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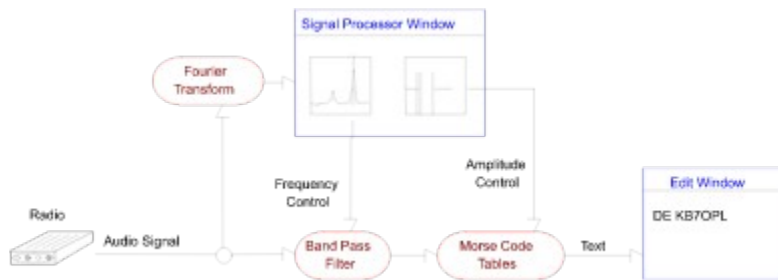> **The Edit Window**

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For any other questions about Cwave, technical support is available via e-mail at the following internet address:
pika@eskimo.com

OVERVIEW

If you have a shortwave radio and a Windows compatible sound-card, Cwave will filter and convert Morse Code signals into text for you.   The modulation technique used for sending the Morse Code over an RF link is sometimes called Continuous Wave, or CW for short.   Hence the name of this program; Cwave.

Cwave works like this:

Audio signals from the radio are band-pass filtered to select the particular signal of interest.   In most CW listening situations, more than one signal is audible within the listening band.   This filter helps to select one signal for decoding.

The duration of the CW pulses is then compared against tables of the Morse Code to extract the original text.

You can adjust the operation of the Band Pass filter and the Morse Code tables via the Signal Processor Window.   When viewing a complete spectrum of the audio signal, individual signals are discernable as 'peaks' in the frequency contour.   You can simply click on a particular peak to adjust the filter to that signal.   You can also choose what signal level will separate the marks and spaces (ones and zeros) in the Morse Code.   See the Signal Processor Window topic for details.

STEP BY STEP

1. Connect your shortwave radio to your sound card.   There are two common ways to do this. If you have a LINE-OUT on your shortwave, and a LINE-IN on your soundcard, use an audio cable with the appropriate phone-plug or rca connectors to connect the two.   If   a line-level connection is not possible, you can simply place the microphone from your sound card in front of the speaker of your shortwave radio.

2. Run Cwave.   The edit window will appear.   Use the File, Edit, and Search menu commands as you would in any typical Windows editor.   To begin converting Morse code, you must activate the signal processor.   This is done by selecting the **listen** command from the editor menu.

3. Adjust the filter, signal strength, and sample rate until readable text appears in the edit window.   **When Cwave is first started, or when the morse code key rate changes, it can take 10-20 seconds for Cwave to adjust to the new rate**.   See the Signal Processor Window section for details on these adjustments.

THE EDIT WINDOW
The edit window is where the translated text will appear.

Remember!   You must start and adjust the signal processor before any Morse will be decoded.

Each of the main menu items available in the edit window is described below.

FILE
Use the **file** menu to save the text from a Cwave session to disk, or to load text from a previous session into the edit window.

EDIT, SEARCH
Use the **edit** and **search** menus to modify the text as you would any basic Windows text editor.

LISTEN
Use the **listen** option to start the signal processor.   See the Signal Processor Window section of help for details.

HELP
Opens this help file and gives program information.

THE SIGNAL PROCESSOR WINDOW

The signal processor window allows you to control the morse decoding process.   When you open the Signal Processor Window, Cwave begins listening to the incoming audio signal and inserting decoded text into the Edit Window.

To hide the signal processor window but to continue translating morse code, just minimize the signal processor window, do not stop or close it!   When the signal processor window is closed or stopped, decoding stops.   Use the down arrow, located in the upper right hand corner of the window, to minimize it.

The following controls are available in the signal processor window.   With the right adjustments, Cwave can decode some very noisy, weak signals.

AMPLITUDE VS. FREQUENCY window
This window displays the frequency spectrum of the audio signal coming from the radio. Signals of interest are visible as 'peaks' in the spectrum contour.   To tune the Cwave filter to one particular signal, simply point the cursor at the associated peak and click the left mouse button.

GET SPECTRUM button
Clicking this button causes Cwave to analyze the incoming signal at that moment, and refresh the Amplitude vs. Frequency window.   Click this button when the signal you are interested in is audible.

AMPLITUDE VS. TIME window
This window displays the strength of the filtered signal as it changes with time.   Morse code signals will appear in this window somewhat like a jagged square wave.   The volume or line level of your radio should be adusted so that the peaks in this window are from 50 to 90 percent of the window height.

The 'crossover point' used by Cwave is shown in this window as a horizontal line.   A signal strength below this line is considered a Morse Code 'space' by Cwave.   A signal strength above this line is considered a Morse Code 'mark' by Cwave .   If the signal is extremely noisy, you can adjust the crossover-point by clicking in the window at a new level..

SAMPLE RATE check boxes
These buttons control the rate at which Cwave samples incoming audio.   The best rate for different morse keying speeds are roughly as follows:

Sample Rate	Morse Keying Speed (wpm)
Slow	5-20
Medium	20-50
Fast	50+

INPUT SOURCE text
This box is not a control; it just shows you what input device Cwave is listening to.

<u>STOP button</u>
Closes the signal processor window and stops the morse decoding process.

<u>HELP button</u>
Opens this help file.

TROUBLESHOOTING

Below is a list of error messages you may receive while running Cwave.

A device ID has been used that is out of range for your system.
This indicates that your sound card has not been properly configured for Windows;   check your sound card documentation for further instructions.

Error: System overload.
Cwave requires a fast processor and video-adaptor to operate.   This error indicates that Cwave was falling behind; it could not process and display all the signal information as it arrived.   Terminate all other applications that may be using system resources.   If the error persists, you will not be able to run Cwave without upgrading your system.

LICENSING, DISTRIBUTION, AND WARRANTY

Licensing

You may evaluate Cwave for a 10 day trial period.   If you would like to continue to use Cwave after the 10 day trial period, you must purchase a license.   To purchase a license send $10.00, check or money order, and the following user-information to Pika Software:

NAME
ADDRESS
PHONE NUMBER
SOFTWARE BEING LICENSED (Cwave)

Indicate how you would like your license delivered; USPS, fax, or e-mail.   Make checks payable to Pika Software.   Mail the check and user-information to:

Pika Software
P.O. Box 95695
Seattle, WA 98145

Pika Software will then send you a license number.   Run Cwave and follow the instructions given to complete the licensing process.

Distribution

You are encouraged to pass a copy of Cwave along to your friends for evaluation. If you do so, you must provide them with the entire set of four files; CWAVE.EXE, CWAVE.HLP, BWCC.DLL, and README.TXT.

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This Limited Warranty shall be governed and construed in accordance with the laws of the State of Washington.

ACKNOWLEDGMENT

BY USING CWAVE YOU ACKNOWLEDGE THAT YOU HAVE READ THIS LIMITED WARRANTY, UNDERSTAND IT, AND AGREE TO BE BOUND BY ITS' TERMS AND CONDITIONS. YOU ALSO AGREE THAT THE LIMITED WARRANTY IS THE COMPLETE AND EXCLUSIVE STATEMENT OF AGREEMENT BETWEEN THE PARTIES AND SUPERSEDES ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, AND ANY OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THE LIMITED WARRANTY.