

## Surveillance Enhancements

### Scancat-Gold for Windows Surveillance Enhanced – Platinum Edition

In Addition to features described in the Main Scancat manual, the following **Enhancements** are included with the Surveillance Enhanced Program:

#### 1. Master / Slave

The Radio selection includes one additional 'button' titled "Master/Slave. This button is located on the far right column, just above the 'Virtual Radio' button. Pressing this will then pop up an additional selection box titled "Slave Master CI-V Radios".



There are 6 slave "programmable" slots, plus one additional "master" selection. Clicking on any of the programmable buttons will enable you to then choose a CI-V compatible radio as that buttons Slave Selection.

#### **Example:**

- Click on 1st button, and the button will darken to indicate you have picked this selection for programming.
- Then place your mouse on any of the 50+ radios on the menu and click to choose one. (Pick R7000)
- You will notice that the 1st button now indicates the R7000 is the first slave unit.
- Continue with the procedure until as many slots are programmed as you want.

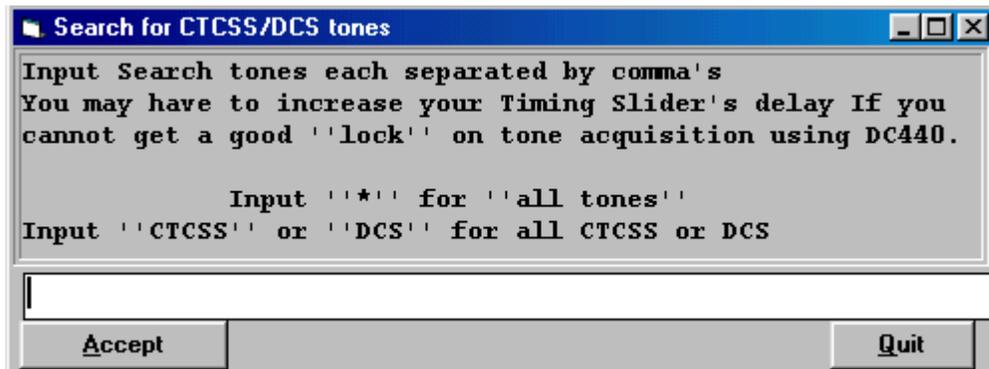
(Since there are up to 6 slots available, if you do not have this many individual radios, program the unwanted slots with "Virtual Radio", and they will be ignored.)

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- e. Choose the MASTER in same way as you picked the slave units.
- f. Click the lower (Red Label) "Click to Select" to indicate ON.
- g. Click "Finished" button

Now, once scanning is enabled, the MASTER radio is always scanned. Once a signal is detected the MASTER radio stops. Once scanning resumes, a slave unit will be tuned to the frequency the master just paused on. The slaves will be sequenced in order of the 'master/slave' menu. If there are 6 slave units, each one in sequence will have the last frequency the master has received. Consequentially, up to 6 frequencies at a time could be monitored if you have 6 slaves. Once the sequence is completed, then the first slave is reprogrammed and so on. It might be to your advantage to pause the scanning once 6 radios are 'programmed', so that all six frequencies can be monitored, as they become active.

### 2. CTCSS/DCS tone search options



In addition to the ability to search by 'user selected' CTCSS or DCS tones, you can globally search by ALL CTCSS or ALL DCS or all of both groups.

- a. Program "All CTCSS" tone search by inputting the "keyword" CTCSS instead of a valid tone value. Using this search choice, Scancat will ONLY stop on frequencies with a valid CTCSS tone. ALL frequencies that do not contain a CTCSS tone will be skipped.
- b. Program all DCS tone search by inputting the "keyword" DCS instead of a valid tone value. Using this search choice, Scancat will ONLY stop on frequencies with a valid DCS tone. ALL frequencies that do not contain a DCS tone will be skipped.
- c. Program ALL tone search by inputting an "\*" (Asterisk), as a "wild card". Using this search choice, Scancat will ONLY stop on frequencies

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with a valid CTCSS or DCS tone. Any frequency that does not contain a tone will be skipped.

### 3. Graphical Spectrum Analysis of Databases

This function is designed to enhance your ability to research a wide spectrum of frequency searches and then 'compile' and graphically analyze the results. This function will work with virtually ANY database you have, but it is especially valuable if you use the **DEMOGRAPHIC LOGGING** option.

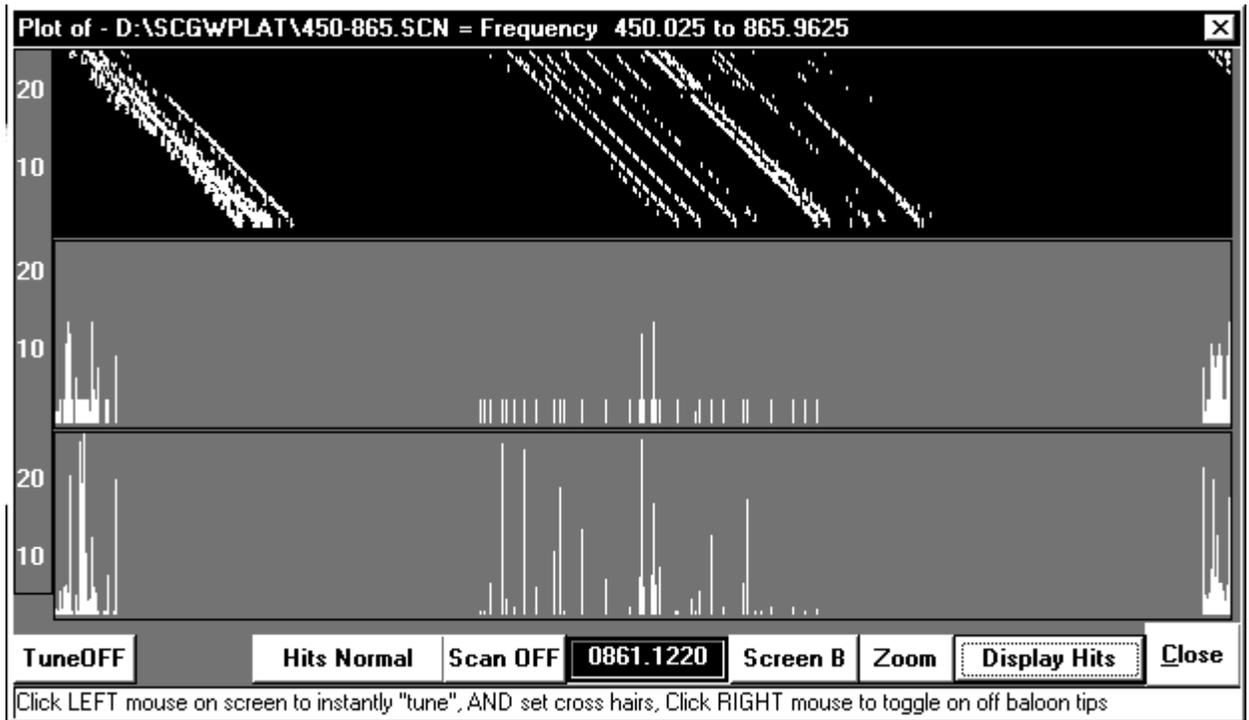


The screenshot shows the Scancat Browser application window. The title bar reads "Scancat Browser - \"D:\SCGWPLAT\450-865.SCN\" - Rec # 0 - Bank -1 Chan 39". The menu bar includes "File", "InActive Dbase", "Global Chgs", "Tjps OFF", "Pause", "Resume", "SE Options", and "Exit". A table with three columns is visible: "Frequency", "Description", and "Comments". The table contains four rows of data. A context menu is open over the table, listing options: "Spectrum Plot Database", "Sound Player ON", "Play Multiple Wave Files", and "Fonts". The table data is as follows:

Frequency	Description	Comments
0453.82500	450 MHZ BUS BA	
0455.25000	450 MHZ BUS BA	
0458.27500	450 MHZ BUS BA	CW163448.WAV 0
0458.90000	450 MHZ BUS BA	

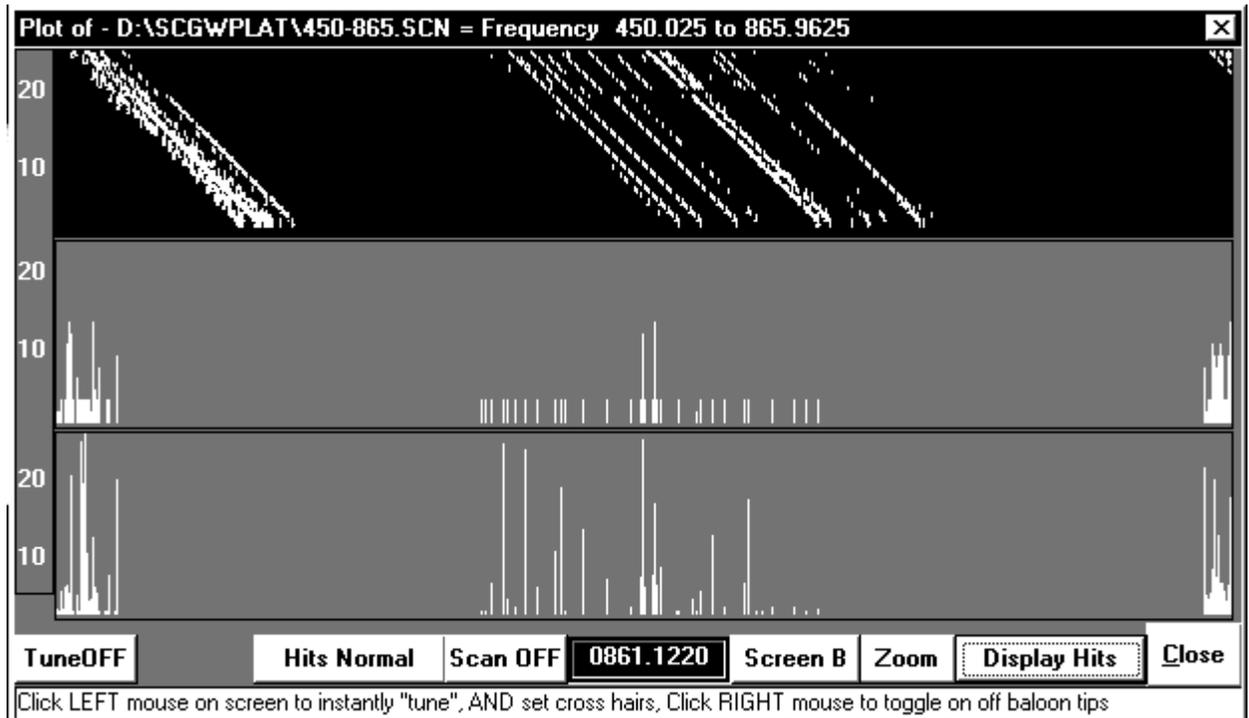
To view the "results" in the 'spectrum analysis' screen, load a file into the 'file viewer'. Once the records are loaded, you will notice the TOP menu bar's far right selection is "**SE Options**". Clicking the "Options" menu will show several choices. Pick the option, "Spectrum Plot Database". Depending on the size of your database this may take a minute or two to 'initialize'. First the Analysis must determine the 'range' of the frequencies. The initialization run will look at the entire database and determine the minimum and maximum frequencies.

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Then the screen will be dynamically allocated to display the entire spectrum that is contained in the database. While this is being compiled, the mouse cursor will be an hourglass. While you can press other buttons until the hourglass changes to an arrow, if you do, the screen may not be completely 'drawn'

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### Split Screen View

Now, you can choose options from the bottom buttons:

**Enable Tuner** - Enables you to open the serial port for communication with your radio. Then you can position your mouse anywhere on the spectrum display and instantly tune to the frequency displayed in the lower window.

**DBSS- Base16** - Some radios have the ability to display up to 255 individual segments representing signal strength. Scancat defaults to 16 divisions no matter what radio is used. This makes all displays appear to be 'equal'. However using the demographic logging option will ALSO log the 255 resolution, which can be viewed using this 'toggled' option.

**Scan OFF/ON** - Enables 'scanning' of frequencies displayed in the Spectrum Display. **This scanning only works if the 'Type display' option is "A" or "C"**, as the moving cursor 'looks for' signal painted on the screen. This would not be practical to do with the 'dot type'

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display or the waterfall/spatial display. (Also see **Clicking on the Screen** below for other scanning features)

**Resume** - Once Scanning is enabled a Red Cursor will progress from left, indicating the scanning position. If the cursor encounters a 'painted' area of signal, it will stop for a predetermined length of time, and the Countdown sequence will be reflected in the Resume button's caption.

(Tip) - This 'delay' time can be changed by clicking the **Right Mouse** on the 'Scan on/off' button.

Clicking Resume with the **left mouse button** will resume the scanning and abort the count down and resume scanning.

Clicking with the **right mouse button** will "lock out" that signal from further 'stopping', paint the signal as a red line, and the scanning cursor will skip that signal from then on.

**Screen A-B-C** -There are actually three individual 'screens' available for graphical analysis. The Default is Screen A. by "cycling" through the three screens, and 'painting' an analysis mode on each of the three screens, you can then "cycle" quickly through all three graphical representations of a database

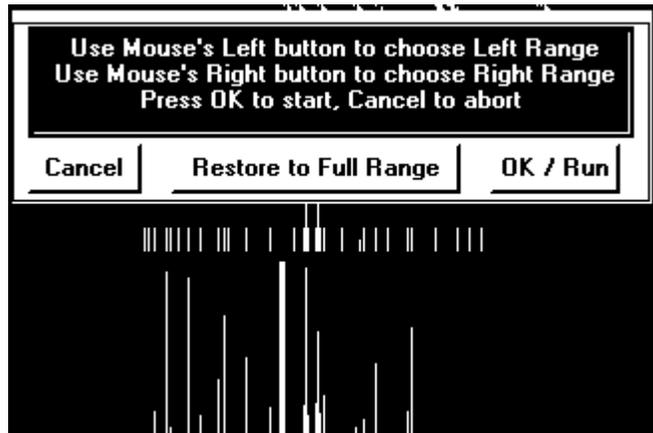
### \*\*\*\* Hint \*\*\*\*

IF you change to an EMPTY screen, before you load a new database, the previous database's screen can be 'saved', and then the new one can be compared with the previous.

An Example of the use of this would be to do the same frequency analysis, a week apart and then load each one on a separate screen. You can quickly 'toggle' between the two or three, analyzing frequencies or usage over two or three time periods.

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\*\*\*\* Plus Feature \*\*\*\*



Pressing the RIGHT mouse button on the **SCREEN BUTTON**, will shrink the screen vertically by one-third, and place that screen into it's own third vertical area of the screen. ALL THREE screens (A-B-C) will become visible at the same time, permitting exact comparisons.

**Zoom Setup** - This will probably be your most used option.

Clicking on this button pops up a menu.

Then clicking the LEFT mouse button on an area of the screen will pick the 'minimum frequency' to display. A green bar will indicate the chosen "minimum" border.

Then clicking the RIGHT mouse button on an area of the screen will pick the 'maximum frequency' to display. A red bar will indicate the chosen "maximum" border.

You cannot place the minimum frequency in excess of Maximum frequency, and you cannot place the maximum frequency less than the minimum frequency, If you notice you cannot choose a min. or max. then adjust to either side and try again until one 'takes'.

When finished, click "OK / Run" and the screen will now zoom in on your chosen range.

This can be done over and over until only a few frequencies are displayed.

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Click “RESTORE” to reinitialize the entire spectrum of the database to ‘full spectrum display coverage’.

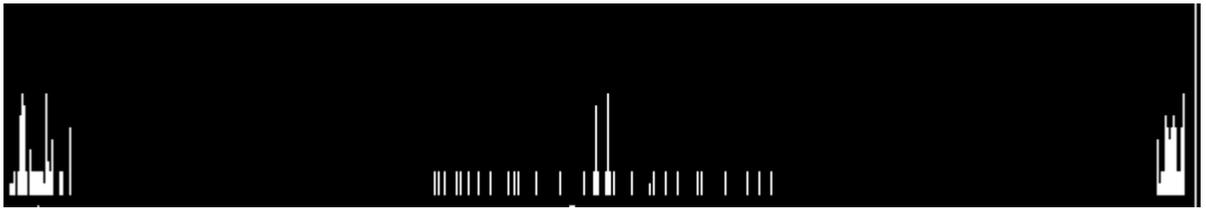
\*\*\* note \*\*\*

If you load more than one database before zooming a screen, only the screens containing the ‘currently loaded’ database will be ‘zoom capable’.

\*\*\* note \*\*\*

### **Type Display** - There are three “Choices”

1. The Default is “**Signal**” or the ‘histograph’ style of display, where all signal strengths are plotted in a line from base line to signal strength. If the range or resolution is very great, several frequencies could be plotted on the same area of the screen. The accuracy of **ANY** display will increase as you zoom in and display less total spectrum.



### **Standard**

\*\*note\*\*

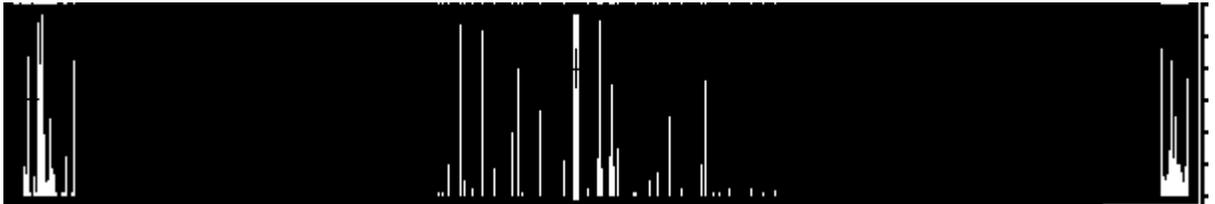
If a database does not contain signal strength, then a ‘random’ level is picked from the ‘base 16’.

\*\*note\*\*

2. The “**Points**” display paints individual dots for each different signal strength. This display is more capable of showing multiple hits on a frequency with varying signal levels. If the range is very great, the screen will become compressed and several frequencies could be plotted on the same area of the screen. The accuracy of **ANY** display will increase as you zoom in and display less total spectrum.

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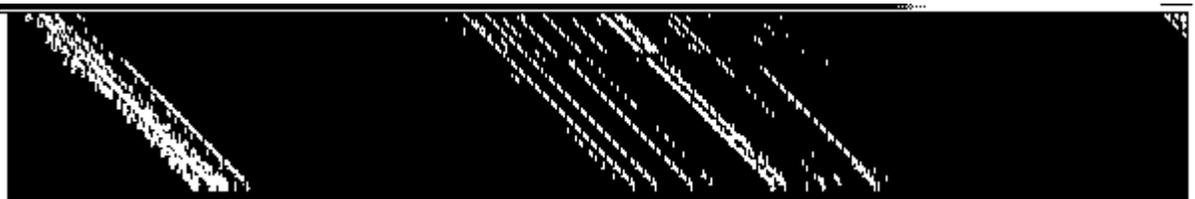
3. “**Hits**” displays the number of hits in a ‘histograph’ style of display, where all hits are plotted in a line from the base line. As successive ‘hits’ on the same frequency are encountered, the vertical line will increase upward in size. If the range or resolution is very great, several frequencies could be plotted on the same area of the screen. The accuracy of **ANY** display will increase as you zoom in and display less total spectrum.



4. “**Spatial-A**” displays in a straight row, descending from top to bottom, each hit with signal strength. The display is represented like a “sky view” of a mountain range. Depending on the way your database was created you will see a partial, or full screen of spectrum.

The analysis is designed to be used with our exclusive “Demographic Logging” feature. This logging option creates a record for each time it hits an active frequency. Therefore, “SE” assumes that each time a frequency is encountered (that is **lower** than the previous frequency) a new scan cycle was started. If your database was not created with this option, and only contains one ‘scan cycle’ (example: frequencies are all in ‘sorted order’), then the spatial representation will not be very ‘graphical’.

If the analysis is longer than will fit on one screen, a pause button will appear at the bottom right of the screen, permitting you to halt the tracing momentarily.



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### Waterfall/Spatial

4. **“Spatial-B”** displays in a left to right moving display, descending from top to bottom, each hit with signal strength. The display is represented like a “sky view” of a mountain range. Depending on the way your database was created, you will see a partial, or full screen of spectrum.

If the analysis is longer than will fit on one screen, a pause button will appear at the bottom right of the screen, permitting you to halt the tracing momentarily.

On *this* display, since the frequencies are skewed from left to right, the mouse will indicate a frequency including this ‘offset’. However if you want to zoom, you must align the left and right zoom bars at the top of display to be accurate.

5. **24 Time versus Frequency** - The best way to utilize this analysis is to log a spectrum of hits over at least 24 hours. 48 or more hours, in 24-hour increments will produce even better results. Each hit recorded has a time stamped field. Using this information a dot is plotted for each location using a 24-hour time period (vertical axis) and frequency (horizontal axis). As more and more hits accumulate in the same spot the colors of these points will change color, enabling you to more easily determine highest activity.

**Frequency readout window** (middle of bottom of screen) - Each screen contains its own individual ‘range’, so as the mouse is moved between screens the frequencies will be shown for that screen in the lower frequency window. If you have all three screen ‘split screen’ visible, then moving the mouse cursor between screens temporarily changes the ‘focus’ to that screen.

**Close** - Closes Spectrum Analysis screen and returns to File Viewer. You must choose the **“Options”** and then the second choice, **“Spectrum Plot Database”** to do the spectrum analysis again.

**CLICKING THE SCREEN** - Clicking the left mouse button on any area of the ‘active screen’ (Screen A-B-C) will paint a Cross Hair at that point, AND change the ‘focus’ to that screen (if more than one is visible). This ‘focus’ will be reflected in the “Screen Button Caption”.

The Cross Hair has two pointing features

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- 1. Threshold** - Determines the signal threshold level if you decide to use the SCAN ON/OFF button. The scanning will scan at the up/down level determined by the cross hair, ignoring signals that fall below it's "threshold level"
- 2. Starting Point** - The scanning will start at the point where the cross hair is placed. This enables you to 'move' forward and backward in the scanning process, and realign the cursor for stopping on an 'active' signal.

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### **SE AUDIO (Recording using a SoundCard)**

#### **1. WHAT (IT) DOES**

SE-Audio will permit you to record to the disk, using a soundcard, actual transmissions of signals as your radio stops on an active frequency. You have a number of choices as to how this process is tailored.

- a. Record EVERY transmission, no matter what frequency.
- b. Select from a pick-list, specific frequencies, and only those will be recorded
- c. Use the Disk Macro's and a separate frequency file, to choose frequencies to record. (Uses same macro as the 'tape recorder macro')
- d. OR combine B & C as you desire.

#### **2. BASIC REQUIREMENTS**

##### **EQUIPMENT**

Any windows version from 3.1 to 95/98

Soundblaster compatible card

**Lots** of free disk space:)

##### **HOOKUPS**

You can only connect to the MIC input of the soundblaster card. We do not support the LINE input. (Maybe later)

Use a **CONSTANT** level audio source, such as the tape recorder output jack on your radio. too much level will distort things.

#### **3. HOW YOU DO IT**

In order to record, and keep track of the transmissions recorded, we need some form of database that can contain the information as to what frequency it recorded, and where the sound-bite file is located. Otherwise we would have to create one huge file for each session, and that would be difficult to track and coordinate with the specific sound file.

The **DEMOGRAPHIC LOGGING OPTION** is perfect for this. We log a new record for each hit, so we only have to record one 'file' per record. And, we already know the frequency and time stamp, and even duration of transmission.

There are at least **TWO** things in the Scanning module you **MUST** to do to 'set up' for recording.

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1. Choose a logging option. The ONLY logging option that supports the sound recording is the Demographic Logging Option. If you choose any OTHER one you won't get anything recorded.
2. You must turn on the Wave Recording (bottom left Button). When you pop up CONTROL PANEL TWO, there are two buttons at the very bottom of the panel.

The buttons are labeled:

"WavRec OFF"

and

"Rec.Freq List" (we refer to this as a "pick list")

The Wave Recording button has THREE functions, and these cycle from 1-2-3-1 etc

1. WAVE RECORDING OFF
2. WAVE Recording ON (meaning everything is recorded every time you stop on signal)
3. Pick-List recording (only pick listed items are recorded)

The first two should be self explanatory, but the third needs a bit of further explanation.

A Pick-list can be created that has discrete frequencies to look for. You can scan ranges OR use a FRQ type Diskfile as the scanning source, but only the Frequencies TAGGED in this list will 'trigger' a recording.

EXAMPLE: Let us say you have 10 mixed frequencies in this pick list. Double click on a frequency. You will note that an "\*" (asterisk) appears at the left of the frequency. This means that selection is 'TAGGED'. Double clicking on the same selection and the Asterisk will be deleted (UNTAGGED). This way you can keep a list of the most popular frequencies handy, and simply tag the ones you want to record, based on your given activity. If things get too busy with chitchat, you can easily UNTAG that frequency, even while scanning.



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We find we will tag certain frequencies such as the "tactical channel" for the local police, and a couple of 'security police' frequencies. Then, we just set up the 'ranges', and scan away. When those that are tagged are active, we get a recording, but don't fill up the disk with useless 'day to day' chatter.

### **EXTRA INFORMATION and TIPS**

Each time a new recording is written to disk a unique filename is created. This file name is then 'pasted' into the comments field of the record in the database, along with the number of minutes and seconds duration of that recording.

Where to put all the 'stuff':

All activity is written not only to a 'master' "SCN" diskfile, but also every recording will create a unique ".wav" sound file. If you stop 300 times you will end up with 300 individual ".wav" files. This can tend to 'clutter up' a working directory in a hurry. To make it easier to keep track, it is advisable to create a 'wave directory'. Then when the demographic logging asks you for a new filename, first pick this 'wave directory' and place the logging database file into IT. As well, all sound files will be written to this same directory.

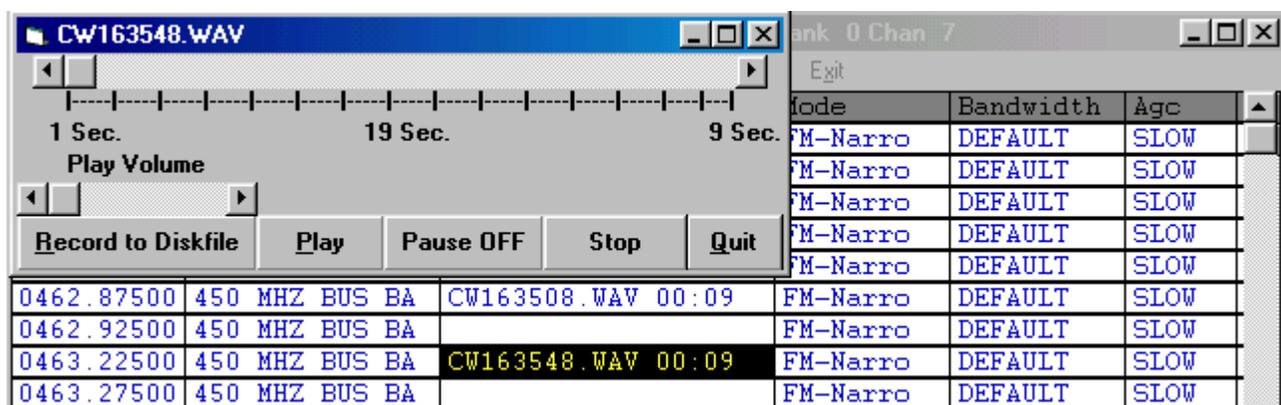
As you can see, it will be a lot easier to 'clean house' if the working directory for these recordings contains only a database and its associated sound files. (Delete \*.\* will only clean out the files, not your whole Scancat and necessary files.

### **HOW DO I USE IT NOW THAT I HAVE IT**

1. Once you have a few 'hits' recorded, exit the scanning module and load the new database file. You will note that the comment field will contain an 8 character ".wav" description and an elapsed time. First click on the SE OPTIONS menu and make sure the second choice "WAVE PLAYER" is ON. If not click it, to turn it on.
2. Now move your mouse cursor to a comment field that contains a ".wav" file and click on the field. A small 'player' box will appear, the wave file will start playing, and the 'slider bar' will move, indicating progress in seconds of the sound playing.

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There are initially FOUR BUTTONS VISIBLE and the VOLUME slider.



**PLAY** begins the playing of a wavefile.

**PAUSE** PAUSES Playing. Click pause again to continue.

**STOP** Stops playing and 'rewinds' to beginning.

**QUIT** Exits and pulls down the wave player box.

ONCE PLAYING IS COMPLETED a FIFTH button appears, **RECORD TO DISKFILE**.

Click **RECORD** and most of the other buttons disappear. The **STOP** and **SAVE** button appear.

Clicking on the RECORD button will start a NEW recording immediately.

Clicking on the **SAVE** button saves the new audio to disk and places a new unique coded filename into the comments field.

This places/replaces a unique file name into the comments field. While the 'old sound file' still exists on the disk, the NEW sound file 'filename' is placed into the comments field.

This enables you to record 'manually' if you so desire.

### HINT:

DOUBLE CLICK ON AN -EMPTY- COMMENTS FIELD. This will pop up the player menu, and permit manual recording to that record of a new sound files. (THIS FUNCTION ALSO WORKS IN A FRQ FILE, even though that

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file is not used for 'logging'. Sometimes the last loaded sound file will still play, as it is still in "memory".

### **THINGS YOU DONT DO, CAN'T DO, AND QUIRKS**

**CAN'T DO:** You cannot use the wave player WHILE scanning. IF you try, it just grinds everything to a halt and eventually the recordings will not play. The windows API just cannot deal with recording one file and playing another at the same time. So... Exit to the main menu and THEN pull up the database file.

**DONT:** Don't leave this recorder unattended unless you have in excess of 100 Megabyte of FREE hard drive space. ONE MINUTE of recording time = 595000 bytes. That computes to about 35 megs per hour. It is possible to fill up 1 gigabyte of hard drive space in an over night session, especially, if it were to get 'hung' on a birdie or carrier. It doesn't matter **how** much we try to 'trap a disk full error'. You can only safeguard things so much. When disks get full (or) close to full, many times directories and 'file allocation tables' (FATs) can get trashed.

At the least set your continuous slider to max (about 250 seconds), so any unexpected birdies do not lock up the recorder forever.

**QUIRKS WE KNOW ABOUT:** We cannot figure out HOW to manage the left right volumes of the input. ANY time you touch OUR volume control slider, it makes the right audio channel go completely off, and only the left channel works. The Volume DOES work, but only at left channel. This should be a 'live able bug" considering all the benefits the sound recorder has added to your listening enjoyment.

**UNKNOWN "QUIRK" ?:** We have researched Microsoft at length, and we can not find documentation on WHERE all the sound information is being stored before you write it to a file, so we must presume it builds up in memory (ram) and then eventually is cached on the hard drive in the default "temp" directory. Depending on the amount of RAM you have, if you leave the 'recorder' on too long, eventually all memory may/will be consumed. We have no solid idea if it is eventually 'flushed' to a 'cache on the disk' or simply the program runs out of memory.

Remember 1 minute = 595K - most machines do not have more than 64 megs, and that's before programs are loaded. That means anything over 60 minutes is really pushing the envelope for first time unattended operation.

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### Sweep Functions

Pop up the Spectrum Analysis display screen and you will notice 6 new buttons labeled "sweep". These buttons are arranged in two sets of 3 buttons "Survel A/B/C" or "Sweep A/B/C". These will give you up to six (two levels per button) of preset ranges for sweeping a frequency spectrum. The RIGHT set enables a one-time sweep of a frequency spectrum. The LEFT set enables a continuous sweep until the user stops it. Clicking either the left or right mouse button will start a pre-programmed sweep. The range is calculated from the "center frequency" or frequency that appears on the upper VFO panel when the sweep button is clicked.

For Instance: To sweep a range of 2.5 Mhz with a center frequency of 10.0 Mhz, first type into the VFO 10.000 Mhz, and then click the "B" button with your left mouse click. A sweep will initiate the left and right edges of the range will be automatically calculated.

If you choose Survel Sweep, there will also pop up a file dialog input box.

- A. If you only wish to sweep and not log to the disk. Then type in the filename of "NOFILE". This will then skip logging entirely.
- B. If you wish to send the spectrum to a logging file, enter a valid filename. (See below for an explanation of "DBASE" or "SCN" file type logging.) A small red crosshair will appear at some 'vertical level' on the spectrum screen. To move or adjust the signal level "threshold" right click on the spectrum screen at any 'signal level' above the noise floor. Any signal that exceeds this red cross-hair "threshold" will be logged, and any signal that falls below the threshold will be skipped (not logged). This will enable more precise logging of 'real' signals and prevent noise etc from creating massive databases with lots of 'false hits'.

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### New SE-Platinum Logging Functions

**LOGGING** – Demographic Logging - Several new functions have been added to SE's demographic logging.

1. Standard Demographic Logging (Option 6) – You can choose not only the default logging file type of “. SCN”, but now also send your logging files to DBASE (. DBF) files. Simply include the extension of “. DBF” when you are prompted for your file name. IE:
  - a. “Testlog” would save the file to a random file structure with the extension of “. SCN” (no extension defaults to “. SCN”)
  - b. “Testlog.scn” would save the file to a random file structure with the extension of “. SCN”.
  - c. “Testlog.dbf” would save the file to a Dbase file structure with the extension of “. DBF”

This applies to both Demographic logging OPTION 6 or the new Survel Sweep buttons.

2. Logging while continuously sweeping – There are three new sweep buttons available within the spectrum analysis screens. These are labeled “Survel A/B/C”, and provide up to 6 preset ranges that can be continuously swept. If you choose the extension (as described above) of Dbase, the logging will be sent to a Dbase file instead of the default “.SCN” Random file.

**Please note:** Due to the way DBase files are handled, you cannot ‘append’ files to an existing DBase file. The file will be automatically overwritten if you choose the same file name. If you wish to append several sessions, use the default random “.scn” file extension.

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There are many 'variations on the same theme' using the "SE" modules. Only a few have been explained here. If you have additional needs regarding surveillance and detailed spectrum analysis, give us a call or email. We will be happy to include your ideas in future releases.

**Computer Aided Technologies**

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**Thanks for choosing Scancat-Gold for Windows "SE"**