH (long) sounds. After sending DITS and DAHS in various formats, you are asked to identify randomly presented DITS and DAHS using the "1" key for DITs and the "2" key for DAHs.

#### C. Lesson <B> - Sound Combinations

Since Morse characters are comprised of combinations of DITS and DAHS, Lesson <B> is provided to introduce the four simplest combinations: DIT DIT, DIT DAH, DAH DIT, and DAH DAH.

#### D. Lesson <C> - Character Steps

Lesson <C> combines the previously learned DITS and DAHS into complete character sounds. The characters are paired with similar (or confusing opposite) sounds in a series of increasingly harder steps, and you are asked to identify randomly-selected characters from each step. You should start with step 1 and learn to distinguish the characters in each step before continuing on to the next higher step. After all 69 steps have been mastered, you should be ready to start with the group and levels lessons. Some users have found this tedious, but it will pay dividends if you

persevere.

If you desire only to practice the characters in a step, you can skip introduction of the step characters by selecting the "Drill" option when the line menu appears.

#### E. Lesson <D> - Character Runs

The character steps idea is extended in Lesson <D>. This

lesson forms groups of characters, each successive one of which differs by only a DIT or a DAH from the previous character.

#### F. Lesson <E> - Character Groups

Lesson <E> begins the traditional code groups as defined and used by the ARRL and others. This lesson lets you study each character group separately. The characters from the selected group are presented randomly, and you are asked to identify them.

The groups used in Super Morse are those used in the ARRL publication "Tune in the World with Ham Radio". If materials having a different grouping are used, the groups can be changed by altering the contents of the file named GROUPS.SM as described earlier in this document. The initially installed groups are included in the file GROUPS.1, and a second grouping used in an older ARRL code booklet is included in GROUPS.2. To use either of these groups, just delete the current GROUPS.SM file and copy either GROUPS.1 or GROUPS.2 to the filename GROUPS.SM. Note that only the letters and numbers can be changed, and no more than 8 user groups can be entered. Punctuation and prosigns are automatically added as the last two groups.

If you desire only to practice the characters in a group, you can skip introduction of the group characters by selecting the "Drill" option.

#### G. Lesson <F> - Character Learning Levels

Lesson <F> permits you to study the various groups in Lesson <E> in a progressive manner starting with the simple Level 1 sounds and adding characters with each level. Each level is simply a combination of groups 1 as defined above through the group whose number is the same as the selected level number. After the new characters for each level are presented, you are asked to identify randomly presented characters from that level.

#### H. Lesson <G> - All Characters

Lesson <G> permits you to sum up all you have learned in the previous 6 lessons in that all letters, numbers, punctuation, and prosigns are sent for identification in the same manner as the preceding lessons. Lesson <G> is adaptive in that the more recently missed characters are sent more often than the others.

#### I. Flash Characters

The Flash selection simulates flash cards by randomly displaying characters from the currently active character

group in large display format. No user keyboard response is required in this feature. To flash characters by groups, use Setup to change the currently active character set.

#### J. Oddball Character Drill

The Odball character function presents a group of five characters with one different from the others, and you are asked to enter the differing character. The two characters used in this feature are always very similar or otherwise easily confused and are randomly selected from the STEPS.CW file.

#### K. The User Group

The User selection permits you to practice a customized group of characters. The currently active character set selected with the Setup command in the main menu is randomly sent for identification in the same manner as the preceding lessons.

#### L. Viewing the Character Groupings (Steps and Levels)

The character steps and groups used in the preceding selections may be displayed using the View selection.



### C. Receiving Complete Words

If you would rather work with real words rather than groups, the Words function can be used. A choice of either "regular" words, "ham" words, call signs, or words from a user file is given.

The regular and ham words are selected from files of fixed name REGWORDS.SM and HAMWORDS.SM, but user words are taken from any file whose name you enter when prompted. You should prepare the file as described earlier in this document. Each word (or short phrase) should be placed on a single line starting in column 1 and should be no longer than 20 characters. Up to 1000

words may be entered.

Call sign "words" are randomly generated and cannot be configured by the user. Note that the call signs generated are not limited to call signs actually issued by the FCC. At 15 WPM and below each character is displayed as sent. Above 15 WPM the entire word is sent before it is displayed.

As words are being sent, the current word can be repeated by pressing the <SPACE> bar.

### D. Receiving A Message Entered via Keyboard

With the message function you can have a helper enter text messages via the keyboard, and then attempt to copy it. The maximum length of the message is 255 characters. The last message can be repeated by pressing <SPACE>. This command differs from the Enhance/Keyboard Send function in that nothing is sent until RETURN is pressed and the length of message is limited.

### E. Receiving a Simulated Radio Transmission ("QSO")

You should use the QSO function if you would like to copy a simulated radio contact between two stations (known to hams as a "QSO"). Random text is sent containing randomly chosen call signs, names, etc., providing a variety of QSO combinations. The call signs are randomly selected from all the possible call signs, which means that some unissued call signs will be used.

The names, antenna types, city names, and rig types can be changed to reflect your desires by editing the files ANTENNAS.SM, NAMES.SM, CITIES.SM, RIGS.SM, and JOBS.SM as described earlier in this document. The maximum number and length of the entries are as follows:

File	Max. No. Entries	Max. Length Each Entry	----	-----	-----
ANTENNAS.SM	50	15			
CITIES.SM	200	15	JOBS.SM	100	20 NAMES.SM
200	10	RIGS.SM	100	15	STATES.SM
15					100

If the QSO is sent in the text Hide mode, you are given the opportunity to review the QSO before exiting.

### F. Receiving Text in a Disk File

## 1. General

This command sends the contents of a disk text file in Morse code. At the prompt press RETURN to select the most recent file used or enter the name of a new file (including the drive and subdirectory) to be sent. If you do not know the name of the file you wish to receive, you may press <SPACE> to obtain a disk directory. At the prompt enter the file specification in the form D:\SUBDIR\FILENAME.EXT, where "D:" is the drive designator, "SUBDIR" is the subdirectory name if applicable. If all files are desired, press RETURN to select the default "\*.\*" in place of FILENAME.EXT.

Disk files can be sent either normally or in reverse by entering proper characters when prompted by the line menu.

You can practice by having someone create a text file of unknown content. Another idea is to exchange disks with a friend who is also studying the code and carry on a "disk QSO".

The disk file required for this command can be any ASCII text file which you have created. Unprintable characters are ignored. Multiple blanks may be skipped if desired in the Setup menu. To familiarize yourself with the use of this command, you can enter the name of the words file (WORDS.SM) or any of the other data file having the SM extension, although this will not provide very useful code practice.

## 2. Scripted Disk Files

Disk files can be "scripted" by placing a period (".") in the first column of any line followed by a command character and a space and text, if applicable. Scripting may be used for example to prepare code tapes which have voice instructions intermixed with the code. With scripting Super Morse follows exactly the same line spacings as are used in the script file. Thus, if you want lines skipped before and after the message, place blank lines in your script file.

Scripting permits the following commands to be inserted in a file:

### a. The Message Command

The "M" command line as follows causes the <text> to be printed in highlight on the screen:

.M This a message to the user

This will print "\* This is a message to the user" on the screen.

b. The Pause Command  
The same effect as the message command, except with a pause for you to press a key to continue, is provided by the "P" command as follows:

.P Ask the user to do something

This will print "\* Ask the user to do something" and instruct you to press any key to continue.

### c. Set Speeds Command

Speeds can be programmed into the script at the indicated send speed ("`<ss>`"), character speed ("`<cs>`") and word speed ("`<ws>`") with the "S" command as follows:

```
.S <ss> <cs> <ws>
```

With all commands the period should appear in the first column, the command should be a capital letter, and a space must be placed between the command character and the text or other information which follow it.

#### d. Speed Lock Commands

The set speed keys can be disabled with the `.L` command and re-enabled with the `.U` command. The `.L` and `.U` commands are not followed by text.

#### G Receiving in the Zoom Mode

The Groups and Words functions can be sent in the "zoom"

mode, which is enabled and disabled by pressing the `<ALT-Z>` key combination during any menu display. The zoom mode sends a specified number of words at one speed and then bumps the speed to a higher speed in a specified increment. The current status of the zoom mode is shown on the bottom line of the screen.

When the zoom mode is active and either the Groups or Words functions is invoked, you will be asked to enter a start speed, an end speed, a speed increment, and the number of characters to be sent at each speed. After the specified number of characters is sent, the code speed is increased by the specified increment until the end speed is reached. Increments of 0.1, 0.2, 0.5, and 1.0 WPM are available.

## VII. The Enhance Phase

### A. Skill Enhancement

The Enhance phase includes modes which are designed to "put the icing on the cake" by putting your code knowledge to work in advanced ways.

The Enhance Phase menu is as follows:

```

ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ;
                                     3                               3
³ A - Boost                          3
³ B - Head                            3
³ C - Lag                             3
³ D - Q & A                           3
³ E - Typewriter ³ F - Word            3
³ G - Keyboard                        3
³ H - Manual                          3
³ I - HELP                            3
³ J - EXIT                             3
³                                     3
ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ

```

### B. Sending Code

The send-related commands in the Enhance phase permit you

to practice sending Morse code either from the keyboard or manually using a designated keyboard key or an external device as a straight key.

#### 1. Sending from the Keyboard

This function permits you to enter individual keys to hear how they sound. You can type ahead of the Super Morse sender by 80 characters maximum. Unlike the Build/Enter command, you do not have to press RETURN to start sending characters.

#### 2. Sending with a Manual Key

You may also wish to practice your "fist", i.e., your manual sending ability, by using the a designated key or mouse button as a telegraph key. The default designated key is the ALT key, but this can be changed using the <M>anual Key function in the Setup menu to one of several keyboard keys, to an external key, or to the left button of a Microsoft compatible mouse. In this function Super Morse decodes the character sent and displays it on the screen. Super Morse is initialized to the send speed displayed on the status line. However, Super Morse automatically adjusts to your sending speed as it changes. Since this adjustment takes place slowly, you may have to send several characters before Super Morse determines your speed and displays the correct character on the screen.

The external key is accessed via the DSR or RTS pin of the designated port. A hand



key can be interfaced by simply connecting the key to pins 4 and 6 of the selected COM port.

### C. Copying Behind

In order to learn to copy Morse code at high speeds, it is necessary to remember several characters before the one presently being sent. Super Morse has several Enhance phase exercises to help you develop this ability to "copy behind". In all the copy features, the characters used are selected using the Setup command in the main menu.

#### 1. Head Copy

The Head Copy function helps you learn to copy "in your head" by developing your memory for a string of characters. In this function a character sequence of increasing length is sent, and you are asked to enter the sequence exactly after it has been sounded. A new sequence is started each time an incorrect answer is entered. The current sequence length and the best length for the session are reported after each correct answer. The maximum sequence length is 50 characters (Good luck!).

#### 2. Lag Copy

The Lag copy function helps you learn to record a previous character while remembering a later sent character. Instead of entering the character that was most recently sent as in all other functions of Super Morse, this function asks you to enter the character sent a specified number of characters ago. The default lag is 1 character, but you may enter a lag of up to 10 characters at the prompt. This exercise is very hard at first, and you may have to use pencil and paper to get the hang of it.

#### 3. Random Lag Copy

This function tests your ability to remember a sequence of 3 randomly sent characters. After the group of 3 characters is sent, you are asked to enter either the first, second, or third character.

#### 4. Word Copy

This function sends complete words from the REGWORDS.SM file and asks you to enter them correctly. A score is displayed on the status line, and words may be repeated using the <SPACE> bar.

#### D. Copying on a Typewriter

The military services train their Morse code operators to use a typewriter to record incoming messages since it is much faster than copying by hand. The Typewriter function permits you to use the keyboard for "copying on the mill", as that method is termed. In this function a simple text checking algorithm is used to determine copy accuracy. Characters which are judged correct are shown in normal display, and incorrect characters are shown in reverse video. A running tally of correct and incorrect characters is also displayed.

The text checking algorithm uses only a single character to determine context. Consequently, it should work fine so long as you copy each character when sent. However, if you copy too far behind and get "out of sync", it may have difficulty in determining which character you are copying and consequently may judge one or more characters to be incorrect until it catches up.

#### E. Boost Copy

Boost copy automatically boosts your speed to your maximum copy speed. The send speed starts at 3 WPM and automatically adjusts upwardly in 0.1 WPM increments as long as you maintain a copy rate specified in the Setup menu. If the rate drops below the specified level, the speed stays constant until the specified level is again attained.

#### F. Questions and Answers

The Q&A feature sends questions stored in a user-created file in code without screen presentation and asks you to enter the answer on the keyboard. This feature may be used to ask trivia questions or other easily answered questions.

Files for this feature can have any name, but they must be constructed in a special way. The odd numbered lines contain questions (no question mark required) and the even numbered lines contain answers. Since the emphasis is upon correctly copying the questions and not upon the answers, the questions should be easily answered and the answers should preferably use only one word without punctuation. Number answers should be in number form and not written out in text. A short sample file Q&A.SM is included with Super Morse.

As each question is sent you should copy it on a piece of paper and enter the answer when prompted. The question may be repeated by pressing the <SPACE> bar at the prompt. After the answer is entered, the full text of the last question is shown on the screen.



8 - years a ham	18 - power (watts)
9 - license class	19 - weather
10 - states worked	20 - temperature (Degrees F)

The following is an example of a line in a QSO template:

My name is {4}, and I live in {5},{6}.

Super Morse randomly generates a name and substitutes it for {4} and a city and state and substitutes them for {5} and {6}. An example of the result is as follows:

My name is Joe, and I live in Northfield, KS.

At least 10 pieces of data should be used in any exam file to support the 10 questions that are asked in the exam.

### C. Simulated VEC Exam

This group of commands permits you to take a simulated code test much like the one you would take when sitting for the license exam given by the FCC-approved Volunteer Examination Coordinator (VEC). All VEC exam-related functions are based upon the simulated contact used for the <Q>SO command discussed above. In the exam functions the student is asked to set the exam speed either at novice, general class, extra class speed, or other user-specified speed. If one of the three license classes is chosen, you are further given the opportunity to select either regular or Farnsworth spacing.

#### 1. Auto Exam

This is a fully integrated self-test for the student. All exam questions are displayed on the screen, and the exam is automatically graded.

#### 2. Exam from File

An exam may be prepared in advance and given using the Make exam file and Run exam file commands. These commands are intended primarily for use by an instructor to create and give a simulated test to a student or students. The Make command generates an exam QSO either internally or from an external template as selected and stores it in a special file on disk. The Make command also permits a new set of questions to be created for the existing exam.

The Run command loads the exam previously created using the Make command and sounds it at the <N>ovice, <G>eneral, or <E>xtra exam speed which you have selected. You can also select n<O>ne, and the speed will default to that shown on the status line.

#### 3. Checking Exam Contents

The Check exam function tallies and reports the characters used and not used in the current exam file. This may be used to determine whether an exam meets the requirements for an official code test.

#### 4. Displaying and Printing the Exam

You can review the text of the test QSO by displaying it on the screen or by listing it on a line printer with the Display and Print commands. Either command permits you to select either the text of the exam, the related exam questions, or the exam answers.

In the Print mode you are prompted to turn on the line printer and press a key to begin. If the printer is not on, an error will occur, and the program will terminate.

#### D. Keyboard Receive Test

This command lets you test your approximate receive speed. The computer sends a character and waits for you to type in the correct key. The accuracy of the copy is displayed on the status line. When this function is exited using the ESC key, the computer prints out the approximate send and receive speeds.

If the incorrect key is typed, the character is printed in reverse video (color monitors only) and sent again. The computer also remembers wrong characters and sends them more often than the other characters.

The character set used in the test can be configured using the Setup command in the main menu as described elsewhere.

#### E. Solid Copy Test

This function tests your ability to copy random characters without a mistake. A sequence of characters of increasing length is sent, and you are asked to type in the sequence exactly as sent. When a mistake is made, the test ends and you are given a report of the number of consecutive characters copied correctly and the number of minutes and seconds during which "solid copy" occurred.



computer, use the <CTRL-E> command.

To dial another computer, use the <CTRL-D> command. To disconnect the phone, use the <CTRL-H> command. In either mode characters can be sent from the keyboard, or a disk file can be sent using the <CTRL-F> command. In addition to these commands, all the Hayes "AT" commands can be used.

### 3. Making a Connection with Another Computer

To connect with another computer you should prearrange the call with the other operator. Both copies of Super Morse should be in the Modem function, and both should set Super Morse On Line to the terminal mode with <CTRL-T>. Both must set their communications parameters, other than the communications port, to the same values. Decide who will initiate the call and who will receive it. Since both modems are already initialized to answer a call on the first ring, it does not matter which computer is chosen.

The call initiator presses <CTRL-D> and enters the telephone number of the call receiver and presses <RETURN>. He then selects either tone (if he has a touch tone phone) or pulse dialing (if he has a rotary dial phone) and presses <RETURN>. He will hear the call receiver's telephone ring and the his modem answer the phone, followed by a brief carrier tone. Both screens should indicate "Connected to Remote SUPER MORSE."

Both users should then enter the CW mode by pressing <CTRLC> and proceed with the landline QSO.

### 4. CONTROL Commands

Following is a summary of the CONTROL commands used in the Modem function:

<CTRL-C> - Activate CW (Morse) mode

<CTRL-D> - Dial a number

<CTRL-E> - Echo/No echo of characters sent to modem

<CTRL-F> - Send a disk file

<CTRL-H> - Terminate telephone connection (hang up)

<CTRL-L> - Add/remove linefeeds from received text

<CTRL-M> - Hang up modem

<CTRL-P> - Set baud rate and other communications parameters <CTRL-R> - Enable/disable Morse mode for received characters <CTRL-S> - Enable/disable Morse mode for transmitted characters <CTRL-T> - Activate Terminal (non-Morse) mode

### 5. Problems with Modem Command

Experienced modem users will recognize that some of the above commands can be duplicated using the standard Hayes "AT" commands. If you have any difficulty with the Modem function, just remember that it is nothing more than a simple terminal program which has the capability of sounding transmitted and received characters in Morse code. If you need help, check with a friend who understands the operation of Hayes and compatible modems.

If the screen shows "Character Not Sent - Check Modem and Port Selection", either the power to your modem is not switched on or the wrong port has been selected. To correct the latter use the Setup/Ports selection in the main menu to set parameters. Correct the problem and try again!

### C. Radio Terminal

The Radio command provides a very simple terminal for sending and receiving Morse code via a radio, if an appropriate interface circuit is used. The same COM pins are used in the other Morse input-output function as discussed elsewhere in this documentation.

When the Radio function is entered, Super Morse is in the receive mode. To change to the send mode, press <CTRL-S>. To return to the receive mode, press <CTRL-R>.



## X. We Need Your Feedback and Help!

### A. Feedback

It is my goal that Super Morse be absolutely the best Morse code training program available anywhere, commercial or otherwise. If it is not the best, I will endeavor to make

it so. To achieve this I NEED YOUR INPUT! Please let me know what you like about Super Morse, what you don't like about it, any bugs or cosmetic defects you have discovered, what you would like to see changed or added, etc. If you have used another Morse code program that you like better, tell me the name of the program and why you like it better. Please take the time to answer and return the questions in the registration form contained in the file REGISTER.FRM to me. If the registration form is inadequate, write me a letter. If a letter won't do the job, give me a call!

I particularly need feedback from those who use Super Morse to train novices. If I know your needs, I will endeavor to add those features to Super Morse.

Your help would be much appreciated. Remember Super Morse is for you! So tell me what you want it to do for you.

Please give me your constructively frank opinion.

### B. Help Others Learn About Super Morse

If Super Morse is helpful to you, you can help others learn about it in the following ways:

1. Give a copy to your friends.
2. Upload Super Morse to your local computer bulletin board system.
3. Leave a message on your computer bulletin board recommending Super Morse.
4. Tell your ham club about it, especially the person in charge of license classes.
5. Write a letter to a ham radio magazine recommending Super Morse.
6. Write a review of Super Morse for a ham radio or computer magazine.

### C. Send Me Your Good News!

If Super Morse helps you obtain your license or upgrade to a higher class of license, I would love to hear about it! Please take the time to drop me a note and let me hear your good news!

### D. Correspondence with Author

The author is happy to correspond by mail with users, but please send a self-addressed, stamped envelope for the reply!!!

## APPENDICES

### Appendix A. - General Information

#### 1. The Author

The author holds an advanced class license to operate amateur radio station WD5CID. He has a "5" call because he hails from Texas, the home of real chili (red hot with no beans) and real music (with steel guitar and/or fiddle with no synthesizers). He is a registered patent attorney working with Rockwell International Corporation in Cedar Rapids, IA (the old Collins Radio Company).

#### 2. The Software

Super Morse is written in Turbo Pascal version 6.0. The development of Super Morse began in early 1986 under the name "CW" and has gone through a number of versions. New versions will be released as features are added and corrections are made to previously released versions. The latest version of Super Morse can usually be found on GENie in the IBM-PC section and CompuServe in HAMNET.

Credit must also be given to users who have made suggestions for improving Super Morse. Many of their suggestions have been incorporated into Super Morse.

#### 3. Other Computers

Super Morse is available only for the IBM PC and compatibles. It is not available for the Apple IIe, McIntosh, Amiga, or other computers, and there are no plans to port it to those machines. Super Morse will operate with some machines with an IBM emulator program, but the loop timing method must be used.

## Appendix B. - Super Morse License

### 1. License

As you may have noticed I have retained the copyright in

Super Morse, primarily in order to control its orderly development. However, I am granting the right to anyone to use the program for private, non-commercial purposes without further permission from me. That is, you can copy it, use it, and share it (including distribution at hamfests and in ham radio equipment stores) so long as you do not charge any money for it other than the cost of the disk or other transfer medium, not to exceed \$2. You may not make a profit or recover labor costs for copying or distributing Super Morse. Super Morse must be distributed in its original form and content. Please note that you **MUST** return a completed registration form as contained in the file REGISTER.FRM as a condition of using Super Morse.

Shareware distributors may distribute Super Morse so long as they include on or in close associate with the distribution diskette a **PROMINENT NOTICE** stating that the user must also make a Shareware contribution to the author. The copy fee may not exceed \$5.

## Appendix C. - Distribution and Support

### 1. Distribution Policy

Super Morse is distributed primarily through Compuserve "Hamnet" and computer bulletin board systems. If possible, users should obtain the program in that manner. If the user does not have a modem, the author will make a courtesy copy if the user will send a formatted diskette (preferably high density--either 5 1/4 or 3 1/2) and a stamped, addressed diskette mailer. A contribution to support further development and distribution of the program as described below is requested but not required. The contribution is not a purchase price, and the author therefore will not accept "orders" for Super Morse--a diskette and mailer must be provided by the user in order to receive a copy.

The author does not notify the users of updates. The users should check Compuserve "Hamnet" and other bulletin boards periodically for new versions. If you wish, you can send the author a diskette and mailer as described above to be held until a new version is released.

### 2. Suggested Contributions

#### a. U. S. Users

In order to cover expenses associated with the development and distribution of Super Morse, such as equipment, software, telecommunications charges, postage, supplies, and long distance calls to users, I suggest that you make a voluntary contribution of \$20 (or whatever is affordable to you--or more if you think it is worth it) for each copy of the program. For use by ham clubs in organized classes, I suggest a contribution of \$5 for each student, unless the students make their own contributions individually. If you have already made a contribution for a an earlier release, you do not need to make an additional contribution for a new release.

If you cannot afford a monetary contribution, at least write the author a note and give me an "attaboy" or two. The author is a always a sucker for an ego massage.

#### b. International Users

Please send contributions denominated in U. S. Dollars only. Changing foreign currency in Cedar Rapids, IA requires a trip to a downtown bank, and I am extremely lazy. If you cannot obtain U.S. currency, you can send an International Money Order through your national post office. The order will be forwarded to the United States Postal Service which will process and mail a U. S. money order to the author.

#### c. Credit Cards

Some users have asked about payment by credit cards. I do

NOT have this service available at this time.

### 3. Courtesy Copies of Super Morse

If you cannot obtain a copy of Super Morse elsewhere, the author will be happy to make you a courtesy copy, if you will do the following:

a. Send a request to the above address. Make sure the request has sufficient postage so that it does not arrive postage

due! It's aggravating to have to pay postage for the privilege of distributing a free program.

b. Include a FORMATTED diskette, preferably 1.2 MB or 1.44MB/720K, but 360K is acceptable.

c. Include a STAMPED, SELF-ADDRESSED diskette mailer. Use a standard diskette mailer if possible. If you have a U.S. address, do not substitute cash for stamps. Enclosing loose stamps and stick-on mailing label is acceptable.

d. Include a Shareware contribution as described above if you can afford it.

#### 4. Support and Inquiries

The author is happy to help you with problems in using Super Morse. However, please keep in mind that there is only one of the author and thousands of you. Therefore, before contacting the author, please read this document and if possible consult with a friend who is also a Super Morse user. If you have a question about DOS or WINDOWS, please check with your computer vendor or a knowledgeable friend first.

The author can be contacted on CompuServe (ID No.: 71016,1355), GENie (Address: L.MURRAH), on packet @WA0RJT or by U.S. mail at the following address:

10 Cottage Grove Woods, S.E.

Cedar Rapids, IA 52403

If you write the author, you must enclose a self-addressed, stamped envelope. The author does not normally respond without one.

The author can also be reached by telephone at 319-365-6530. Please do not call the author at his workplace!

#### 5. Comments and Suggestions

The author likes to receive comments and suggestion for improvements to Super Morse.

## Appendix D. - Information about Amateur Radio

Information about amateur radio can be obtained from a number of sources.

### 1. Amateur Radio Organizations

There are two organizations devoted to the promotions of radio.

The National Amateur Radio Association (NARA)

is a specialized new organization dedicated to increasing participation in amateur radio, especially by the youth of America. NARA's address is:

National Amateur Radio Association

16541 Redmond Way, Suite 232  
Redmond, WA 98052

The American Radion Relay League (ARRL) is a general membership amateur radio organization serving the United States and Canada. Sister organizations exist in many other countries. The ARRL publishes a monthly magazine named QST and provides many useful services and publications. The ARRL's address is:

American Radio Relay League

225 Main Street  
Newington, CT 06111

The W5YI Group publishes several amateur radio courses and manuals, some of which are available through Radio Shack stores. This company can be contacted directly at the following address:

The W5YI Group

P.O. Box 565101  
Dallas, TX 75356

Tel: 817/461-6443

### 2. Amateur Radio Magazines

Several major magazines devoted to amateur radio are available at most amateur radio and electronics stores and at many large newstands and supermarket and drug store magazine racks. The following is a list of several of these magazines:

QST (published by ARRL for members)

73  
CQ

## World Radio

### 3. On-Line Computer Services

A vast amount of information about amateur radio can be  
obtained from on-line computer services.

One of the primary on-line sources is the COMPUSERVE information utility, which provides a special interest area called HAMNET to its subscribers. Most computer and software stores can tell you how to subscribe to COMPUSERVE.

The GENIE on-line utility also has a special interest area for radio and broadcasting interests. To subscribe to GENIE you can call 800-638-9636.

Most communities of substantial size have an amateur radio club or at least one ham. To find the nearest club or ham contact the ARRL or call businesses who are likely to have a ham on the payroll. Try a local radio dealer (amateur or commercial) or TV or radio station. The author found a ham to help him out by looking for suspiciously large antennas in the neighborhood. Another good tactic is to look for amateur radio call sign automobile license tags and make contact with the driver (try leaving a note on the windshield).



## Appendix E. - Morse Code Table

### Morse Code Table

#### Letters

A	DIT DAHN DAH DIT
B	DAH DIT DIT DIT O DAH DAH DAH
C	DAH DIT DAH DIT P DIT DAH DAH DIT
D	DAH DIT DIT Q DAH DAH DIT DAH
E	DIT R DIT DAH DIT
F	DIT DIT DAH DIT S DIT DIT DIT
G	DAH DAH DIT T DAH
H	DIT DIT DIT DIT U DIT DIT DAH
I	DIT DIT V DIT DIT DIT DAH
J	DIT DAH DAH DAH W DIT DAH DAH
K	DAH DIT DAH X DAH DIT DIT DAH
L	DIT DAH DIT DIT Y DAH DIT DAH
DAH	
M	DAH DAH Z DAH DAH DIT DIT

#### Numbers

1	DIT DAH DAH DAH DAH
2	DIT DIT DAH DAH DAH
3	DIT DIT DIT DAH DAH
4	DIT DIT DIT DIT DAH
5	DIT DIT DIT DIT DIT
6	DAH DIT DIT DIT DIT
7	DAH DAH DIT DIT DIT
8	DAH DAH DAH DIT DIT
9	DAH DAH DAH DAH DIT
0	DAH DAH DAH DAH DAH

#### Punctuation

.	DIT DAH DIT DAH DIT
,	DAH DAH DIT DIT DAH DAH
?	DIT DIT DAH DAH DIT DIT
/	DAH DIT DIT DAH DIT
-	DAH DIT DIT DIT DIT DAH
!	DIT DAH DIT DIT DIT

#### Procedure Signs

+	DIT DAH DIT DAH DIT
#	DAH DIT DAH DAH DIT
\$	DIT DIT DIT DAH DIT DAH
=	DAH DIT DIT DIT DAH

Note: The phonetic "DIT" is used in every appearance in the above table for the sake of clarity. However, "DIT" is normally rendered as "DI" when it precedes another sound element and written out fully only when it is the last element in a character. The reason is that "DIT" seems to have the "T" ending only when it is the last element in a character. For example, the character "C" is normally written phonetically as "DAH DI DAH DIT".

## Appendix F. - Troubleshooting

If you have difficulty in using Super Morse, you should begin by reading the instructions! Most problems are due to a misunderstanding of how Super Morse operates, and the instructions should clear up most problems. However, if you continue to have a problem after reading the instructions, the following points may be helpful in resolving your problem.

### 1. Random Characters Faster than Plain Text

This is NOT a problem. Due to the way code speed is calculated, random characters sound faster than plain text. For an explanation see the discussion of code speed earlier in the documentation.

### 2. 'File Not Found' or 'I/O Error 02' Message

a. Make sure that all files with an HLP and an SM extension are copied to the same subdirectory or diskette containing SM.EXE.

b. Make sure all the required files listed early in this documentation are on the program disk.

c. If Super Morse is distributed in ARC format, de-archive only with ARC 5.12 or later, or PKXARC. For ZIP format use PKUNZIP 1.02 or later.

d. Make sure the program disk is in the currently active drive when run.

e. Make sure that SM.CFG is present and is not shown with 0 bytes. If the latter happens, erase SM.CFG and start the program again.

f. If you de-archived onto a floppy, copy the distribution file to a hard disk and try again. The floppy has overflowed, and not all necessary files were de-archived.

### 3. 'I/O Error 100'

Erase the SM.CFG file. If that does not work, erase the SMn.USR files. The current version of one of these files is probably longer than the previous version.

### 4. 'I/O Error 101'

Your disk is full. Usually happens when trying to run Super Morse from a floppy. Run it on a hard disk, or remove all unnecessary files, such as sm.doc, from the floppy.

## 5. 'I/O Error 150'

Remove the write protect tab from your diskette! Super Morse must be able to write to the diskette to create the configuration and user statistics files.

## 6. Strange Values on the Status Line and Other Weird Happenings

Erase the SM.CFG and/or SMn.USR file and start over!

## 7. 'Disk Read Error'

Erase SM.CFG and/or SMn.USR and start over.

## 8. No Video on Laptop Computer

It has been reported to me that Super Morse will not run on some laptop computers with LCD screens. If someone knows why and knows how to fix the problem, please let me know.

## 9. Erratic or Choppy Code Sound

Switch to the software loop code timing method. Microsoft Windows or non-standard computer designs are not compatible with the clock timing method.

## 10. Code Speed Changes

If the loop timing method is used, the code speed will be affected each time you add or remove a memory resident program. You must recalibrate each time.

## 11. Mouse Does Not Work after Running Super Morse

In some functions, Super Morse can interfere with a serial mouse. Reboot the computer to correct the problem.

## 12. External Key Does Not Work

Check the following:

a. The RS-232 connector pins are small and easily confused. Remember that the connector pins on the computer are a mirror image of those on the cable connector.

b. Super Morse uses two COM ports, and you should make sure that different ports are set for the Modem function and the keying function.

c. Be sure that the "External" keying source is selected.

## 13. Speaker Not Loud Enough

Aside from adding external amplification, about all you can do is change the

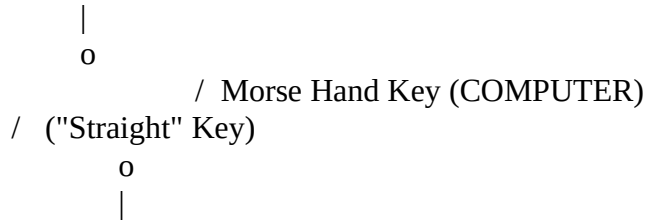
speaker tone since speakers vary in their loudness at different frequencies. Super Morse does not support sound boards such as the Sound Blaster.

## Appendix G. - Interfacing

### 1. Using an External Hand Key

To RS-232 DSR o-----+

(Pin 6) or CTS  
(Pin 5)



To RS-232 o-----+  
Pin 4

### 2. Driving a Transmitter of Other Device

The following circuit designed by John Swancara, WA6LOD, can be used to drive a keyer, code oscillator, or a transmitter. It is described in QST Magazine, February, 1990, page 36. A similar circuit was provided by John Dilks, K2TQN.

If these connections do not work, first check the Port settings in the Setup menu. Then check your computer's RS-232 information in case your computer uses something different from the standard.



1/4 Watt

C1 = 0.01 Microfarad, 50 Volt

DTR = Data Terminal Ready pin

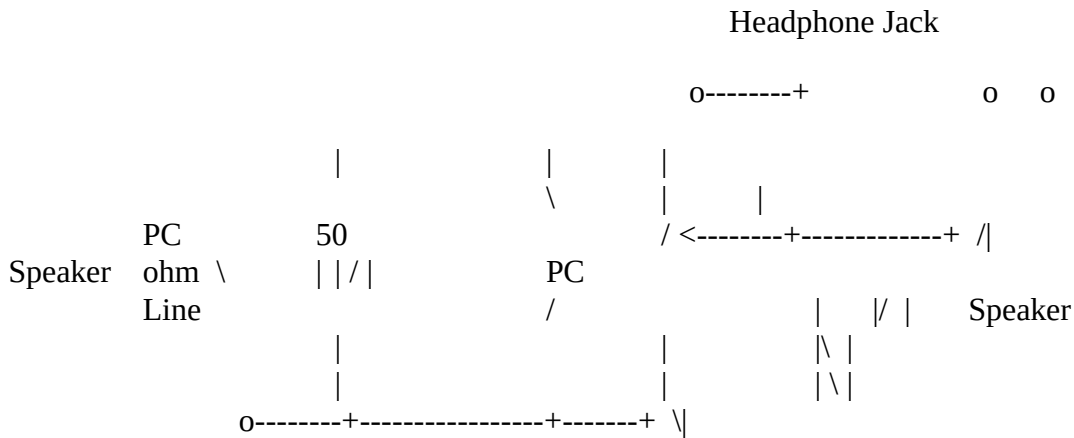
NC = no connection

Note: (1) Voltage on pins 4 and 5 of TIL-113 should be kept below 20 volts, and the current draw should not exceed 100 ma.

(2) The Philco ECG 3041 may be substituted for the Radio Shack TIL-113.

### 3. Using a Volume-Controlled Headphone

Splice a 50 ohm variable resistor and a headphone jack into the PC speaker line as shown below. The headphone jack should break the speaker circuit and close the headphone circuit when the headphone plug is inserted.



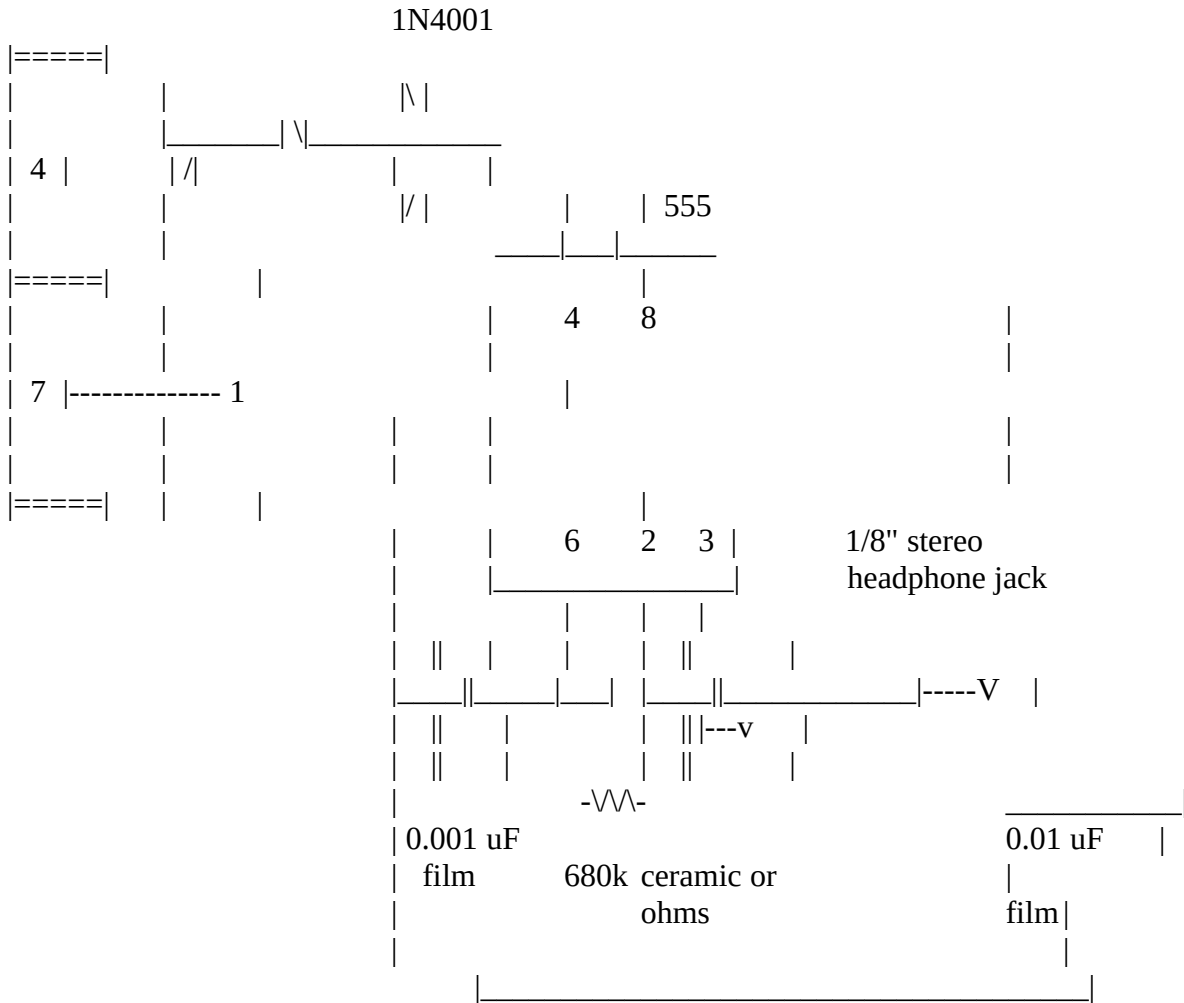


#### 4. Using an External Oscillator

Following is a simple code oscillator driven from the COM port of a PC designed by Jeff Furman, KD6MNP..

DB-25

FEMALE



This easily fits inside the DB-25 shell.

Adjust the 680k ohm resistor to change the pitch--  
higher value for lower pitch, etc.  
Decrease the value of the 0.01 uF cap. for lower volume.

Super Morse Setup:

Keying Port : <your choice from what's available>

Output Keying: ON

RS-232 Output: RTS

Output Sense : -

I use this with the prompt sound off and the speaker off to practice in the office during lunch.