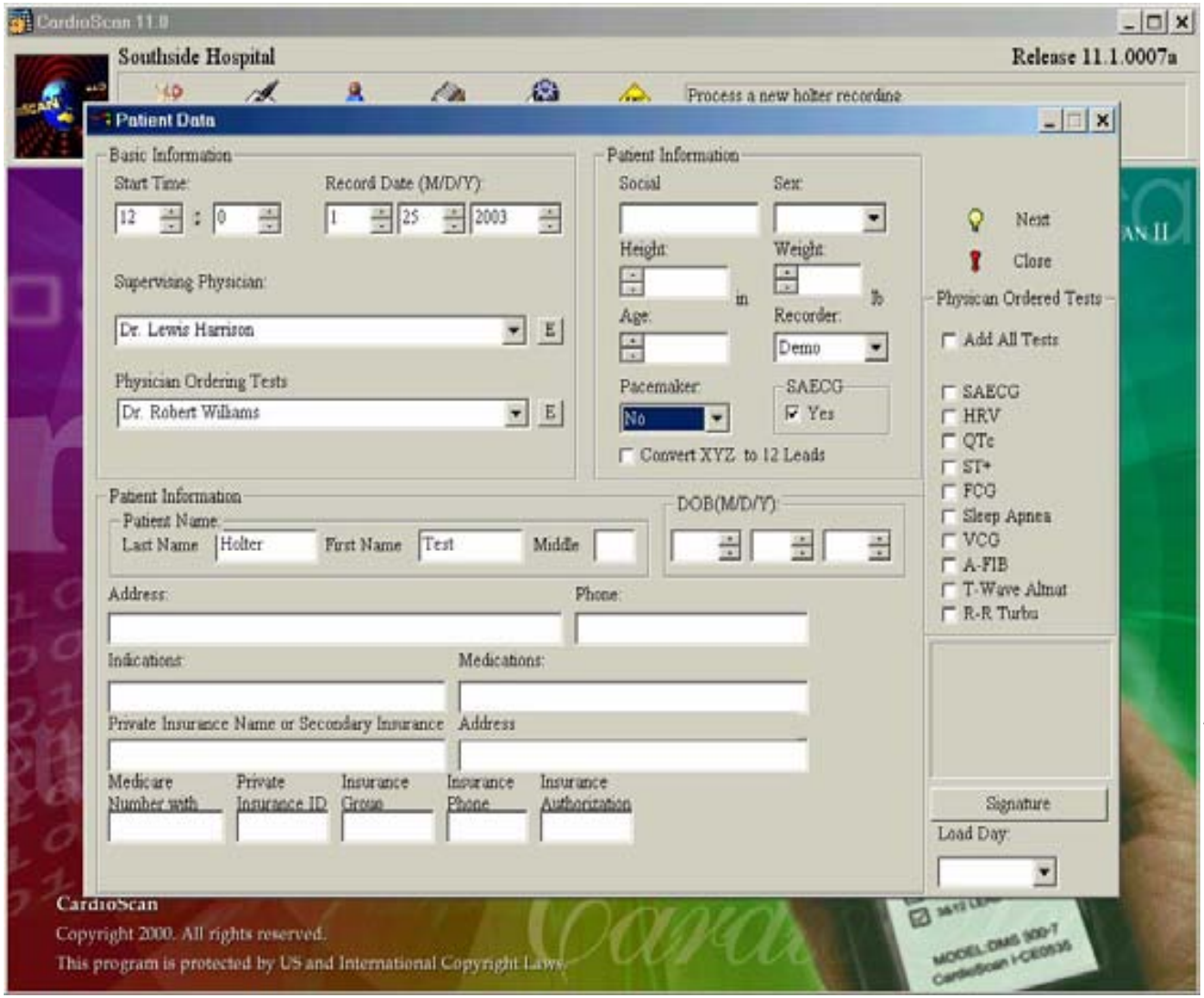
Access the Holter Program
EDIT Mode

- **The “Leads” icon is for viewing the various electrode placement options.**
- **The “Enroll” icon is for pre-assigning the patient name to the recording flash card.**
- **The “Prior” icon is a list of all the saved Holter ECG files.**
- **The “Setting” icon is the Default menu.**

How to Start the Holter Processing

- **To start the processing of the Holter ECG, left mouse click on the "New" icon.**
- **The "Edit Mode" is a very user-friendly process for verifying the accuracy of the Holter ECG report.**
- **When help is needed we will give you on-line internet instructions on how to use the software.**
- **The following screen display will appear.**

Patient Data Menu



- **You must enter data into these fields:**

Start Time
Physician Names
Patient Name
Pacemaker: NO
Recorder: DEMO

Note: Select DEMO because this is a learning program with a 2-hour Demo Holter ECG file.

* **After you have entered data into these fields, then left click on the “Next” command at the upper right.**

ST & QT Set-Up

- **In about 10 seconds you will see the adjacent screen display,**
- **The Holter ECG recording has been transferred to the PC's hard disk drive.**
- **This is a quick view to see if the green vertical markers are set at the beginning of Q, the J-point, and the ST point.**

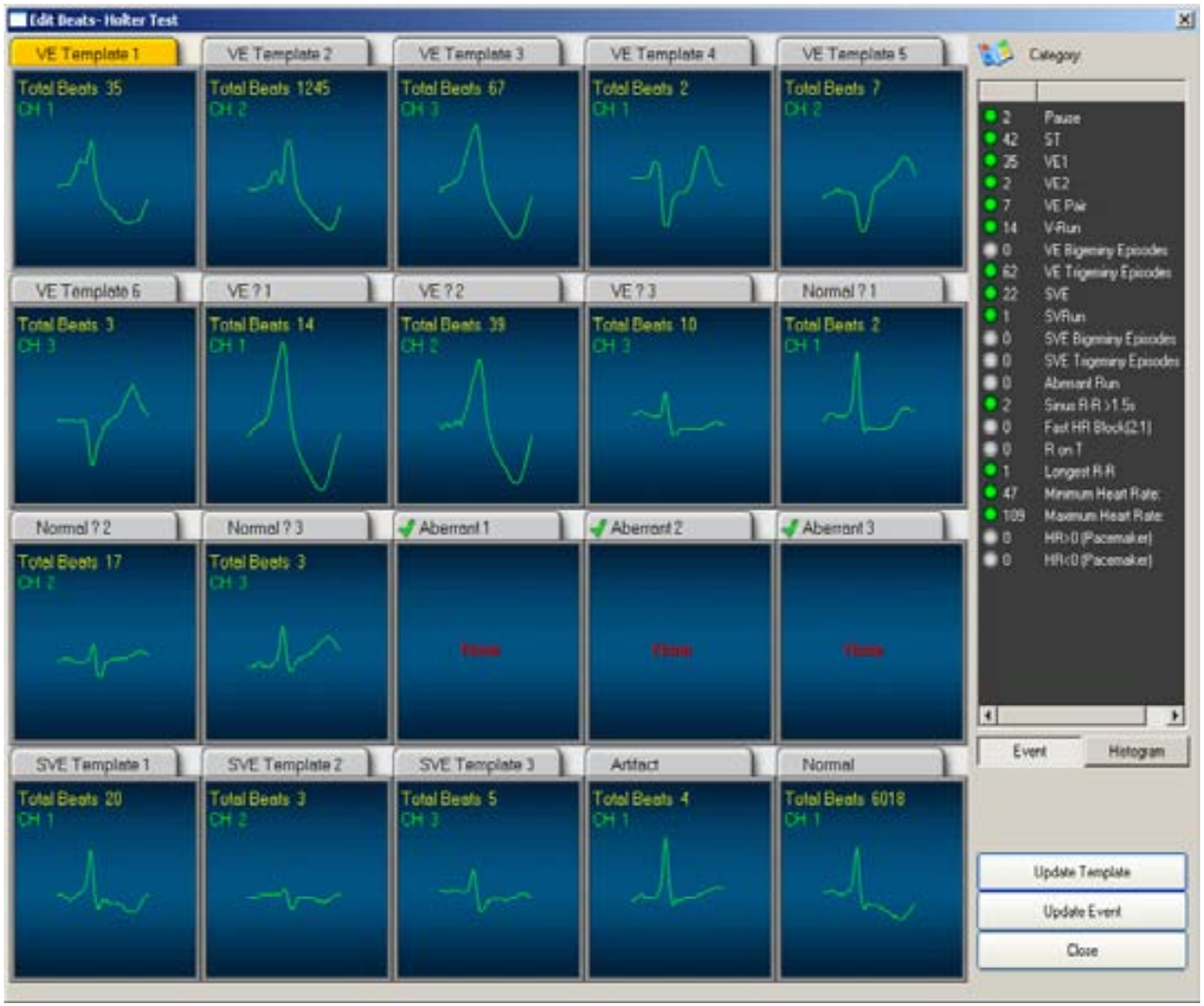
ST & QT Set-Up

- Place the mouse arrow into the blue rectangular box, left click and hold, and drag blue box to centering over ECG beat
- Check placement of vertical markers on Ch.1
- Press “Tab” key to move green marker. Use arrow keys to move green marker at Q, J, and ST,
- Place green line at beginning of Q, and then press the left arrow key once.
- F10 or the Accept icon takes you to next ECG channel. Repeat this process for ECG channels 2 and 3.
- When you press F10 or click on the Accept icon on Channel 3, the Analysis process will begin.

Analysis

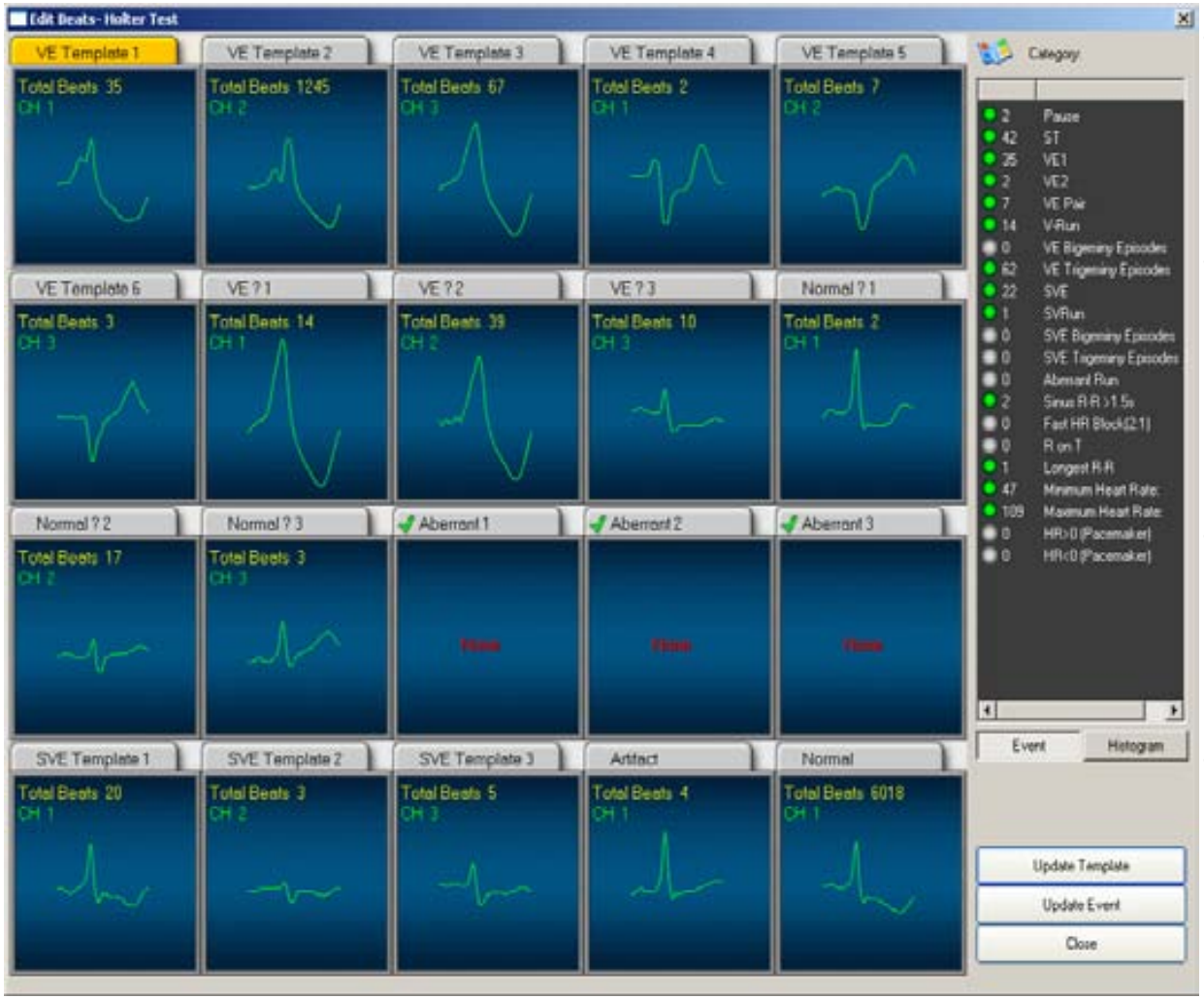
- **After a few seconds, the Holter ECG analysis is completed, and the adjacent screen display will appear.**
- **Prior to printing the Holter ECG report, the Holter data needs to be edited and verified.**
- **Most of the Holter work is focused on the arrhythmia analysis.**
- **Click on the “Edit” icon.**

Arrhythmia Template Editing



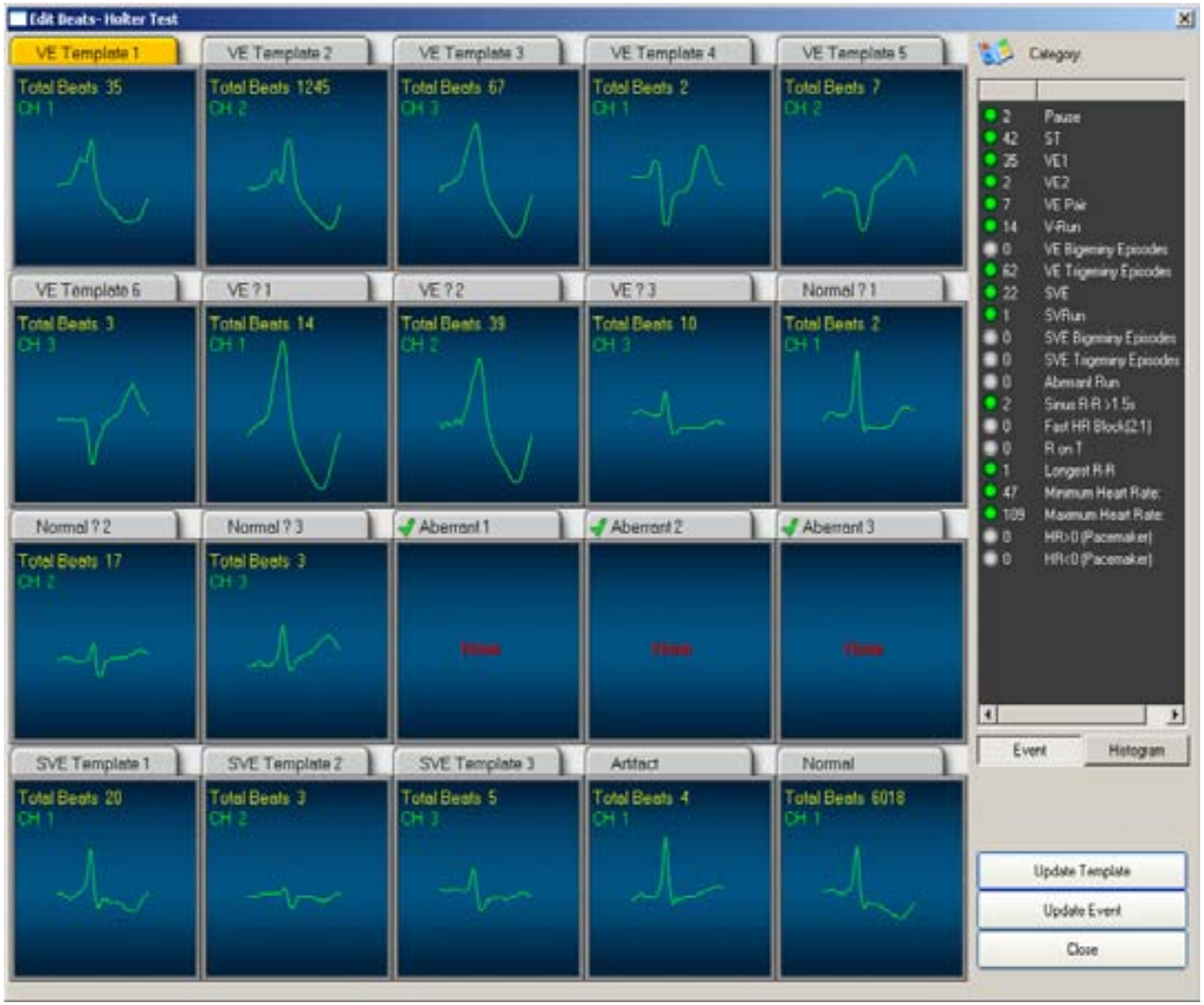
- **20 blue-colored ECG templates are displayed.**
- **At the right are 19 icons for Abnormal ECG Event categories.**
- **The first 12 templates are for Ventricular Ectopic Beats, the next 2 templates are for Aberrant beats, the next is for BBB, the next 3 templates are for SupraVentricular Ectopic beats, then Artifact, and then Normal beats.**

Arrhythmia Template Editing



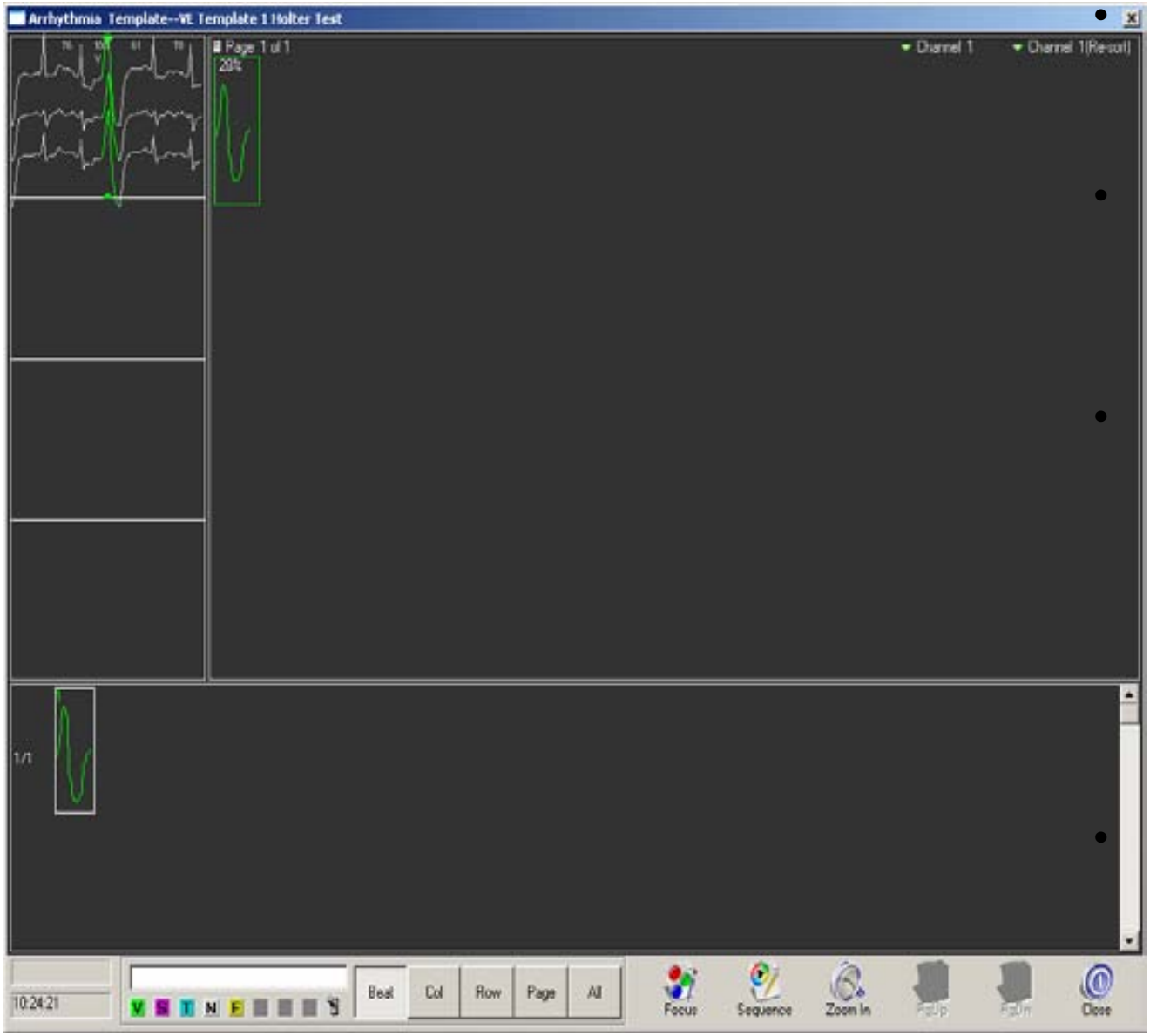
- **The first 6 VE Templates are the main Templates for VE detection.**
- **VE Templates 1,2, & 3 are detected as positive going QRS' in ECG channels 1, 2, & 3.**
- **VE Templates 4, 5, 6 are negative going QRS' in channels 1, 2, & 3.**
- **For fast and accurate VE editing, each of these Templates will now be shown in multiple wave-shape templates.**

Arrhythmia Template Editing



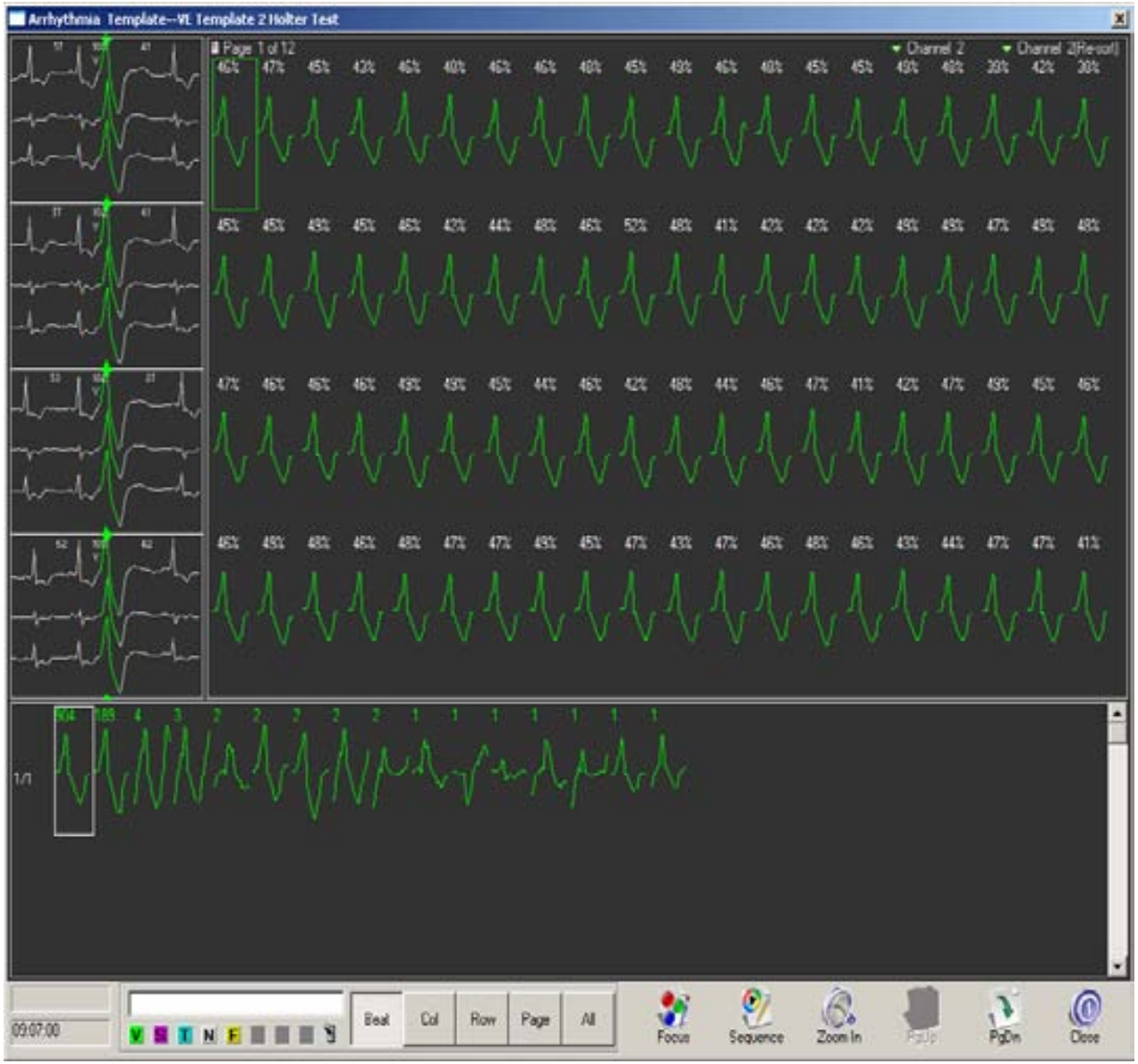
- About 90% of the Holter work is performed in Arrhythmia Template Editing. The purpose is to view and edit all arrhythmia beats prior to printing the report.
- Click on VE Template 1 with the yellow header (or press Enter).
- You can use the mouse or the keyboard for all arrhythmia edit functions.

Arrhythmia Templates Editing



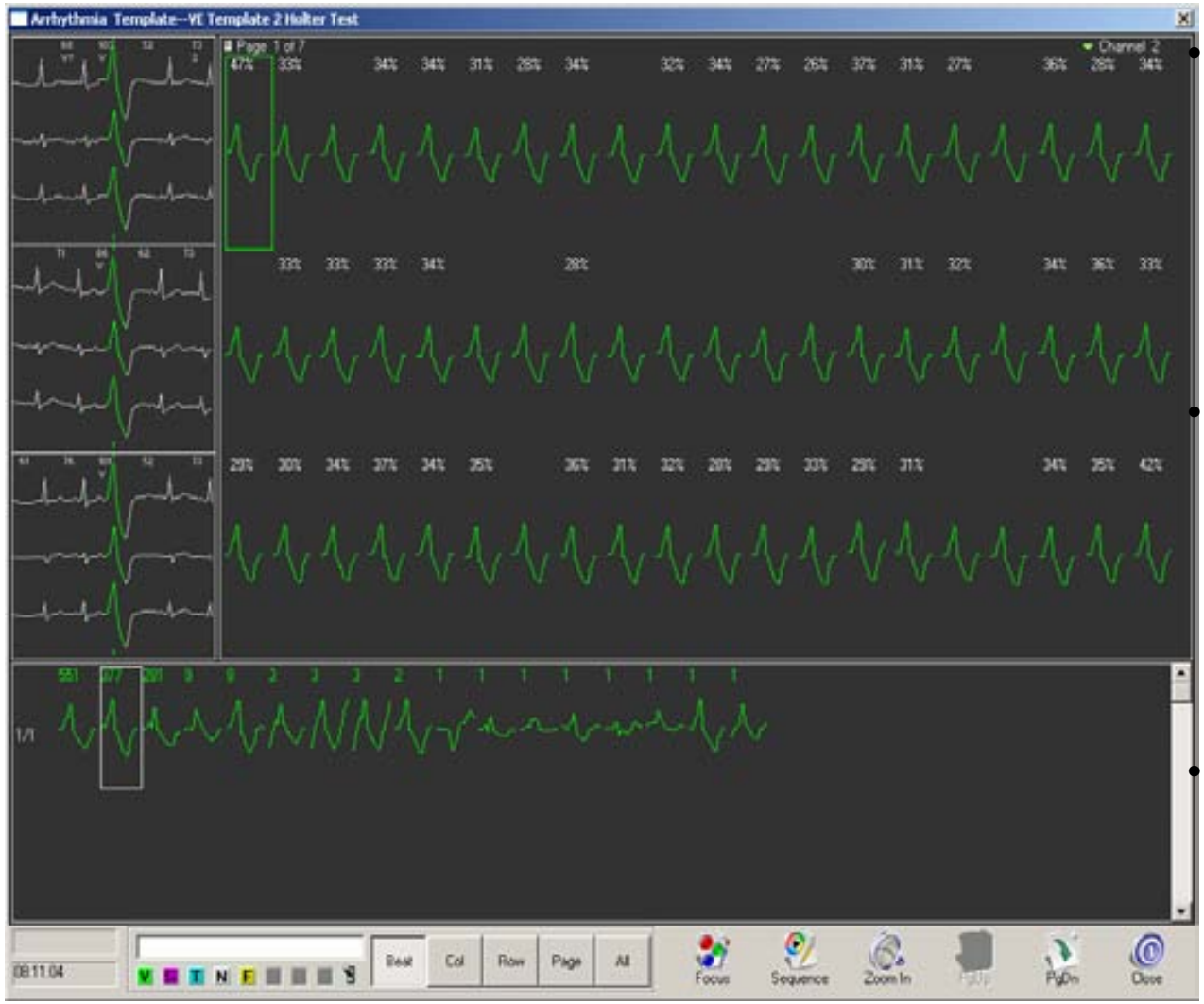
- **This is the new “Double Morphology” Template Editing.**
- **A total of 1 VE beat was detected in the first Template. You can see the 3-channel ECG also.**
- **This arrhythmia edit display is made up of 3 components. They are the 3-channel ECG strip, the green ECG beat box at the top of the display, and the white ECG beat box at the bottom of the display.**
- **The next slide will show you the functions of each of these components..**

Arrhythmia Template Editing



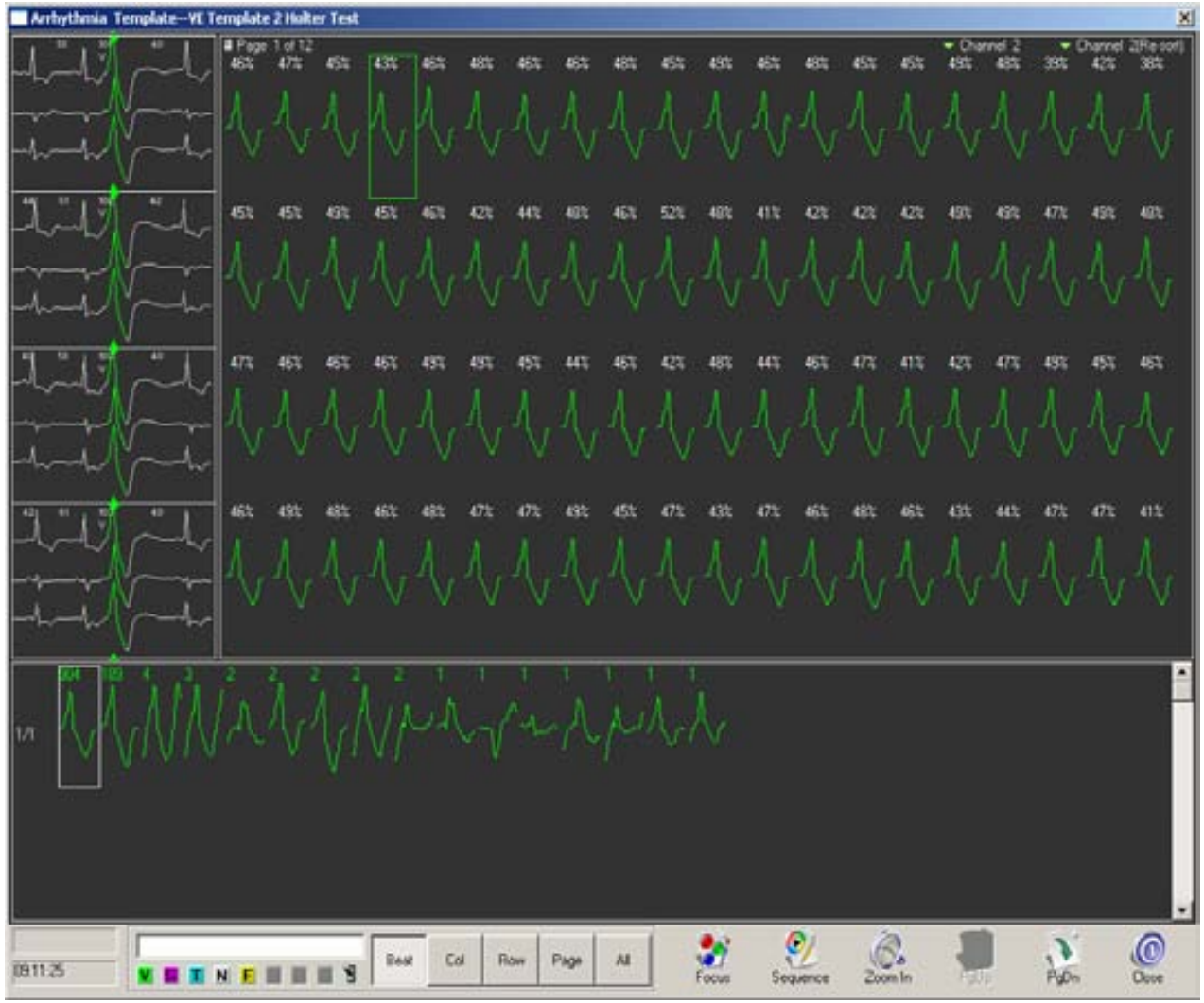
- **This is VE Template 2. It has about 1,100 VE beats in it.**
- **The white box in bottom display shows there are 904 beats (of the approximate 1,100 beats) with the same shape Morphology.**
- **The 60 green VE beats shown in the large box area are the first 60 VE beats of the 904 from the small white beat box. Since all 904 VE beats came from the same Morphology, you do not need to view the next pages of 60 VE beats, but if you desire, you can see all 904 by pressing PgDn (or mouse click on PgDn icon.**
- **If you point & click on the next Morphology (the small white beat box at bottom of display), you can immediately review all of these VE beats. The Z & X keys will also move the white box.**

Arrhythmia Template Editing



- **The green box at top of display can be moved from beat-to-beat by the arrow keys, or point the mouse arrow and click. Try this a few times.**
- **If the green box beat was an artifact, you would need to remove it from the VE file. Either click on the yellow “F” icon at bottom, or press F key.**
- **The VE beats in the column with the green box are shown as a mini ECG at the far left. If you move the green box to the 2nd column, you will see a new column of ECG**

Arrhythmia Template Editing

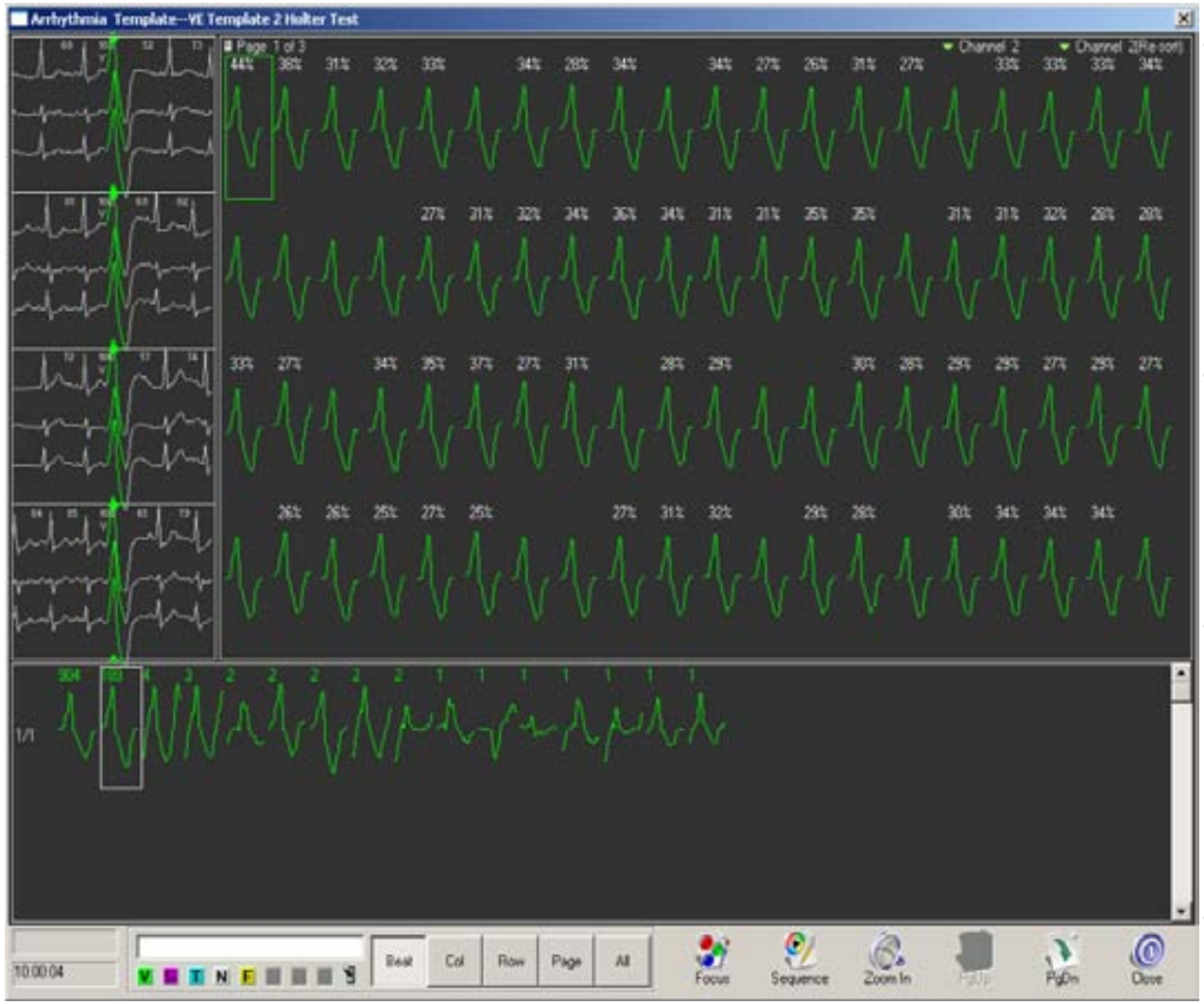


- You moved the green box to this new location by simply moving the mouse narrow and a left click.
- If any beat is not a VE, you can instantly change it to a SVE, Aberrant, Normal, or Artifact with a mouse click or key press.
- The Pacemaker program has other selections.
- If you want to enlarge the ECG, you can double left click, or click on Zoom, or press the Enter key.

Arrhythmia Template Editing

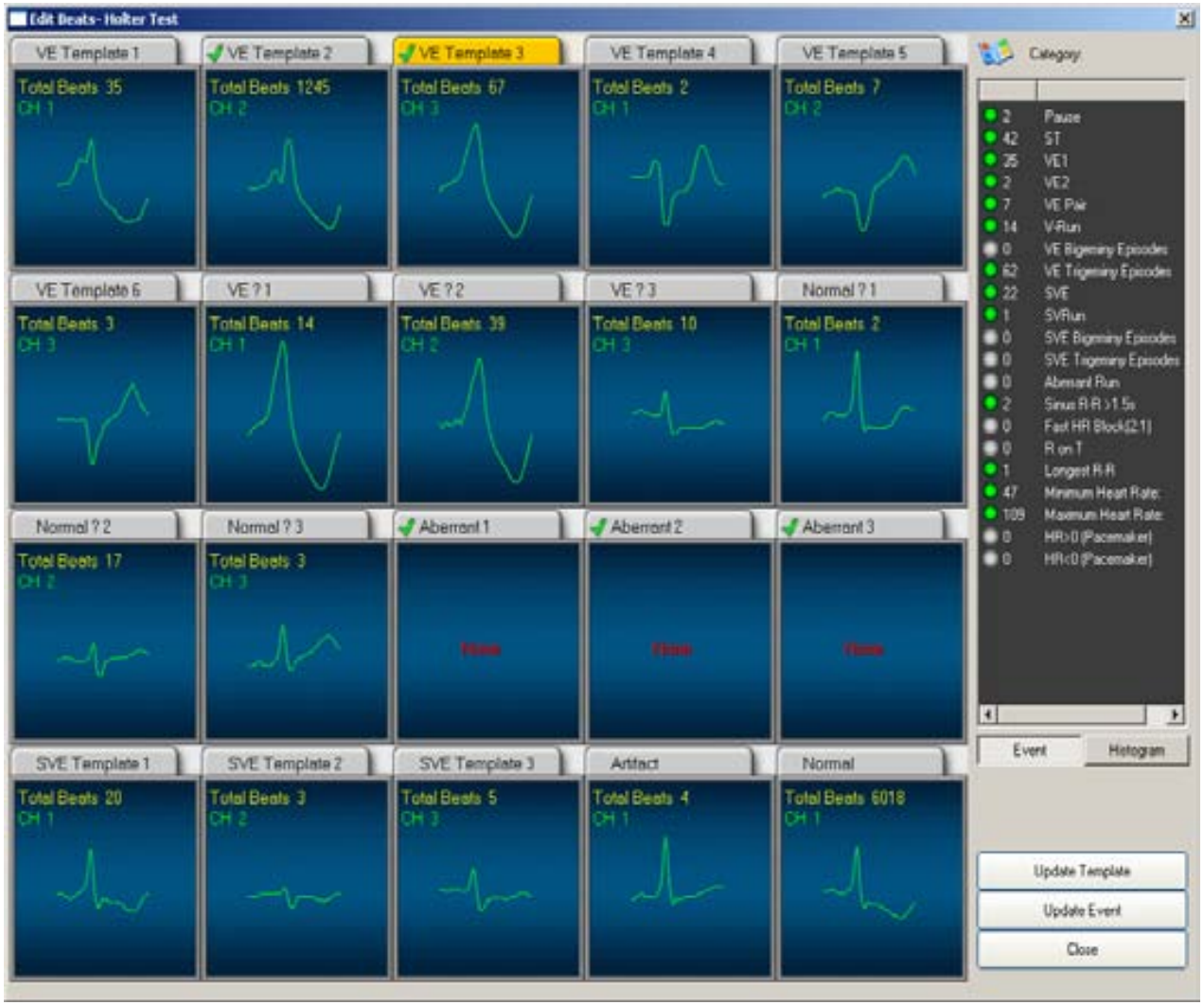
- The blue box with red line above is the VE beat that had the green box in the prior slide.
- You can see that the beat is a VE, it is labeled with a V, and the small yellow box on top is on the same beat, and it is colored green.
- Green beats are VE; Majenta = SVE; Blue = Aberrant; White = Normal; and Yellow = Artifact.
- To return to Template editing, click on Close or press the ESC key.

Arrhythmia Templates Editing



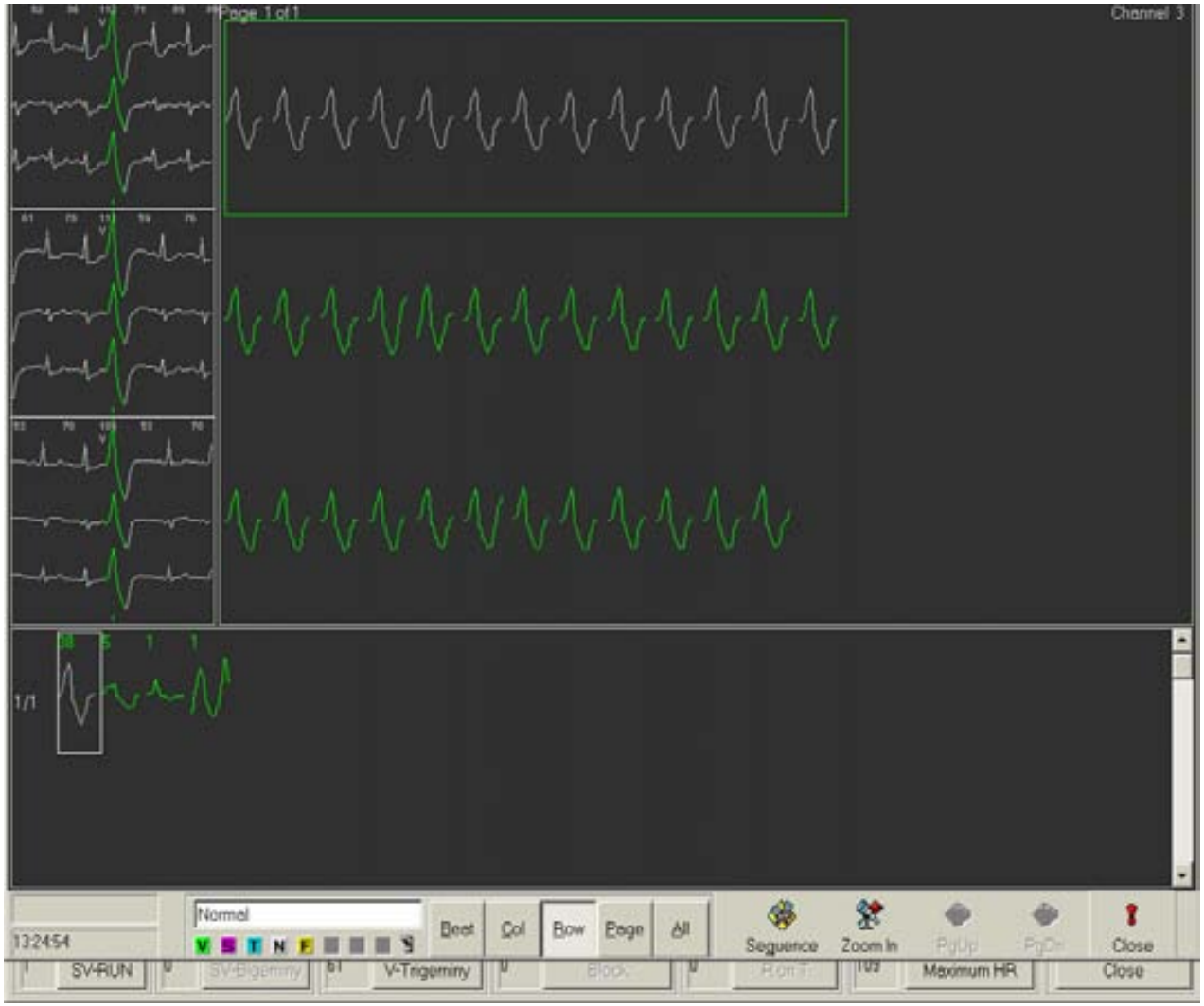
- Up to 60 VE beats are shown on each screen display. To see a new page, click on PgDn icon, or press the PgDn key, and the next 60 VE beats will appear.
- However, since all of these beats are the same VE beat Morphology, you will not need to view all of them.
- Move the white beat box to the next ECG Morphology, and you can immediately verify that all 189 beats in this Template are VE beats.
- The key to editing and removing VE beats is to look for Templates at the bottom that do not look like VE beats.

Arrhythmia Templates Editing



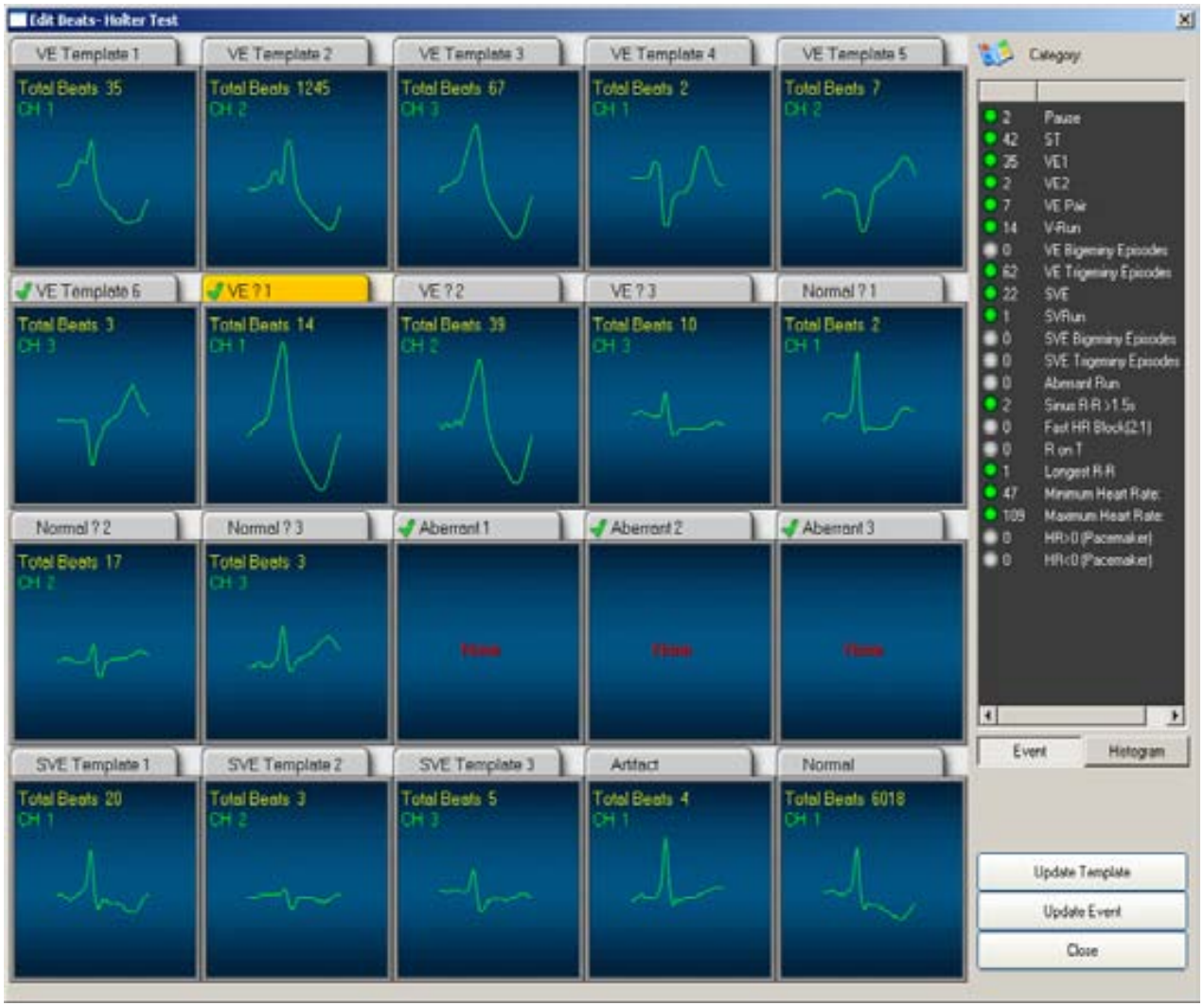
- When you Close from the prior screen display, notice the yellow header has changed to VE Template 3.
- This Template includes VE beats that were detected as positive QRS' in Ch.3.
- The next 3 VE Templates will be the negative going QRS' that were detected in Ch.1, Ch. 2, and Ch.3.
- The green check mark at top of VE Template shows that the Template was edited.

Arrhythmia Templates Editing



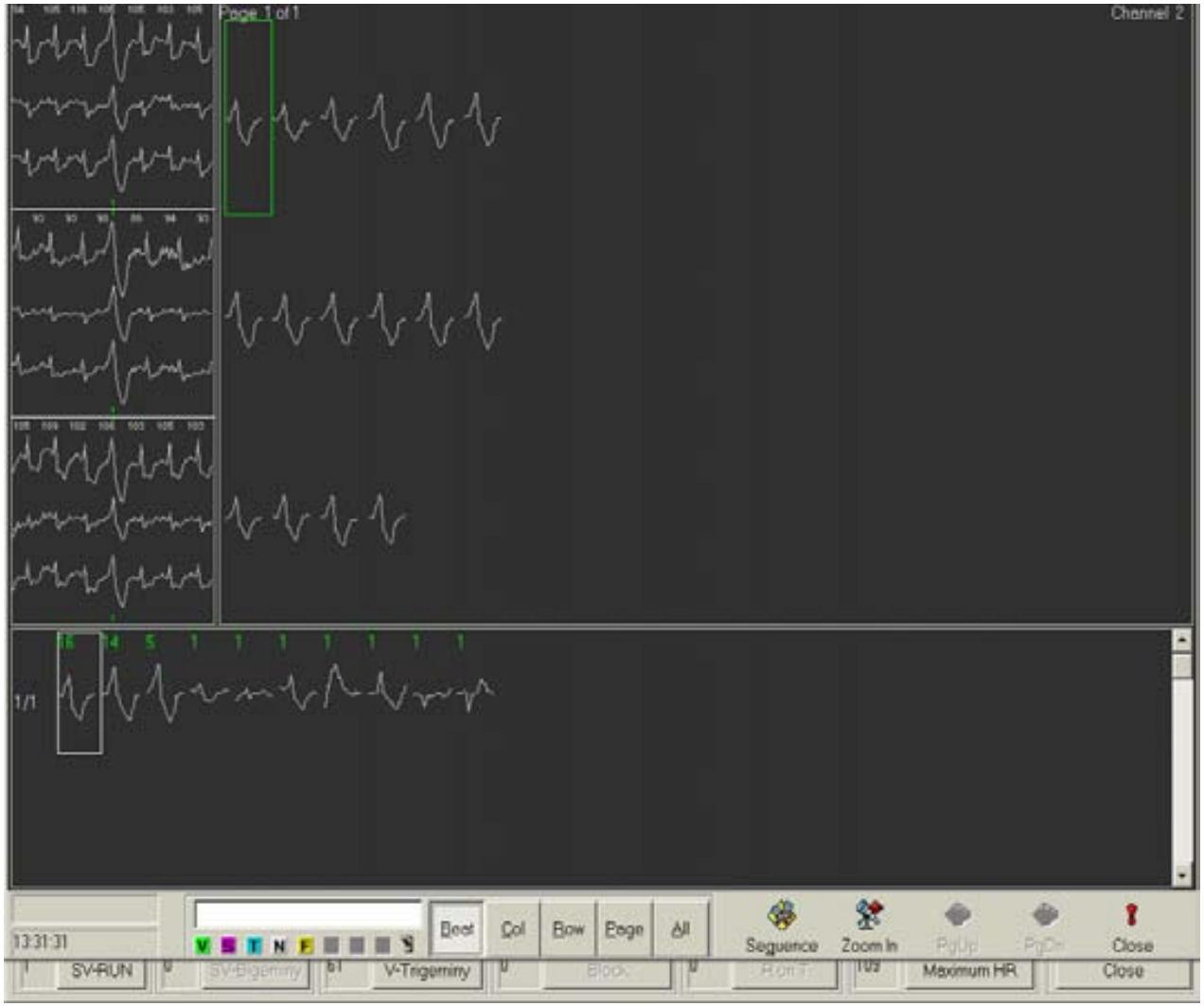
- **You can click on “Row” at bottom, and box all the beats in a row. The same for Column.**
- **With the Page command the entire Page is boxed**
- **The All command will include all the pages of VE beats.**
- **In the adjacent display, the row of beats was changed to Normal beats by pressing the N key, or a mouse click on the N icon.**
- **If you use the Page command, and surround the entire page, and press th e “N”key, all beats on the page would be Normal.**

Arrhythmia Templates Editing



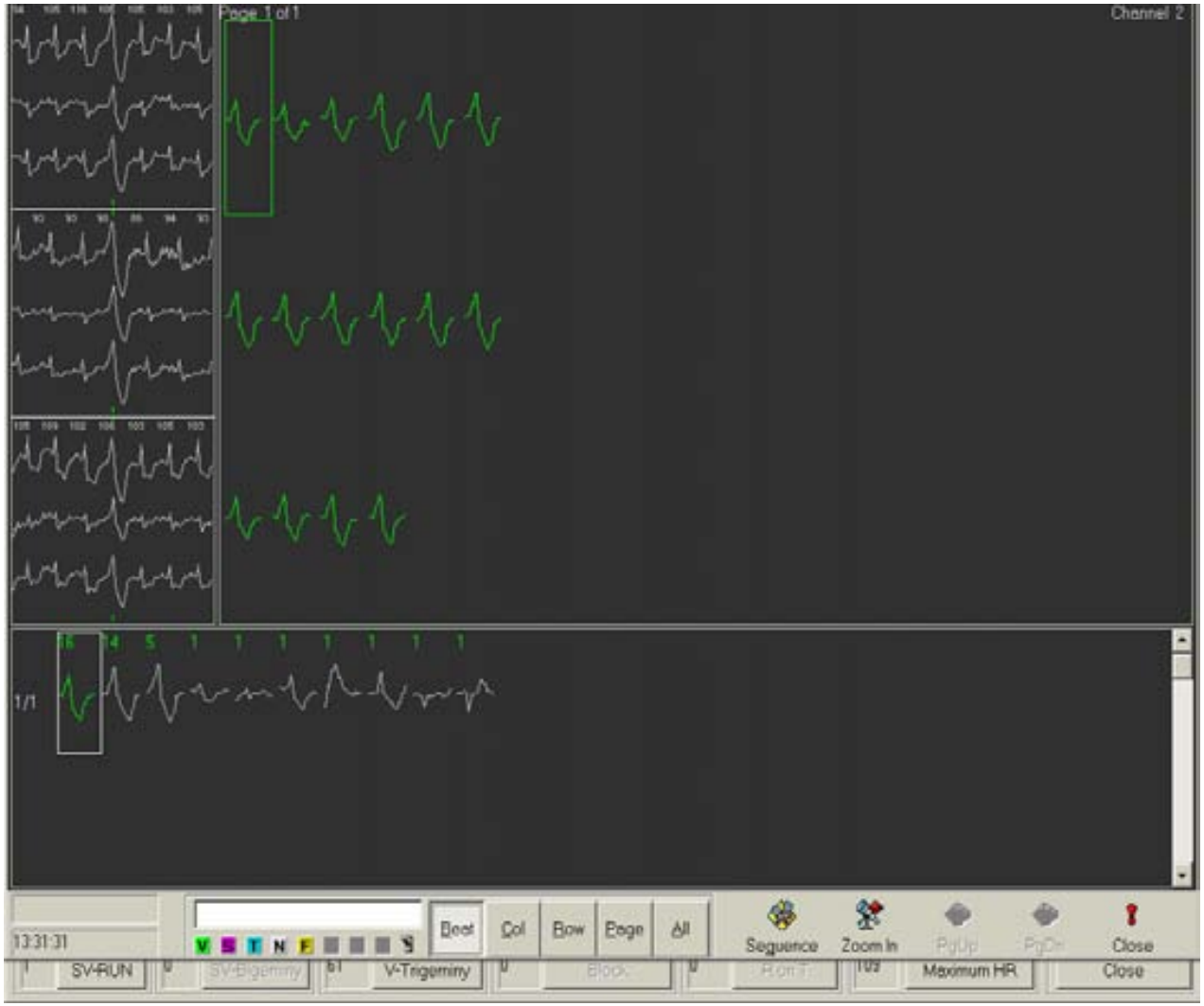
- **After editing the first 6 Templates, the next 3 are VE?1, VE?2, and VE?3. These are borderline VE's that did not qualify for the first 6 templates.**
- **When you click on VE?1 you will notice that all of the beats are colored white. The white-color is for Normal beats.**
- **Therefore, you need to color the VE beats the green color.**

Arrhythmia Templates Editing



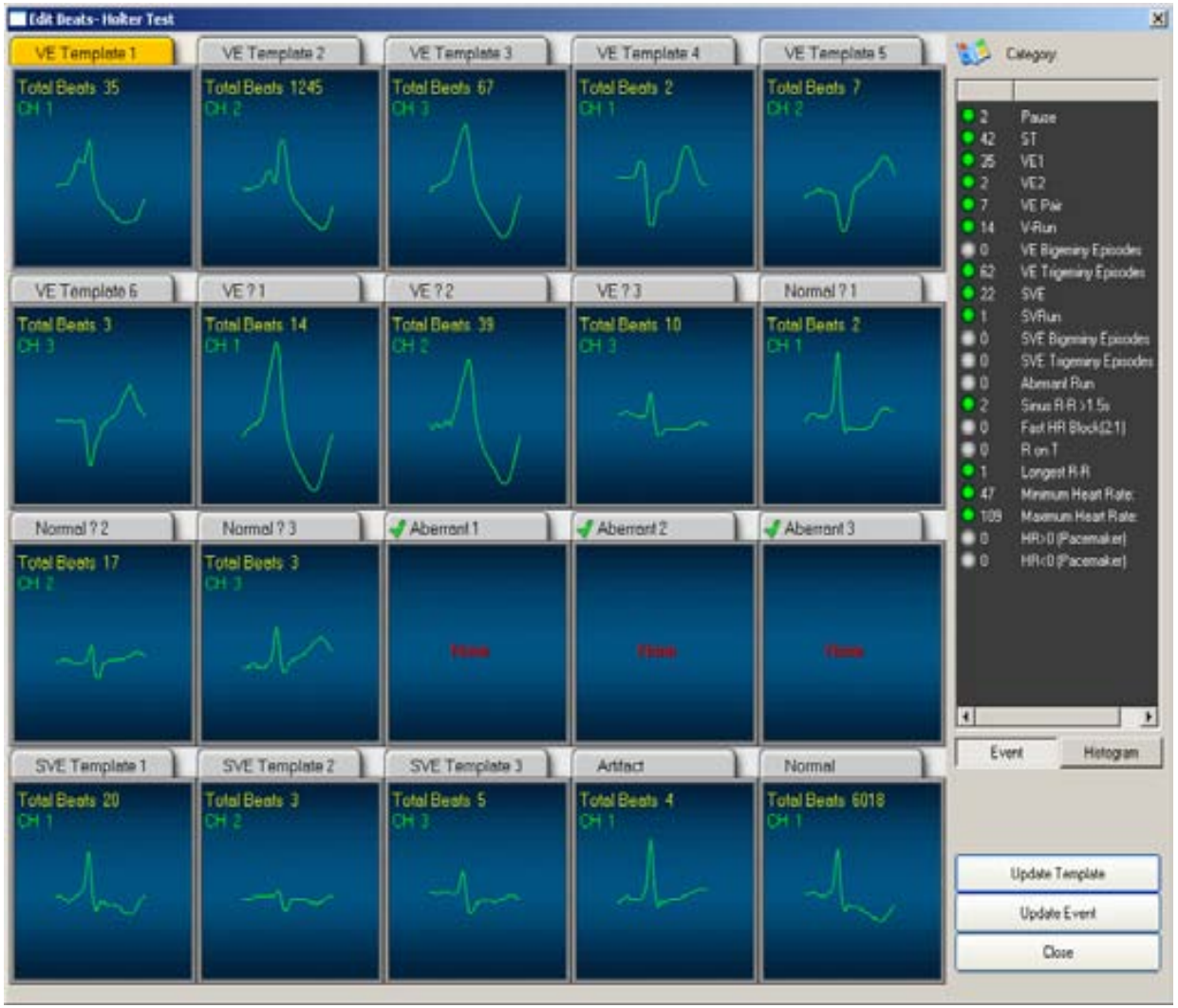
- **This Template is VE ? 2. All of the beats are the white color, which means the Holter Analysis will label them Normal, until you make the VE beats the green color.**
- **All of the displayed beats need to be green. Click on the Page icon, and click on the V icon (or press the V key), and all will be green VE beats.**
- **Move the white box at bottom of display to go from Template to Template, and make all VE beats the green color.**

Arrhythmia Templates Editing



- **Note that all the beats have been changed to green VE beats.**
- **When you move the white box in bottom half of display with either the X&Y keys, or mouse arrow and click, all of the beats for that new Template will be shown in the top half of the display.**
- **If you want to change all of the Templates in the bottom section, click on the switch icon (to the left of the Beat icon) at the bottom of the display, and click on V icon, or press the V key.**

Arrhythmia Templates Editing



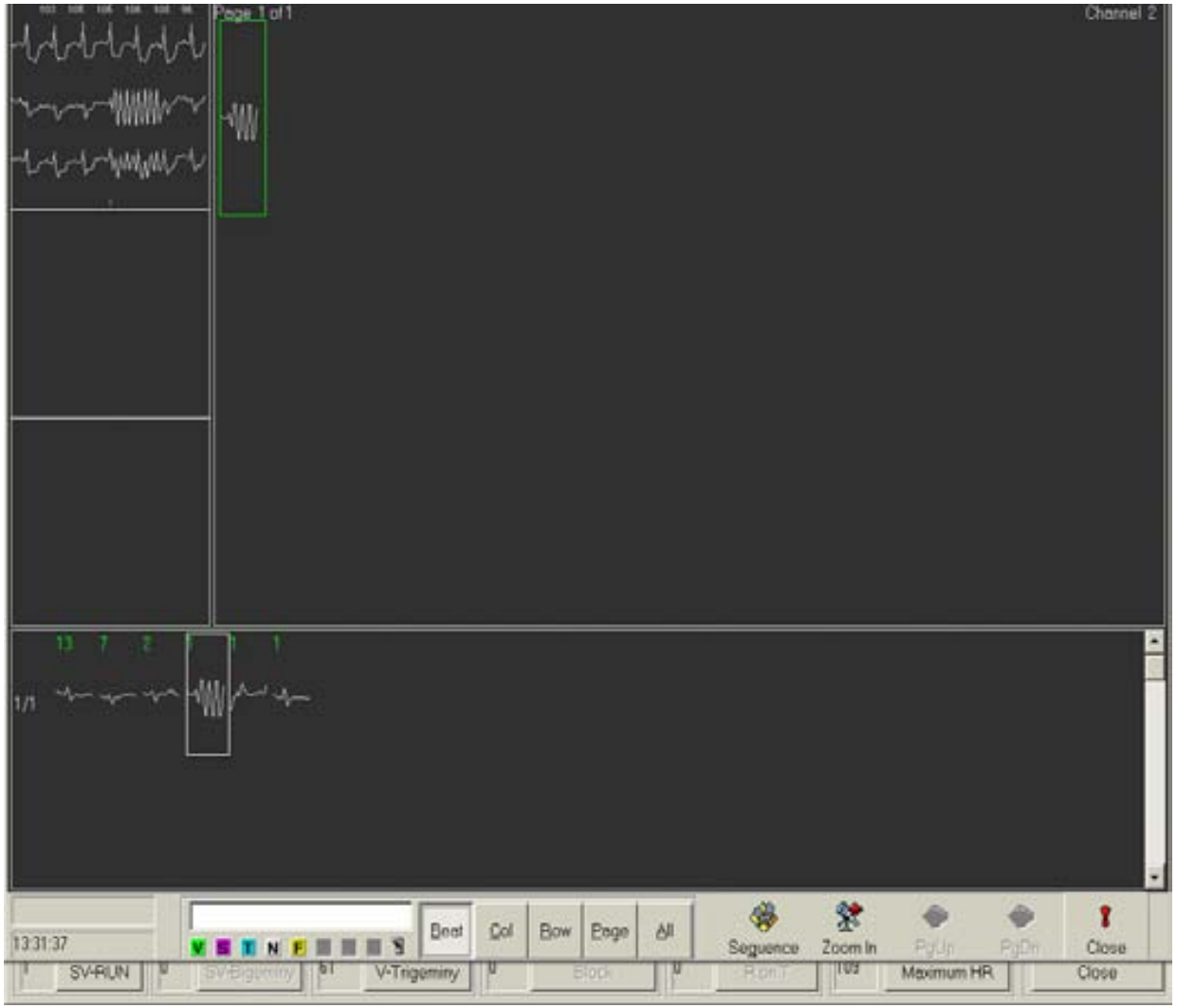
The Templates for VE?1, VE?2, and VE?3 were for beats that did not fully qualify for the first 6 VE Templates.

The next 3 Templates are Normal?1, Normal?2, and Normal?3. Beats in these 3 Templates had even less qualifications for VE beats.

Usually there are a small number of VE beats in these 3 Templates.

All beats need to have a label of VE, SVE, Aberrant, Normal, or Artifact.

Arrhythmia Templates Editing



We are now in Normal?2.

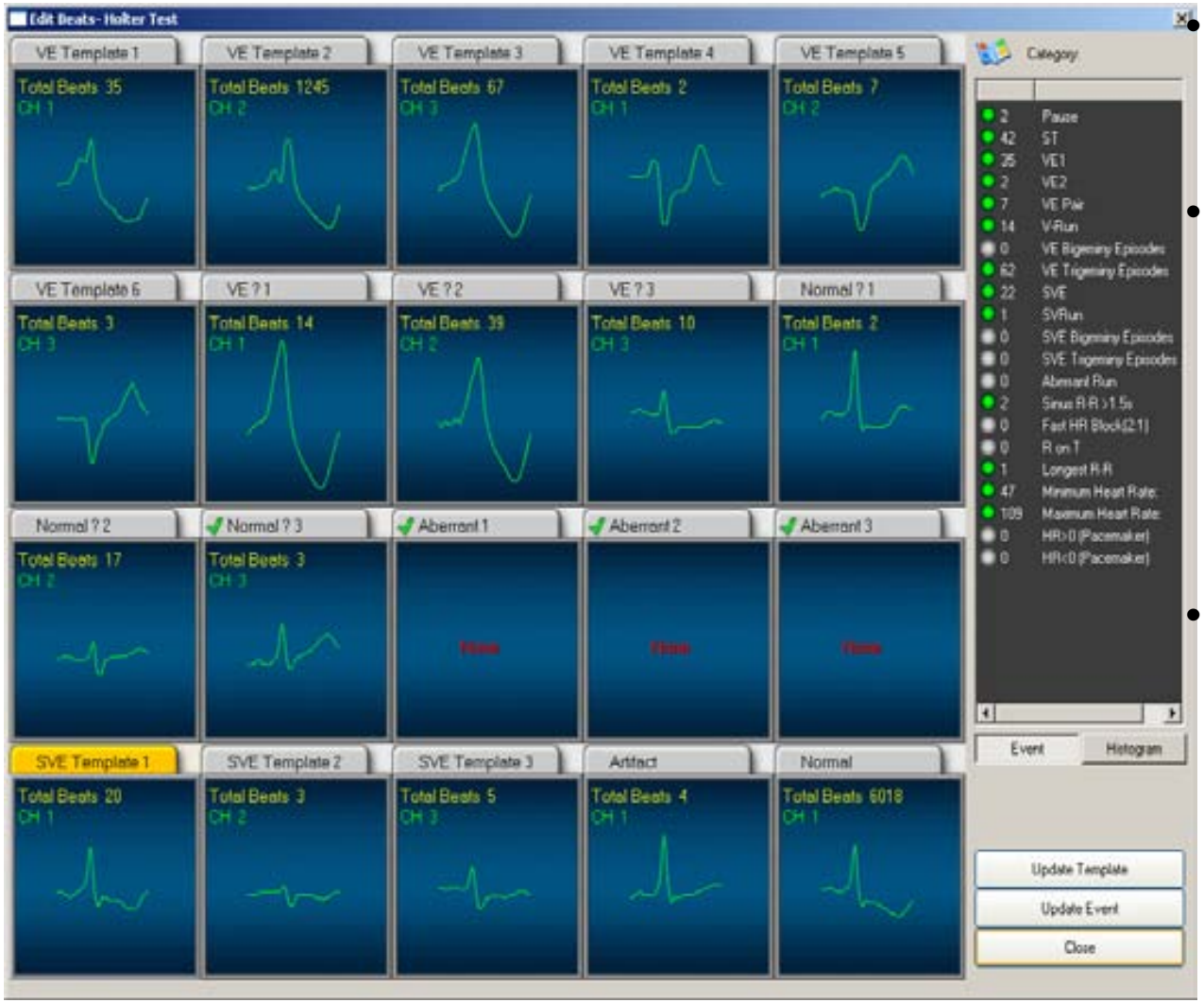
All of the beats are normal, except the artifact where the white box is located in the bottom display.

To label as artifact, simply press the F key, or click on the F icon.

The beat will change to the yellow color, and the beat will be removed from the Holter analysis file.

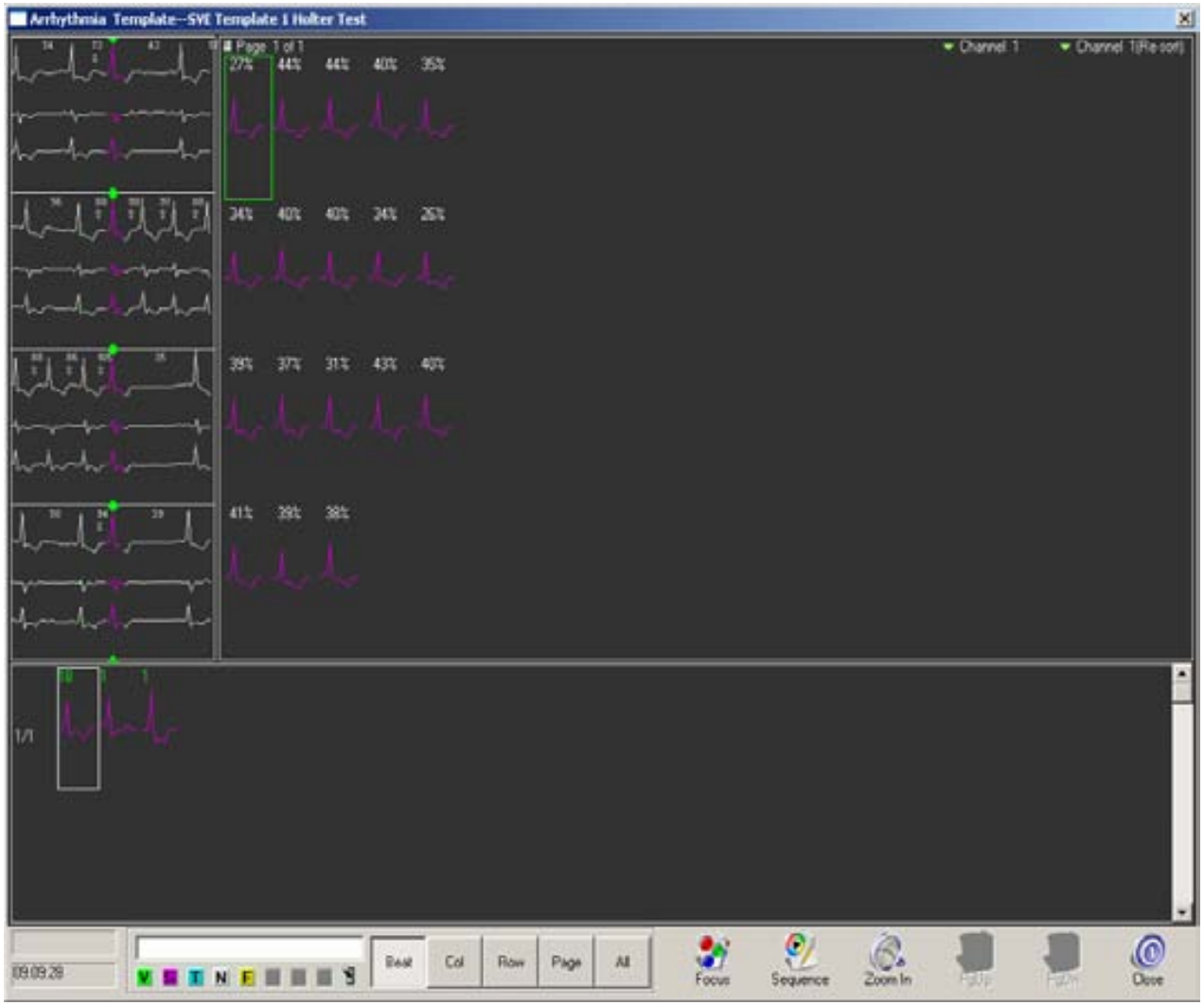
Note the Channel word at the top right. Move the mouse arrow to the word, and left click. This can be helpful sometimes in seeing a better ECG channel.

Arrhythmia Templates Editing



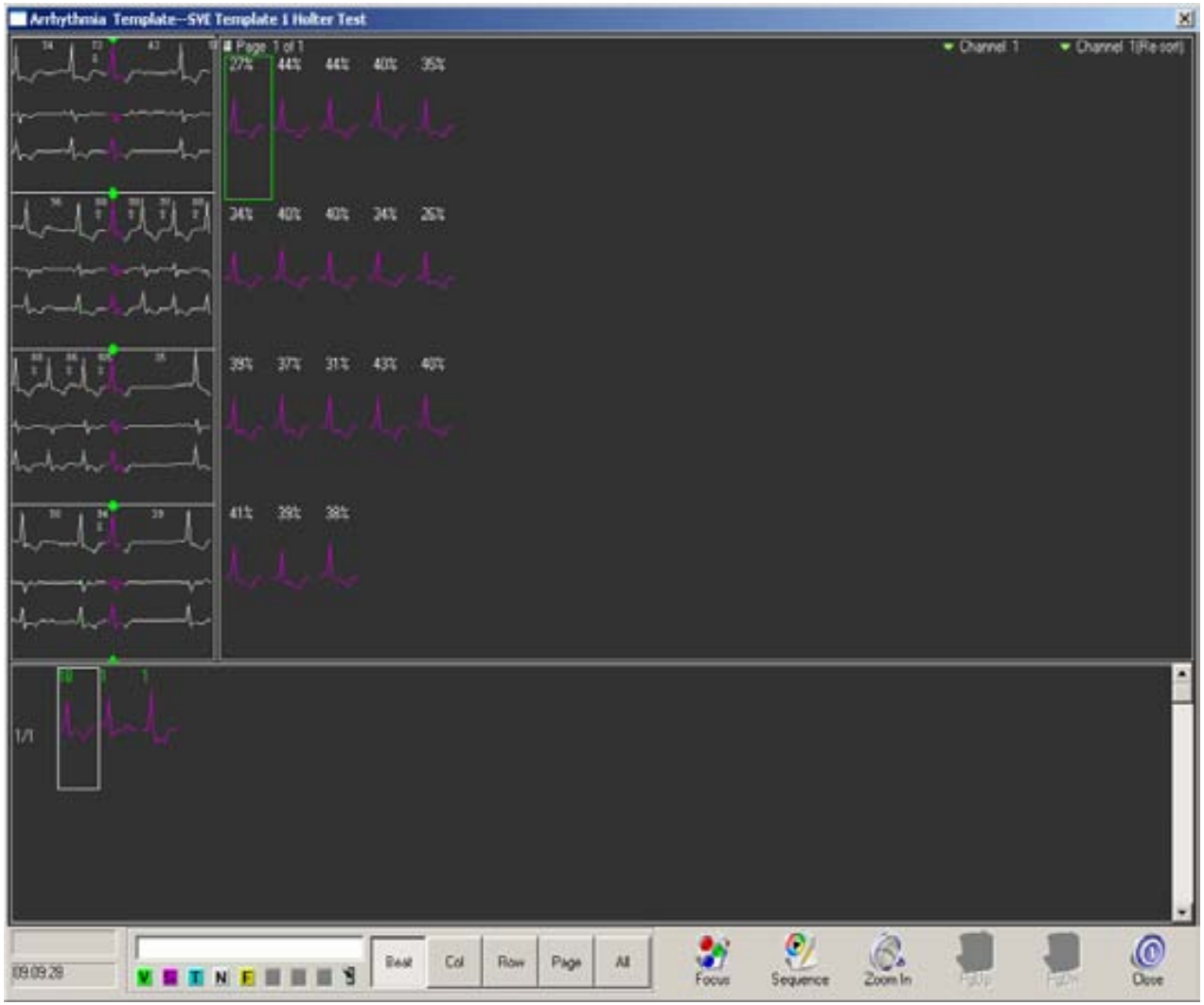
- There are no beats in the 2 Aberrant templates.
- The yellow border is now on SVE Template 1. The next 3 templates are for viewing SVE beats. The SVE beats are the majenta color.
- If the beat is a SVE, then leave in the majenta color; if a beat is not a SVE, then change to a artifact (F - yellow), VE (V - green), or Normal (N - white).

Arrhythmia Templates Editing



- When you enter into SVE Template 1, you will see that the adjacent display shows all 20 of the beats in the majenta color for SVE beats.
- The editing process is the same as for VE beats.
- The white beat box represents 18 of the 20 detected SVE beats. All 18 are shown in the top part of the display.
- By moving the green beat box from column to column you can verify in a few seconds that all of the 18 SVE beats are SVE beats by comparing to the 3-channel ECG at the left of the display.

Arrhythmia Templates Editing



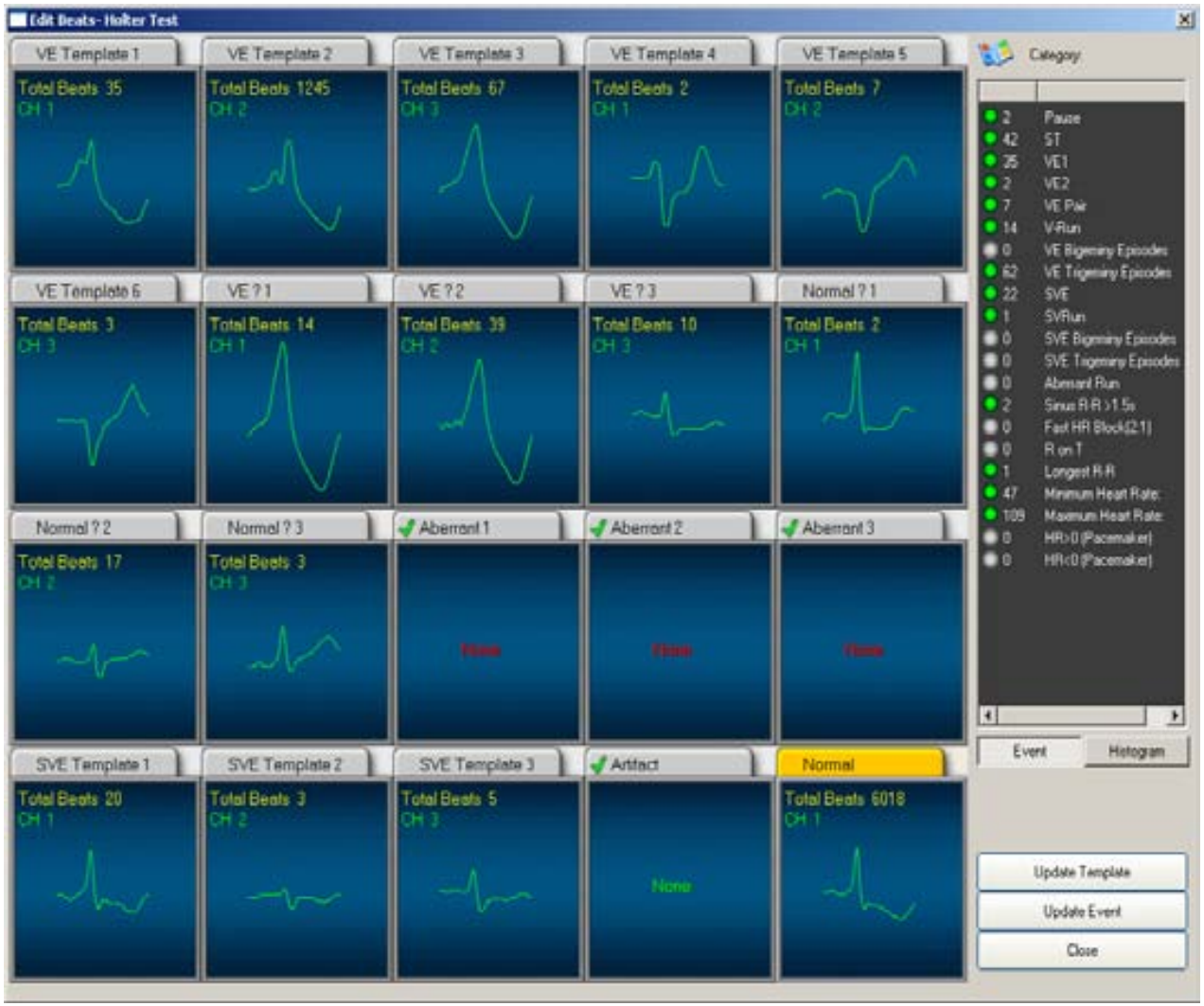
The Sequence icon or Q key is very useful for sequentially seeing Template ECG beats with small quantities in the enlarged ECG view area. Place the green box on the 1st beat, and press click on Sequence icon at bottom.

Now all 18 SVE beats can be seen as standard size 8-second ECG strips for SVE verification. You simply Sequence from one SVE strip, to the next, to the next.

When you see the beat is a SVE, press the S key (for SVE) and the next ECG strip will appear.

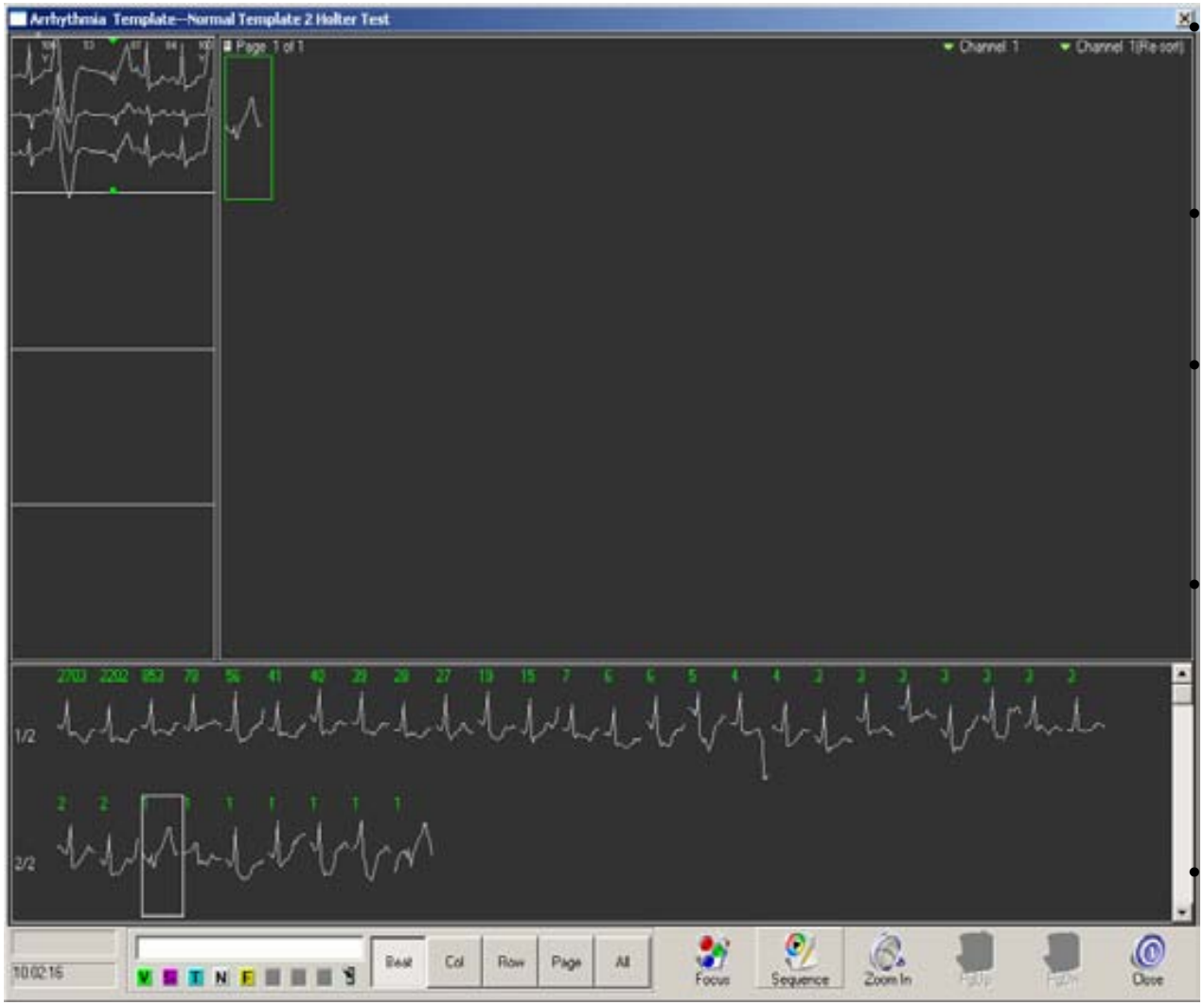
If needed, you can edit the beat by pressing the V, N, or F key.

Arrhythmia Templates Editing



- **The Normal Template clearly shows the power of this new “Double Morphology” Template editing.**
- **In this 2-Hour Demo file, there are only about 6,000 Normal beats.**
- **You can see how quickly you can verify all the beats in the Normal Template with this new technique for Holter arrhythmia analysis.**
- **Click on the Normal Template.**

Arrhythmia Templates Editing



All 6,100 beats that are detected as Normal beats are displayed in this Double Morphology Template.

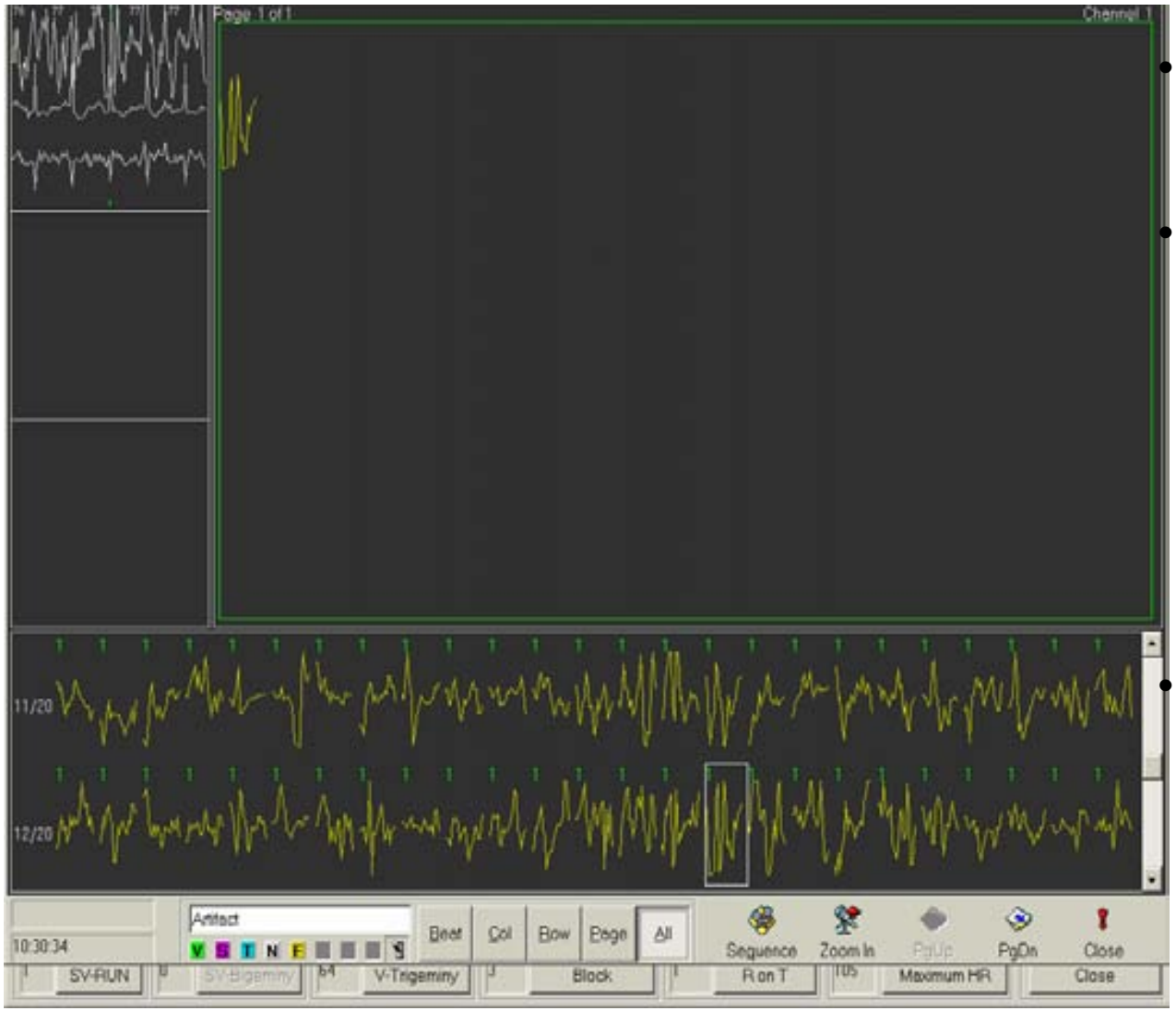
In less than 15 seconds, you can see, and re-label the 3 beats that are not Normal beats.

The first beat is shown with the white beat box because you moved the white beat box to an ECG that did not look like a normal beat.

You can quickly edit this beat, the beat to its right, and the end beat as VE beats (or whatever you want), and these 3 beats were pulled out of the 6,100 beats and properly labeled in just a few seconds.

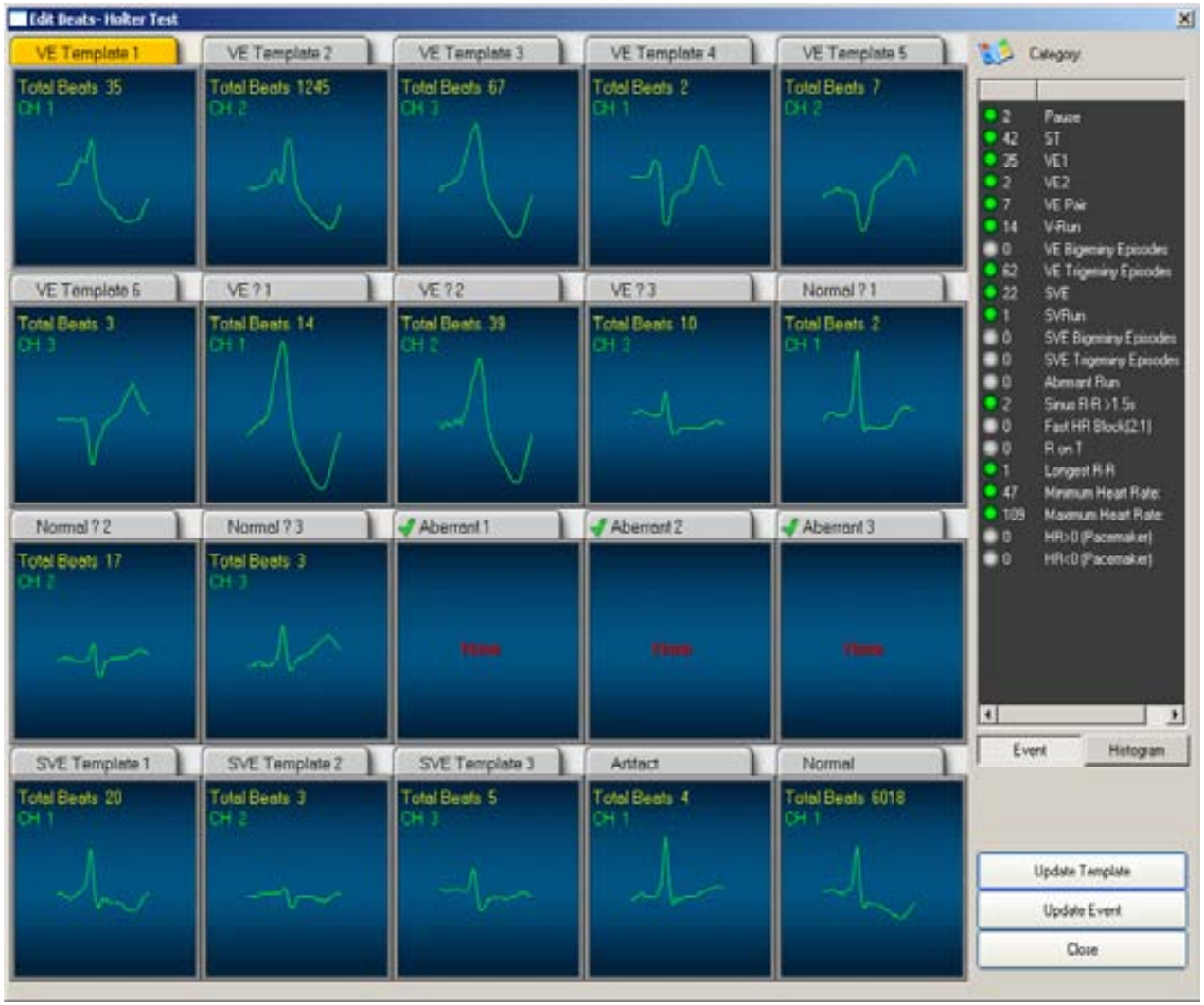
When you have completed the Template editing, you must click on the Update Template icon to save your edits.

Arrhythmia Templates Editing



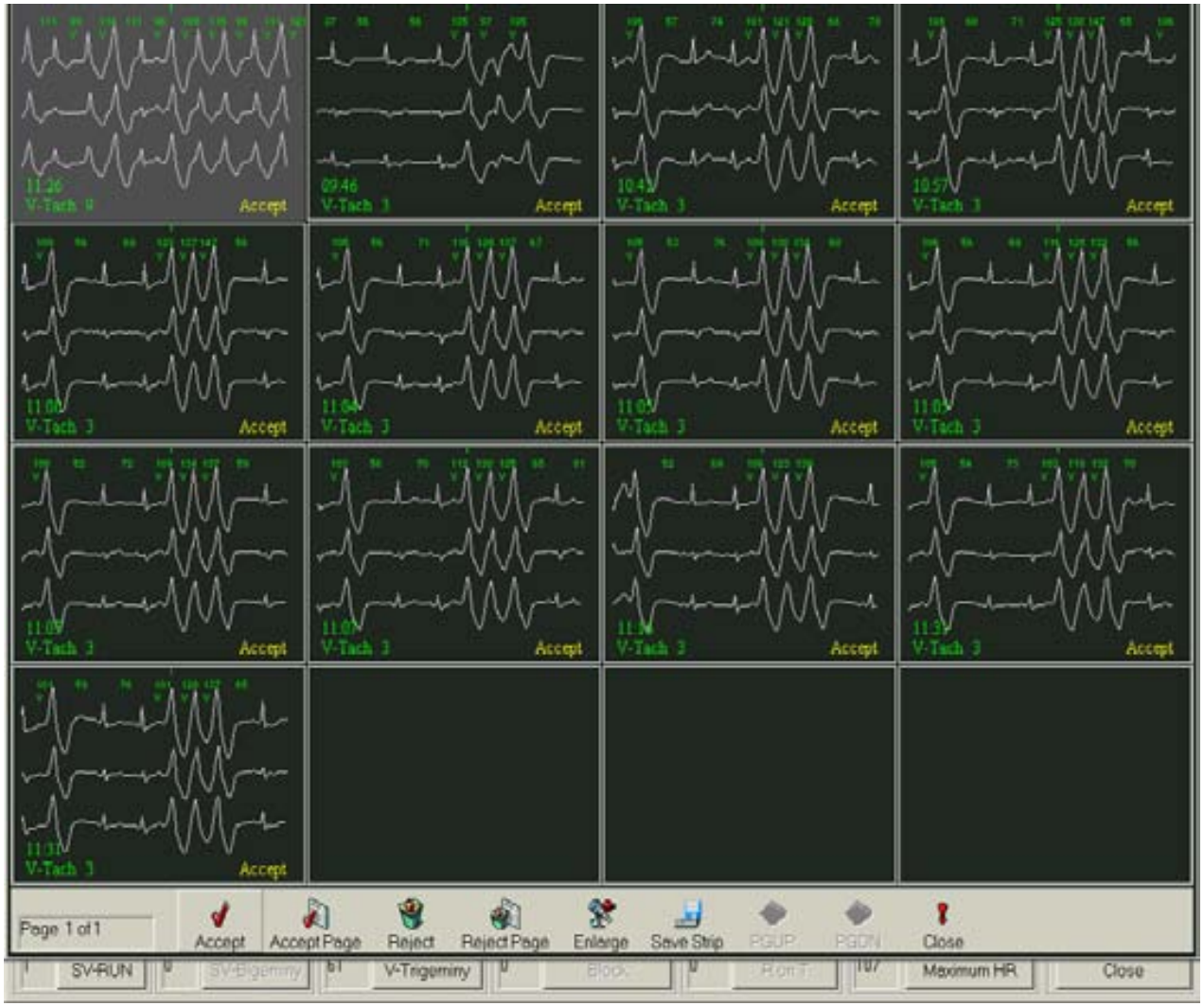
- **Good techniques for fast Template Editing:**
- **When you see all artifact beats in the lower section, click on the switch icon to the right of the color label icons, and then press the “A” key (for All), and then the “F” key (for artifact).**
- **When you have an obvious VE Template and a large number of VE beats, they will all be VE’s, and you do not need to take the time to view the VE beats in the upper display section.**

Arrhythmia Templates Editing



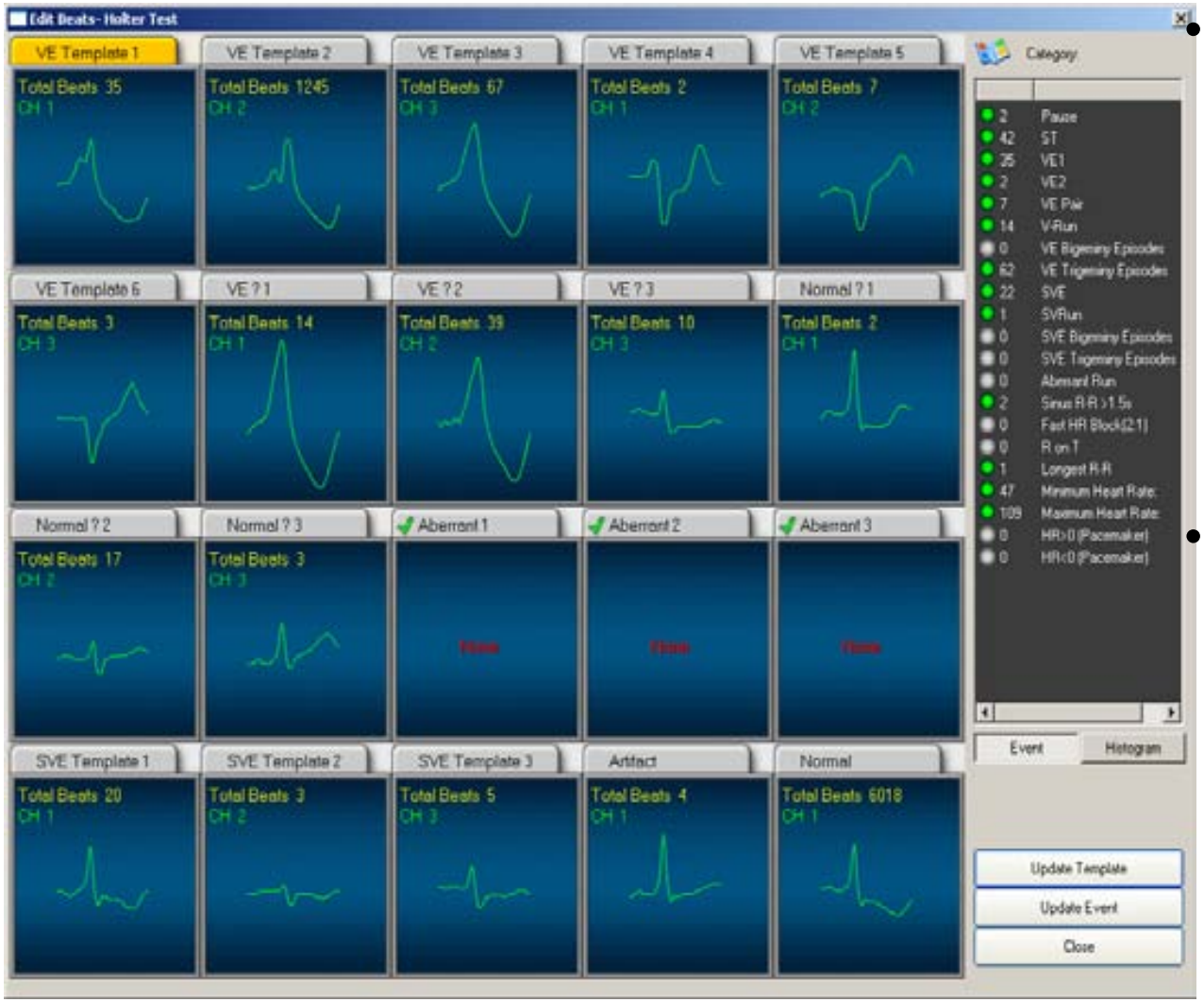
- **After clicking on the Update Templates icon, you will notice that the Pause icon at the upper right is green.**
- **Click on it to view and verify the 2 detected R-R intervals in excess of 2.5 seconds.**
- **Then ESC and return to this menu, and click on the other icons to view the abnormal ECG categories.**

Arrhythmia Templates Editing



- **This is the V-Tach icon. Note that the first V-Tach is the longest one.**
- **Play with editing by going to the last V-Tach and doing a double left click. The enlarged ECG appears. Put the mouse arrow on the last VE beat, and do a right mouse click. Then press N for a normal beat. ESC and ESC and go to Update Templates.**
- **Note that the V-Tach number changed from 13 to 12. Play with data.**

Arrhythmia Templates Editing

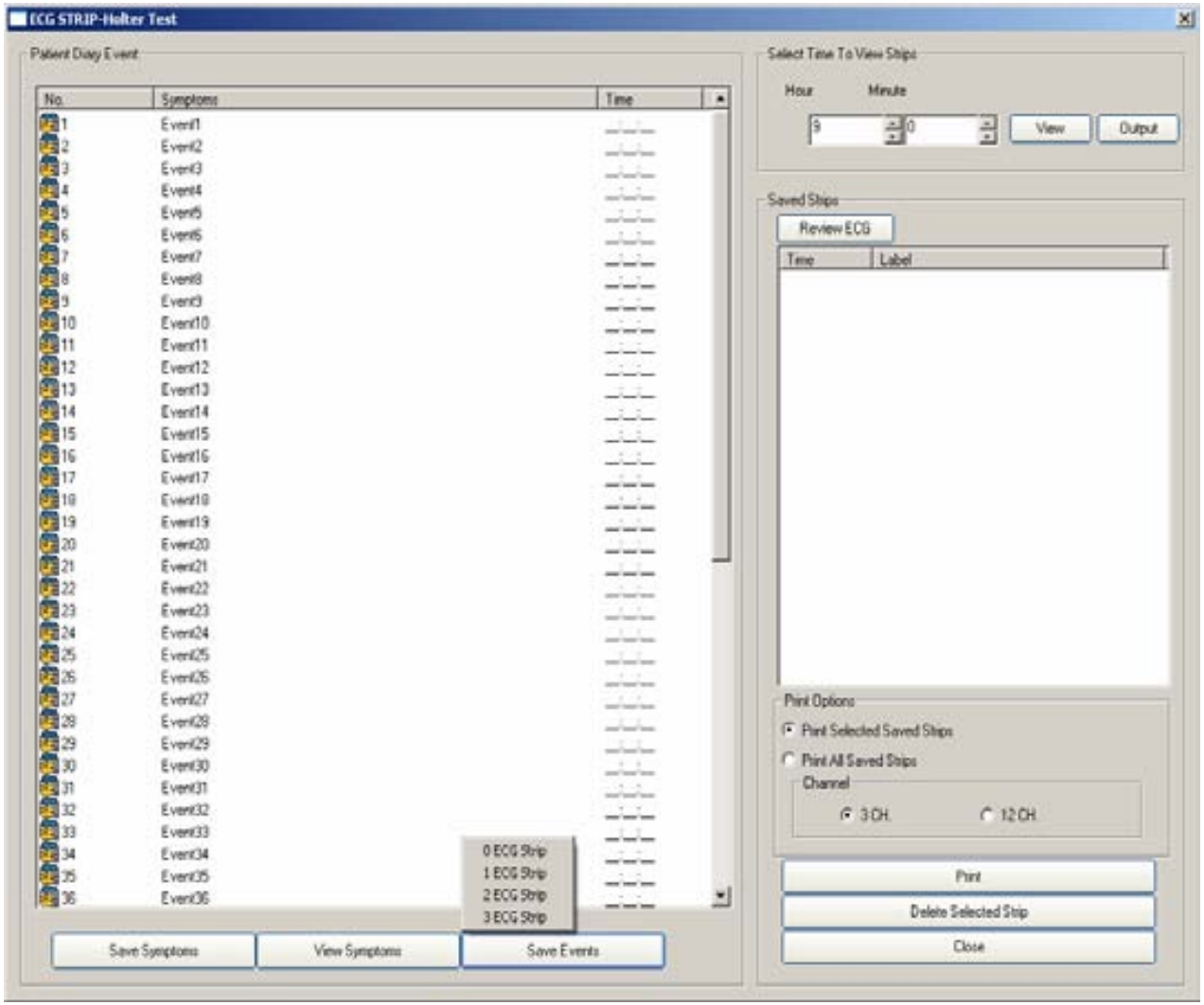


- After you have viewed (and perhaps edited) the Abnormal ECG Event icons, you must click on “Update Events” to save the changes.
- The purpose of Arrhythmia Templates Editing is for you to see and validate all the arrhythmia beats. After you practice a few times, it will take only a few minutes to perform this task.

Select ECG Strips

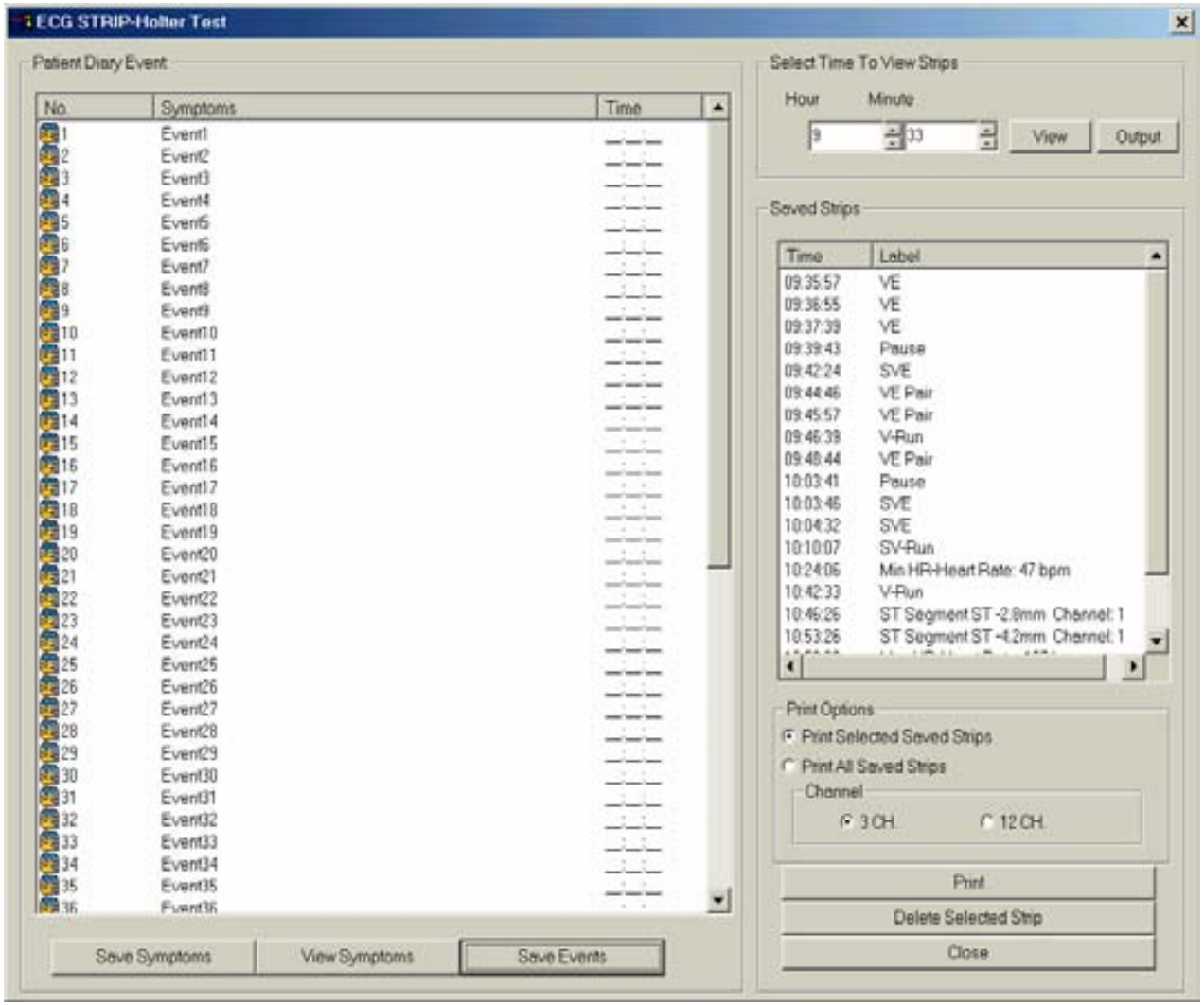
- **After you have Closed the Arrhythmia Templates Editing, you will return to the Data Access Choices menu.**
- **From this menu, move the mouse arrow to the "ECG Strip" icon, and left click.**
- **The next screen display will allow you to select the desired 8-second ECG strips for the Holter Report print-out.**

Select ECG Strips



- **This is the ECG Strip menu. Note that there is a “Save Events” icon at the bottom-middle.**
- **Move mouse arrow to Save Events, and do a left mouse click.**
- **A new window will appear, and it is asking you to select 1, 2, or 3 ECG strips from each of the Abnormal ECG Event icons that you had previously viewed and edited.**

Select ECG Strips

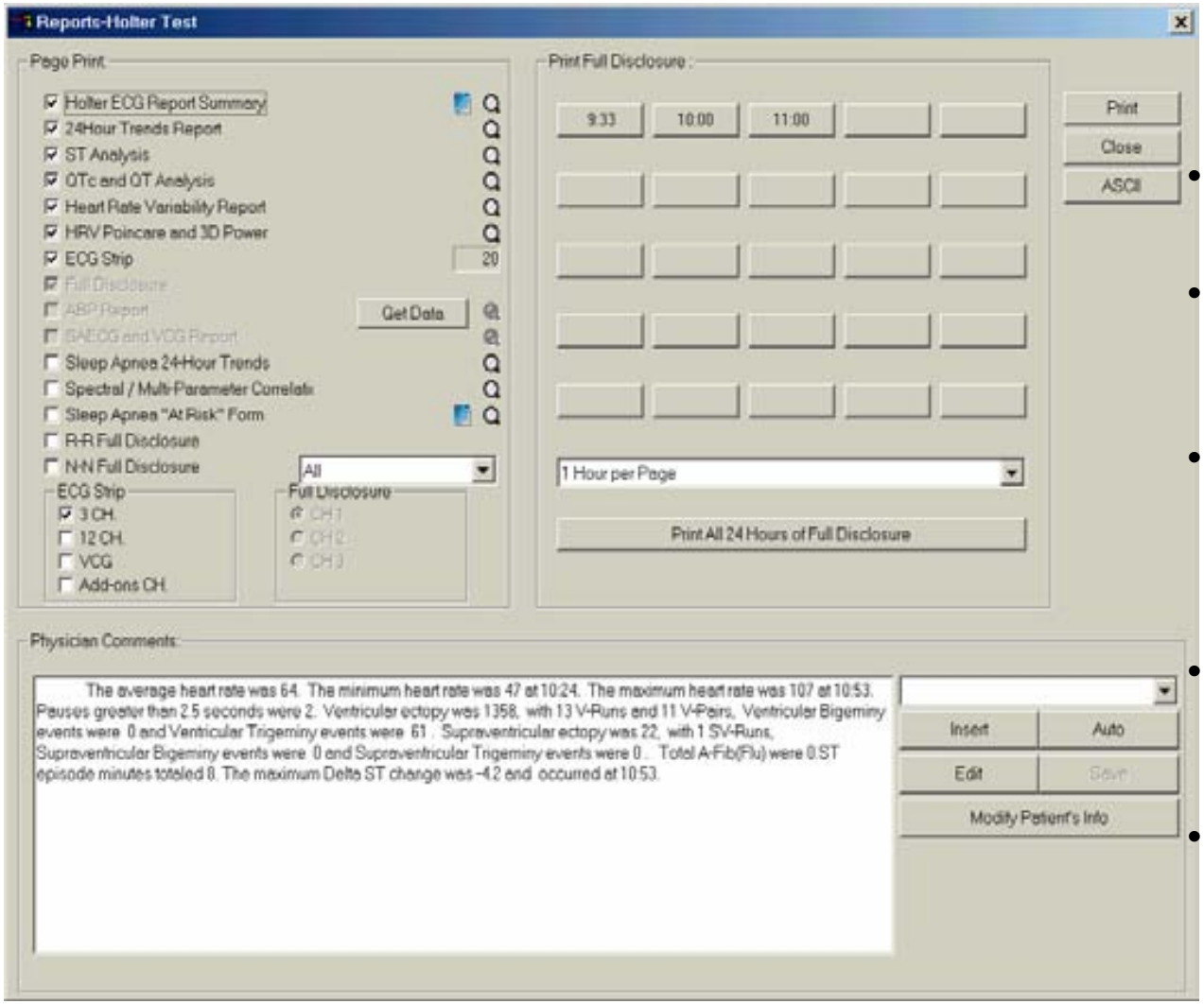


- When you click on “3 events” you will immediately see a listing of all these ECG strips on the right side of this menu
- See the manual for the many other functions of this menu.
- You can view any of the listed ECG Strips by placing the mouse arrow on a listing in the Saved Strips area, and then a double left click.

Select ECG Strips

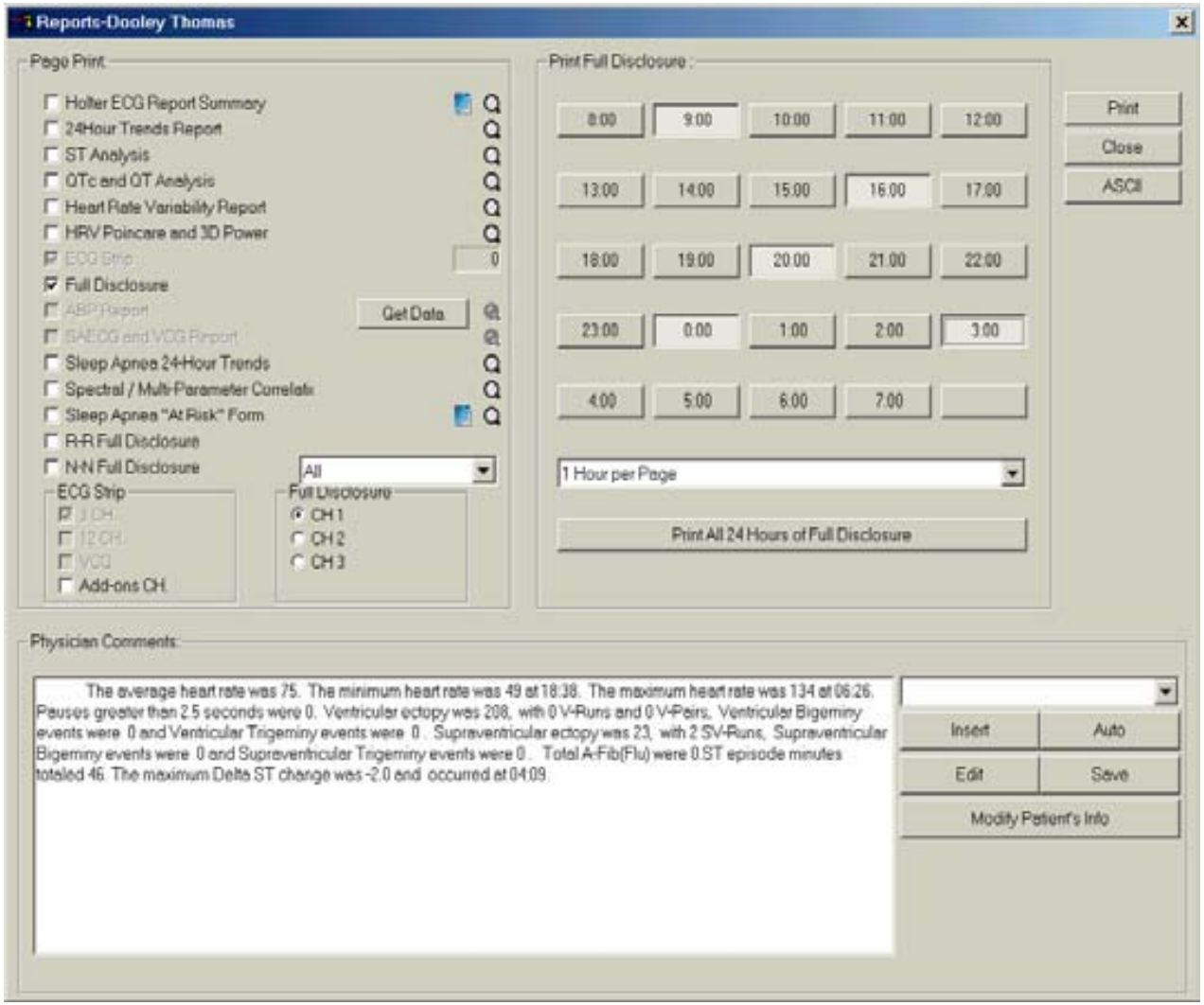
- This is the ECG Strip that was selected from the prior slide.
- It shows a significant ST depression.
- Note the 5 long green vertical markers. This is an electronic Ruler function. Click on the Ruler icon at lower right. Click on the small PP icon just above the large ECG. Place the electronic cross-hairs at the beginning of P, press and drag mouse to next P, and release mouse.

Print the Holter Report



- When you are in the Data Access Choices menu, click on the “Report” icon.
- This menu will appear.
- Check mark the pages you want to print.
- Print-Preview is the magnifying glass to the right of each report page
- See manual for the many other functions.
- To print, click on “Print” icon, and follow standard Windows print routine. Practice a few times, and all will take only a few minutes.

Print Full Disclosure



- **In the middle of display is a wide field bar for printing the 24-hour Full Disclosure. You can select either 1, 2, or 4 hours per page print.**

- **If you do not want to print all hours of Full Disclosure, then place the mouse arrow on a hour, and do a left mouse click. The hour icon will become white. You can select multiple hours, and then click on Print icon at top right.**

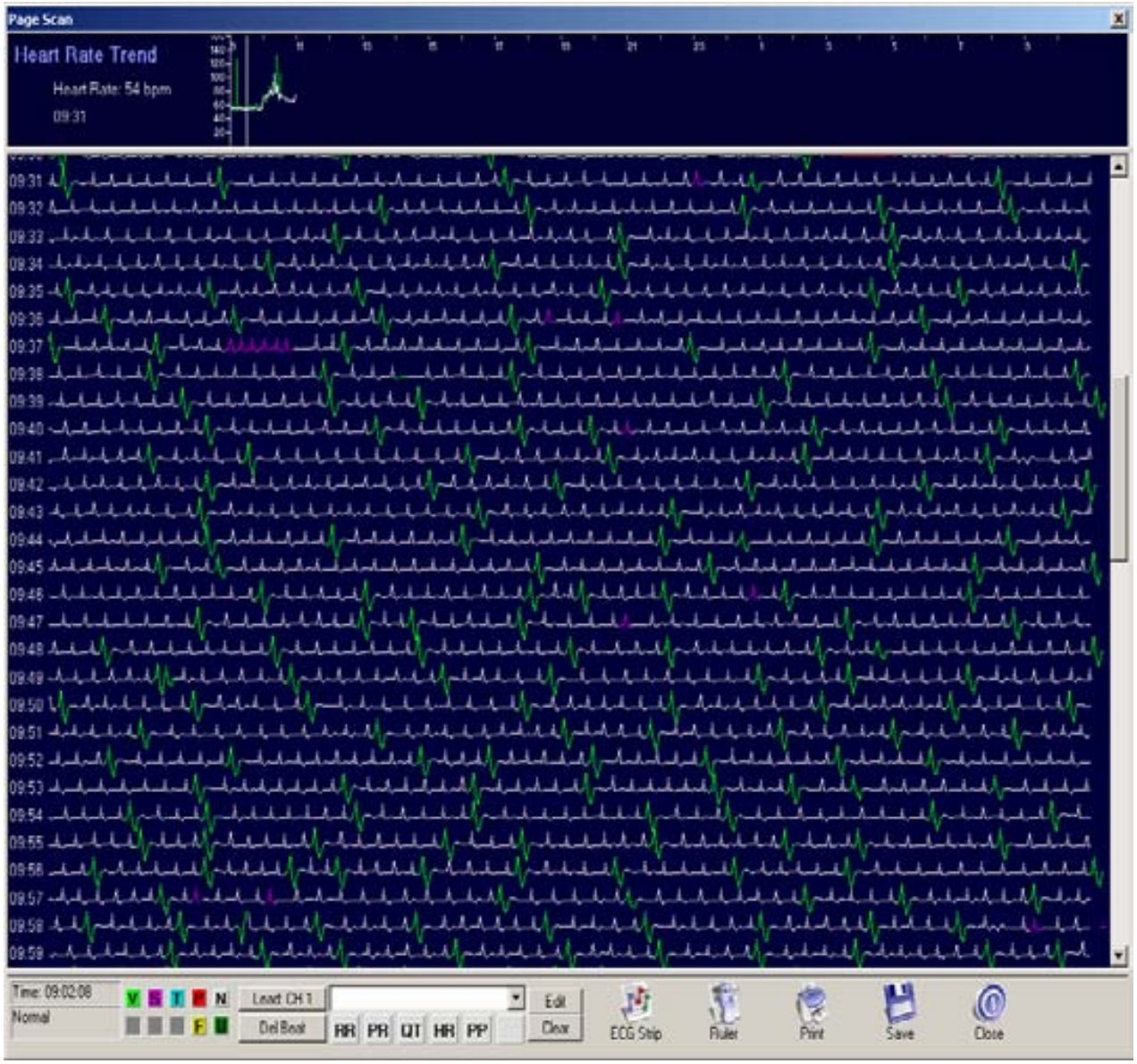
Page Scan

- When you click on the Page Scan icon, three selections will appear.
- Click on Page Scan, and the following display will appear.
- It will show you the Full Disclosure on the screen displays.
- All the beats will be color-coded for Normal, VE, SVE, Pause, and Artifact beats.

Page Scan

- **This is a 20-minute Page Scan. The normals are white, Pauses are red, VE's are green, SVE's are majenta, and Artifacts are yellow.**
- **Note the green rectangular box in the ECG at the upper right.**
- **Wherever that box ix moved by the mouse, the enlarged ECG is shown at the bottom of the display.**
- **The top of the display shows a 24-hour trend of heart rate. This Demo file is only a 2-hour Holter ECG file.**

Page Scan



- **The Page Scan can be increased to a 30-minute display by placing the mouse arrow at the top border line of the large ECG, and dragging down.**
- **The vertical bar at the far right can be dragged up or down for a very rapid Full Disclosure view of the 24-hour Holter ECG.**
- **You can also use the mouse on the vertical line in the Heart Rate trend to view parts of interest.**
- **The bottom of the screen allows you to edit and re-label any beats in the Page Scan display.**

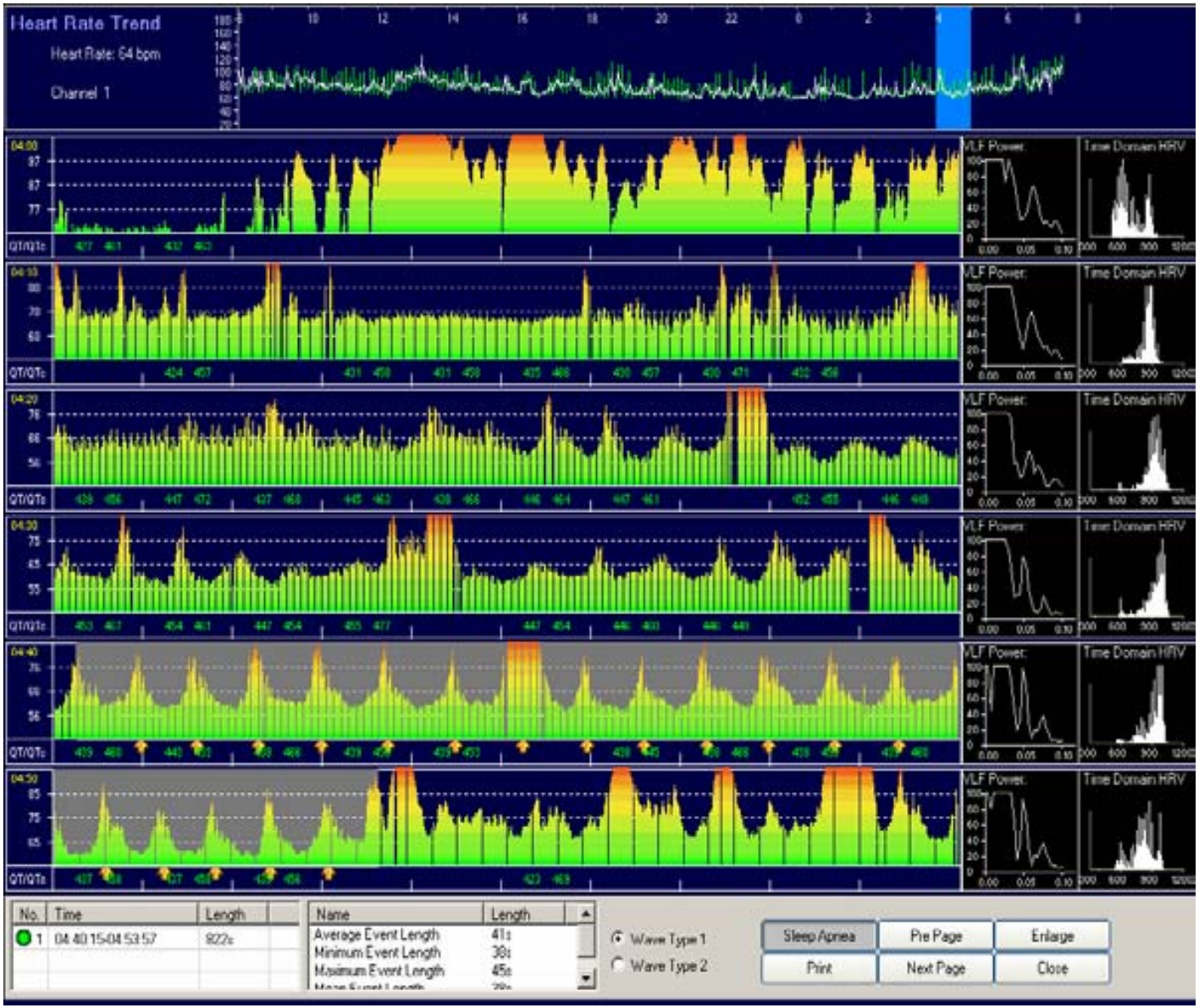
Page Scan

- With the mouse arrow in the PageScan display, a right mouse click and the selection of Properties will give you additional access to data control.
- For those who prefer the Full Disclosure technique, this Page Scan display will allow you to make all editing changes.
- You can also Save any desired ECG Strips for later printing in the Holter ECG report.

Page Scan: Sleep Apnea

- From the PageScan menu, you can also select the Sleep Apnea indicator.
- A left mouse click on Sleep Apnea will bring up the display on the next slide.
- It is now understood that Sleep Apnea has a history of being a strong pre-cursor to significant cardiac disease.
- Sleep Apnea detection is now included in the Holter test as an indicator that more specific Sleep Apnea detection and confirmation may be in order.

Page Scan: Sleep Apnea

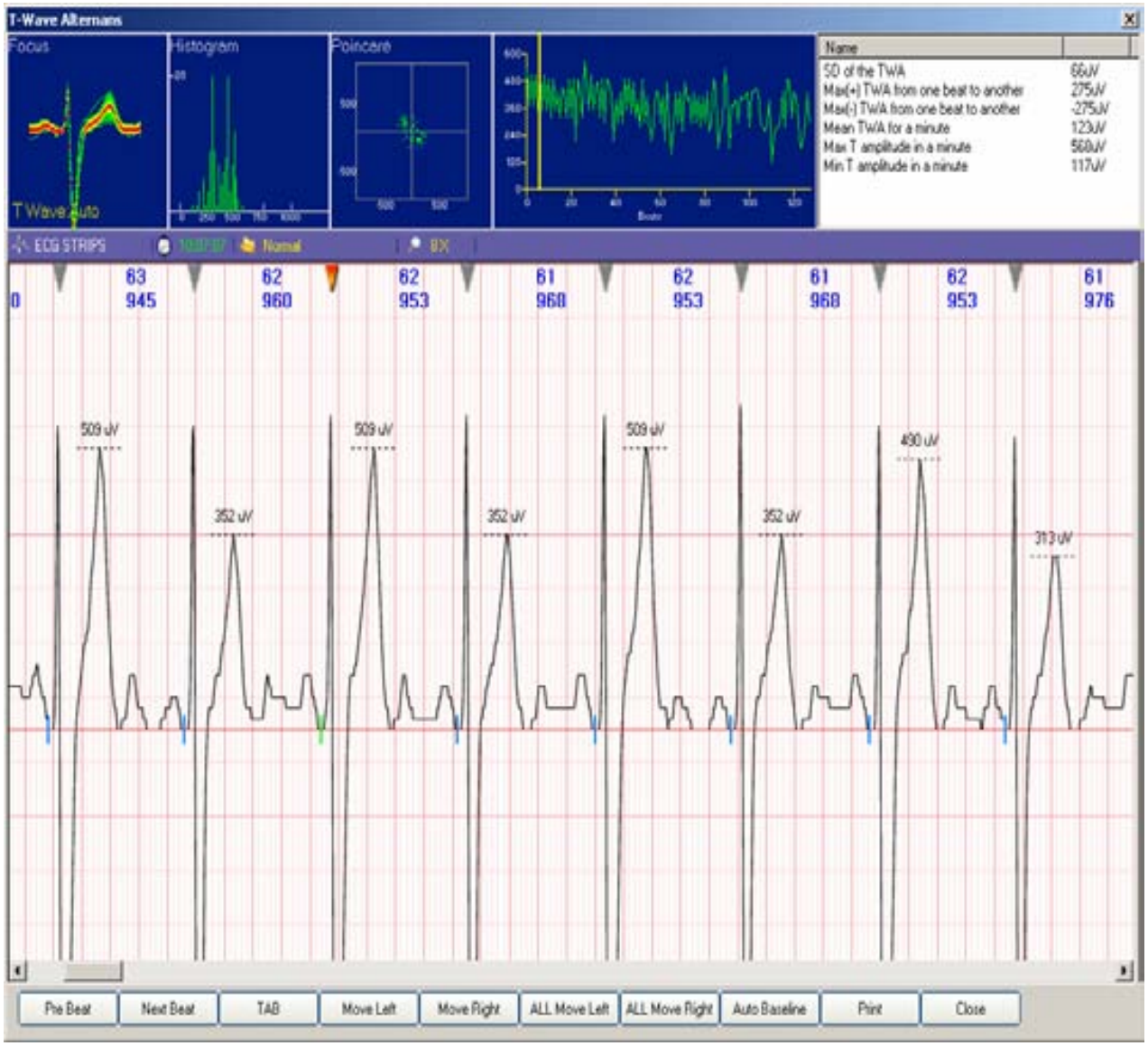


- **The Sleep Apnea program allows you to look at the sleep hours, and in about 1-minute you can can determine if the patient had a positive or negative Sleep Apnea indicator.**
- **A separate Power Point presentation will detail the operation of the Sleep Apnea program for you.**

Page Scan: T-Wave Alternans

- **T-Wave Alternans is a transient ECG event.**
- **Therefore, Holter ECG is the optimal method for capturing transient T-Wave Alternans.**
- **Transient T-Wave Alternans are captured by Holter ECG at heart rate ranges from 60 to 120 bpm.**

Page Scan



- This is Channel 3 on a Holter ECG recording.
- The T-Wave Alternans on a beat-to-beat basis is about 150 micro-volts.
- Note that there is visual verification that there are no corresponding R-Wave changes.
- Any Holter ECG channel can be analyzed for 24-hours of TWA in about 10-seconds.
- A separate Power Point presentation shows the operational use of the T-Wave Alternans program.

MegaScan

- **If you click on the Mega Scan icon, you will see a 24-hour trend of various heart rate, ST, QT, Arrhythmia, and HRV data.**
- **The next screen display will show this data.**
- **At any time period you can see a multi-parameter correlation of several ECG functions, and you can then access the actual ECG event.**

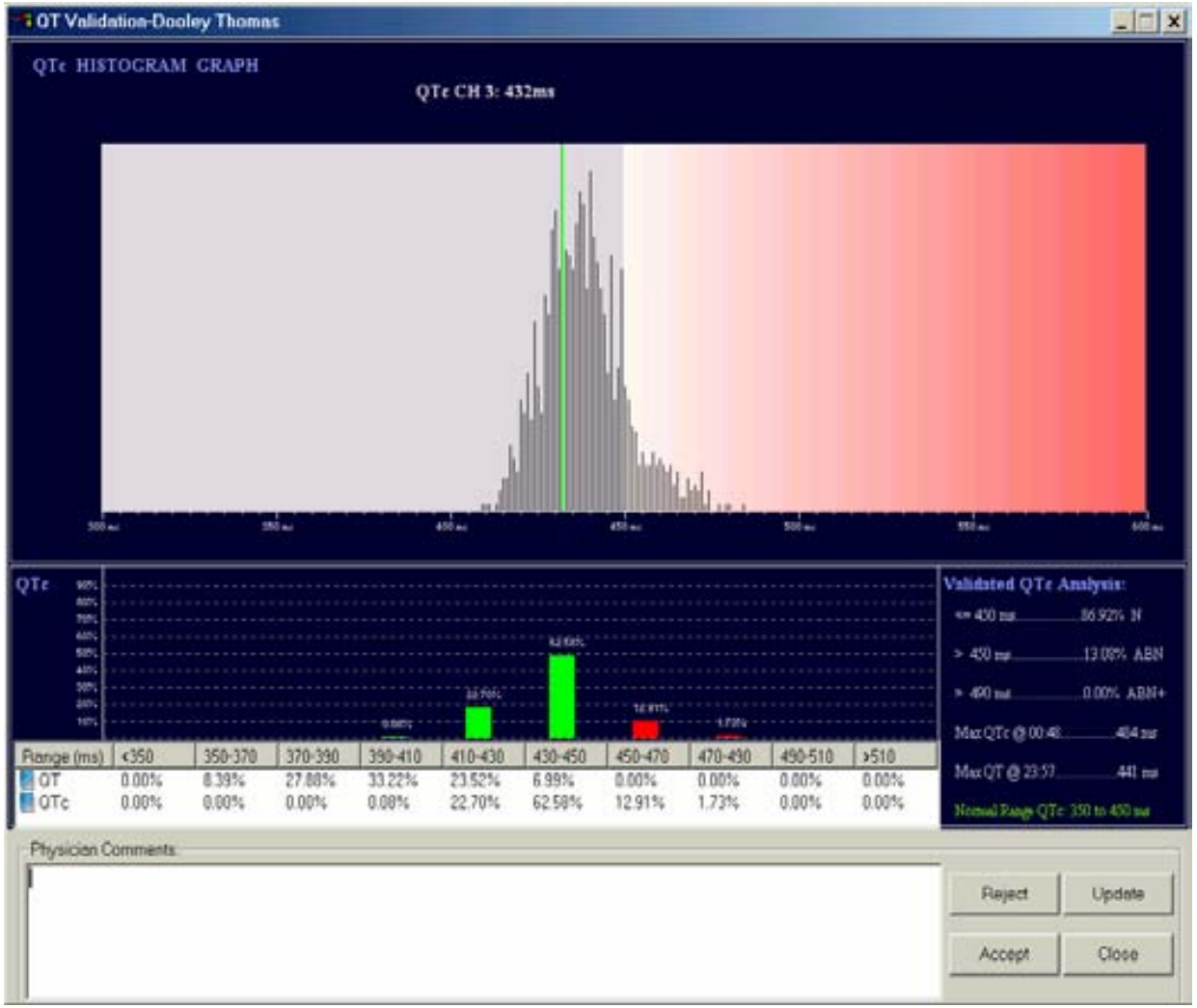
Mega Scan

- **Point the arrow at any time in the 24-hour trend and click.**
- **The ECG for that minute is displayed at the bottom**
- **Press Enter to see a large ECG.**
- **Use the arrow keys to move the long vertical cursor to adjacent minutes.**

QT Validation

- **Click on QT Validation to verify accurate QT and QTc measurements.**
- **QT measurements should never be accepted on the basis of a computerized detection & calculation.**
- **The following will show you how the computer can assist you in validating the accuracy of elongated QTc data before entering it into your Holter ECG report.**

QT Validation



- **The QTc histogram is shown. The QTc events to the far right of the histogram are the events of interest.**
- **With the mouse arrow in the histogram, and a right mouse click, you can select another channel for QTc analysis.**
- **Move the long green cursor to the far right of the histogram with a mouse arrow and click, or use the arrow keys.**
- **A double left click or Enter key will show a QTc**

QT Validation

- **You will first see a mini-ECG. Double left click or press Enter, and you will see the adjacent ECG.**
- **Note the vertical green markers on Ch. 3. They should be located at the beginning of Q and the end of T.**
- **If the markers are not correct, this QTc must be deleted from QT analysis, by ESC and using Reject or the R key.**
- **When the markers are correct, the QTc validation process has begun.**

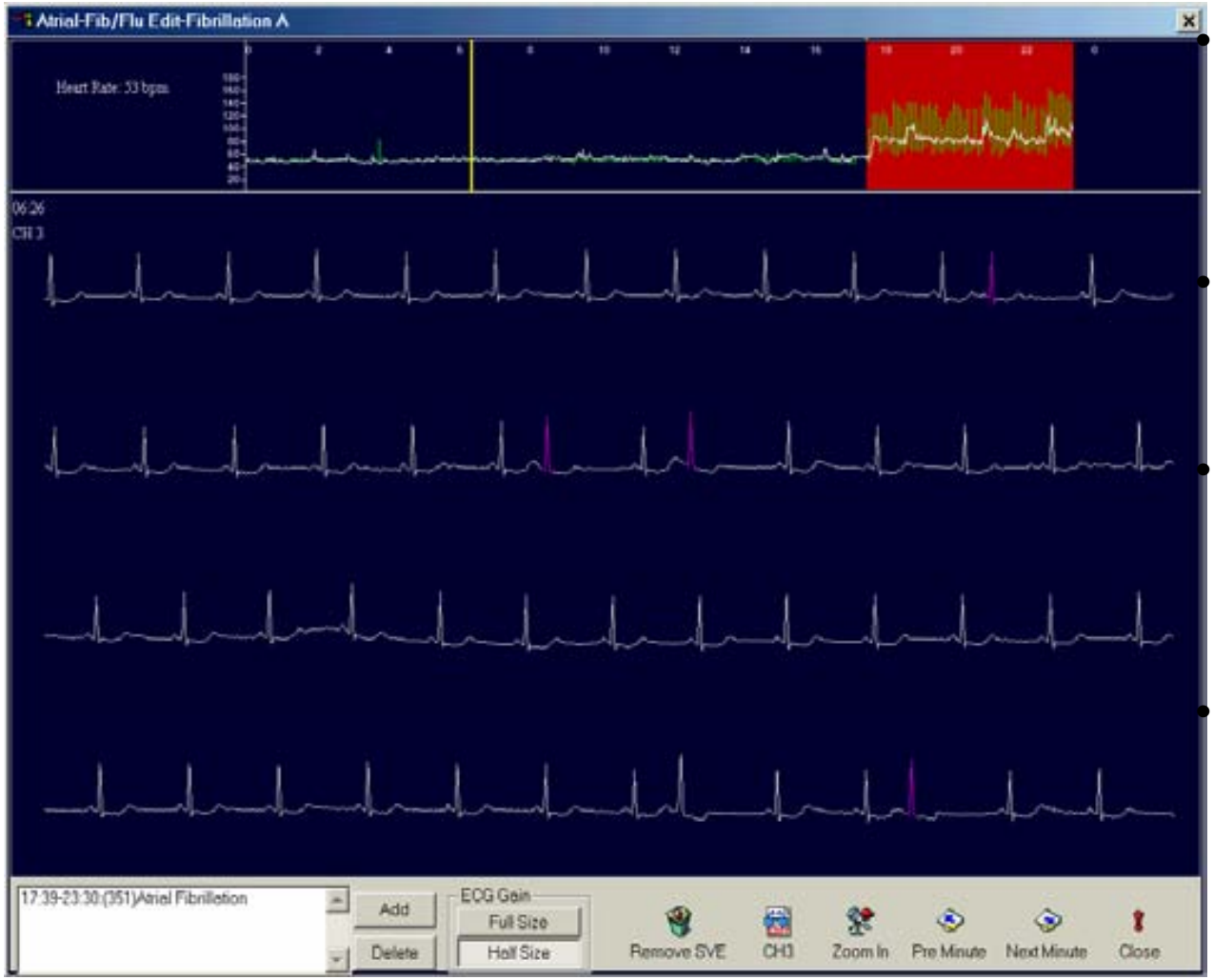
QT Validation

- **Click on the Ruler icon in the bottom right.**
- **Point and drag on the actual QT to draw the manual QT measurement box. Upon release of the mouse button, the QT measurement is shown above the ECG strip.**
- **If this number is similar to the computer QT number at bottom left, then you have verified the QT measurement.**
- **The arrow markers are at 50% of the R-R interval.**
- **A separate Power Point presentation shows the detailed operational use of the QT/QTc program.**

Atrial Fib

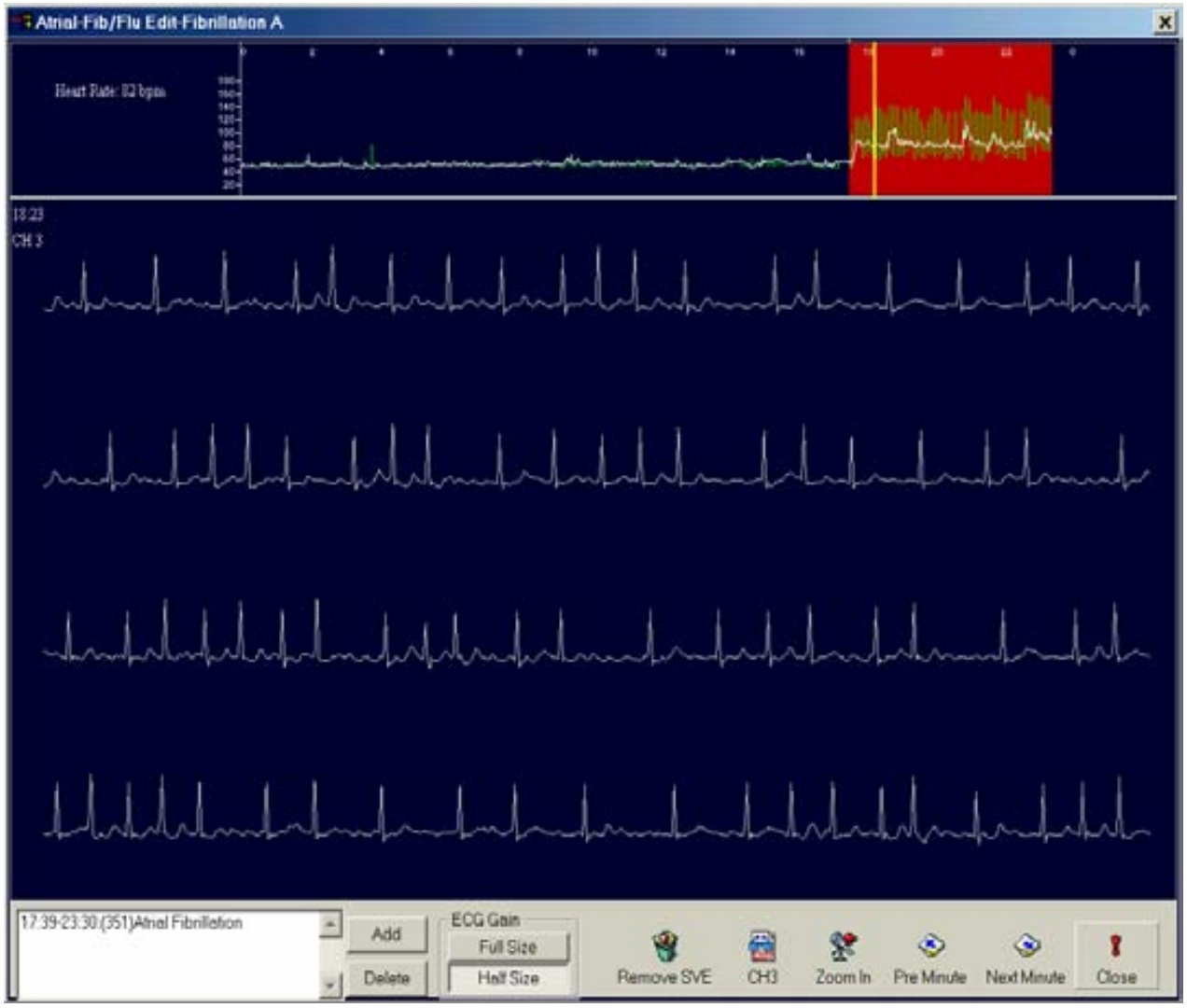
- **The A-Fib/Flu menu is mainly used to show you the detection of atrial fibrillation rhythm and the percent of time the patient is in A-Fib.**
- **Click on the A-Fib icon and you will see the following screen display.**
- **The time periods that are colored in red are the minutes of A-Fib.**

Atrial Fibrillation



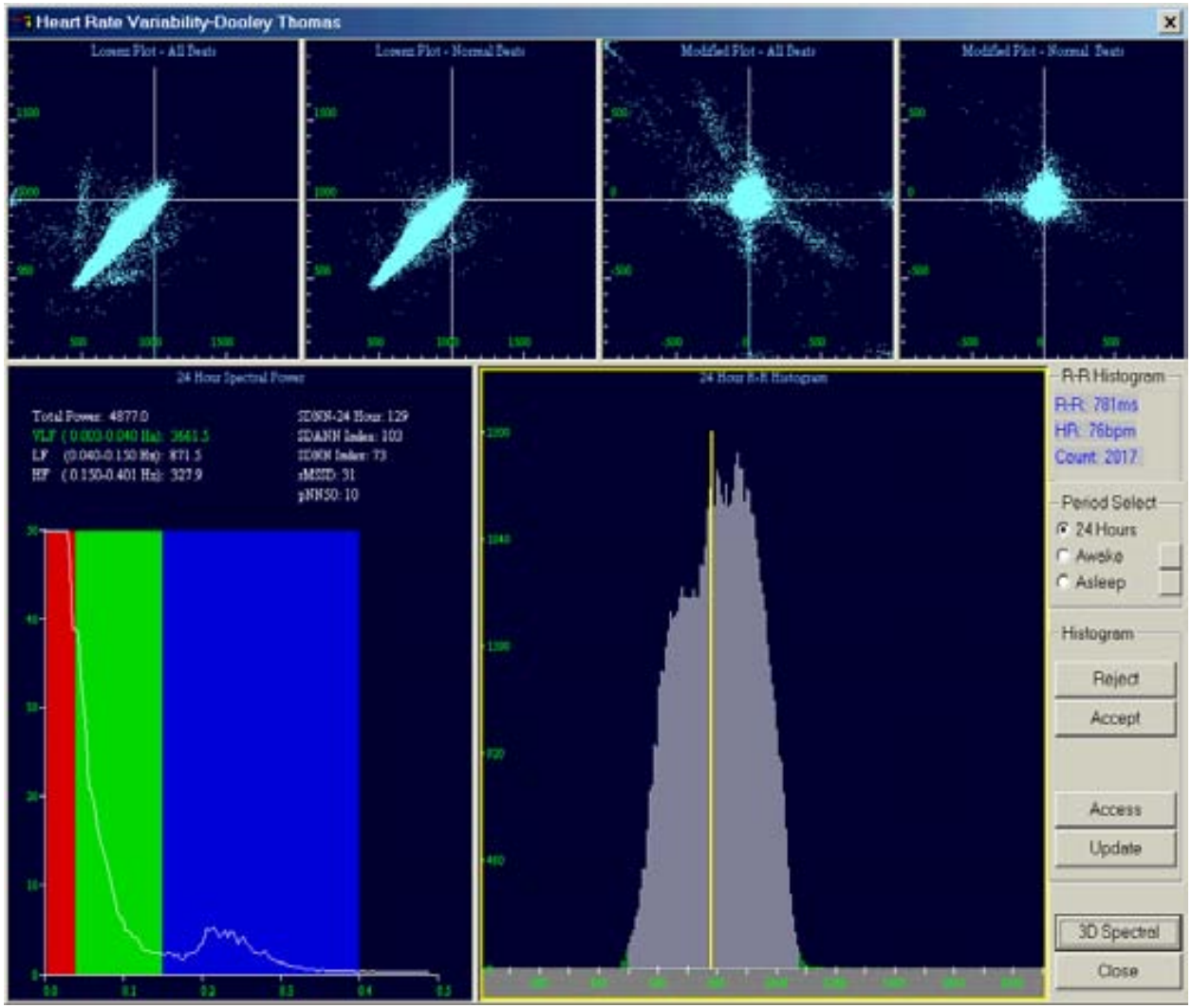
- **The red color area is about 6-hours of A-Fib rhythm.**
- **The yellow cursor shows a minute of sinus rhythm**
- **There are four SVE beats shown in the majenta color.**
- **If you do a mouse arrow and click in the red area, you can verify if the red minutes are A-Fib rhythm.**

Atrial Fibrillation



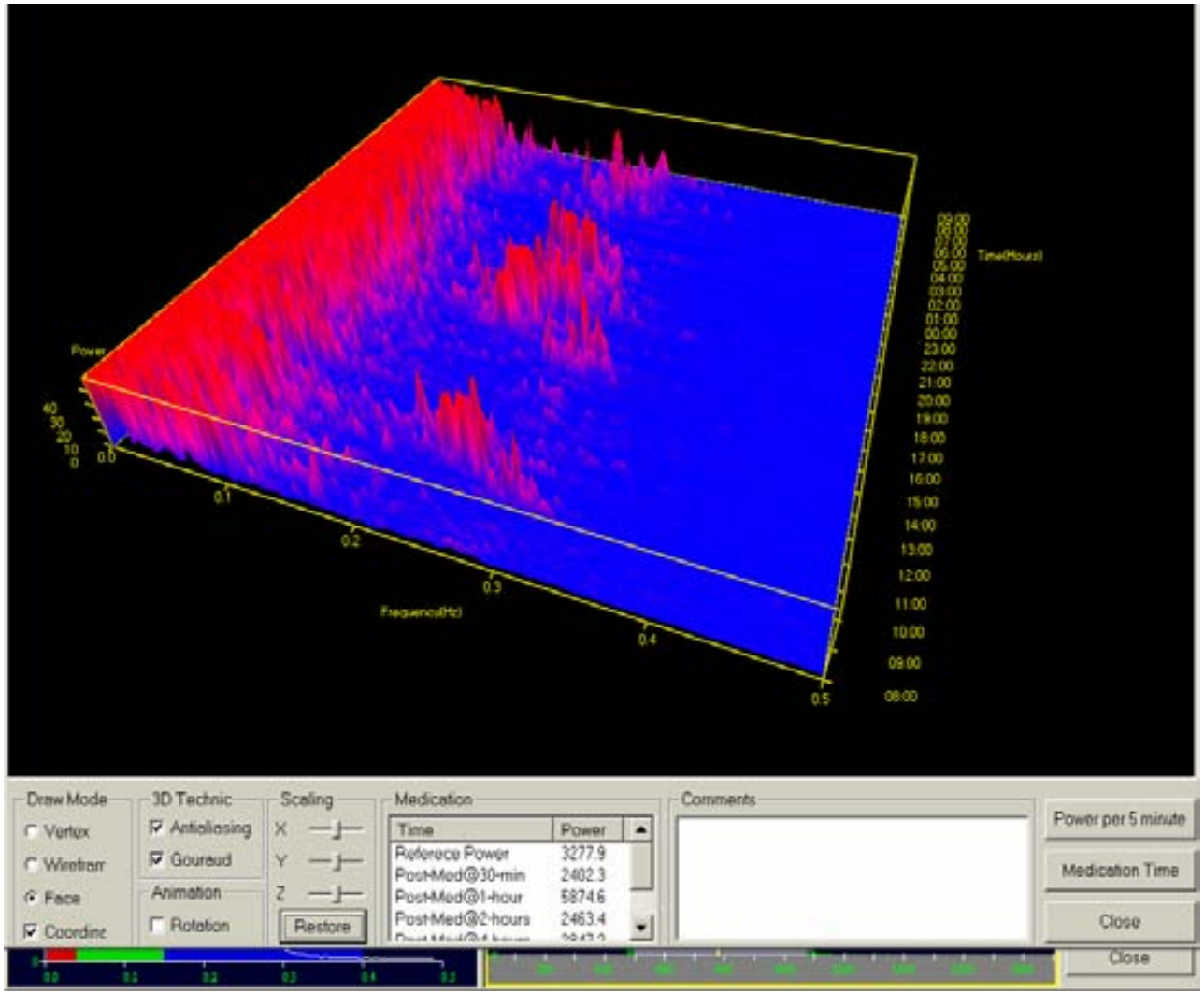
- **By placing the yellow cursor in multiple red minutes, you can verify the A-Fib rhythm.**
- **All SVE beat labels need to be removed from the A-Fib minutes. Click on the Remove SVE icon, and you will remove the SVE labelled beats from the A-Fib minutes in a few seconds. You should do this before editing SVE beats in the Template EDIT menu.**
- **Edit A-Fib time periods at the bottom left of this screen display.**

Heart Rate Variability



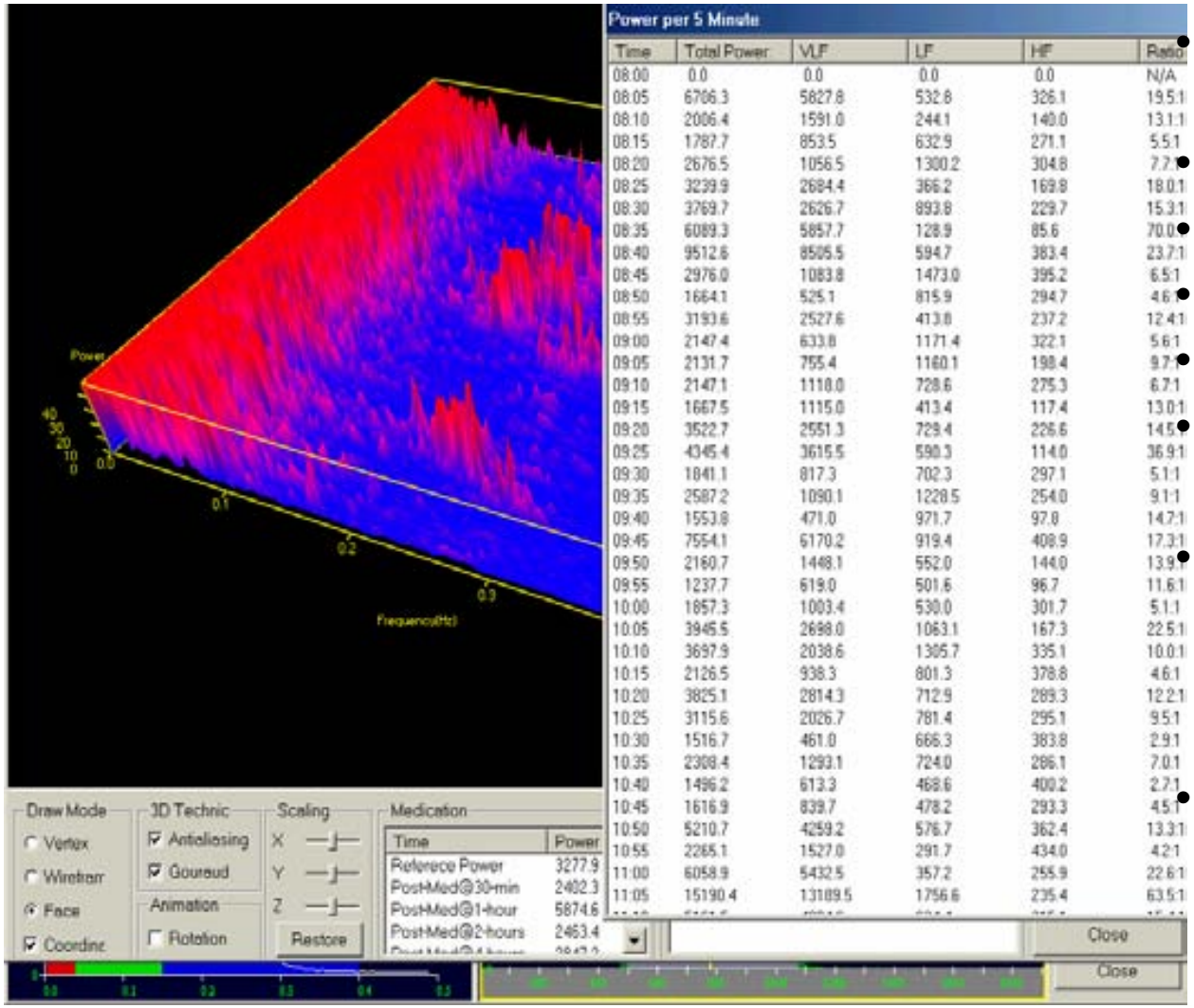
- **If you click on the Power graph, you can use the TAB key to change frequency ranges.**
- **If you click on the Time Domain histogram, you can view ECG's to the far left and right for N-N correctness.**
- **The awake and asleep buttons are for entering time for Sleep Apnea and other HRV studies.**
- **The 3D Spectral icon takes you to next HRV screen display.**

Heart Rate Variability



- This is a 3D Power graph for the 24-hour Holter recording.
- Each 5 minutes a power graph is drawn. 288 of these graphs are overlayed so that you can get an instant look at the amount of HR variability.
- A Medication icon shows the HRV pre and post medication time.
- Power per each five minutes is on next slide

Heart Rate Variability



- Each 5-minutes the following is calculated:
- Total Power
- VLF Power
- LF Power
- HF Power
- Time Domain numbers

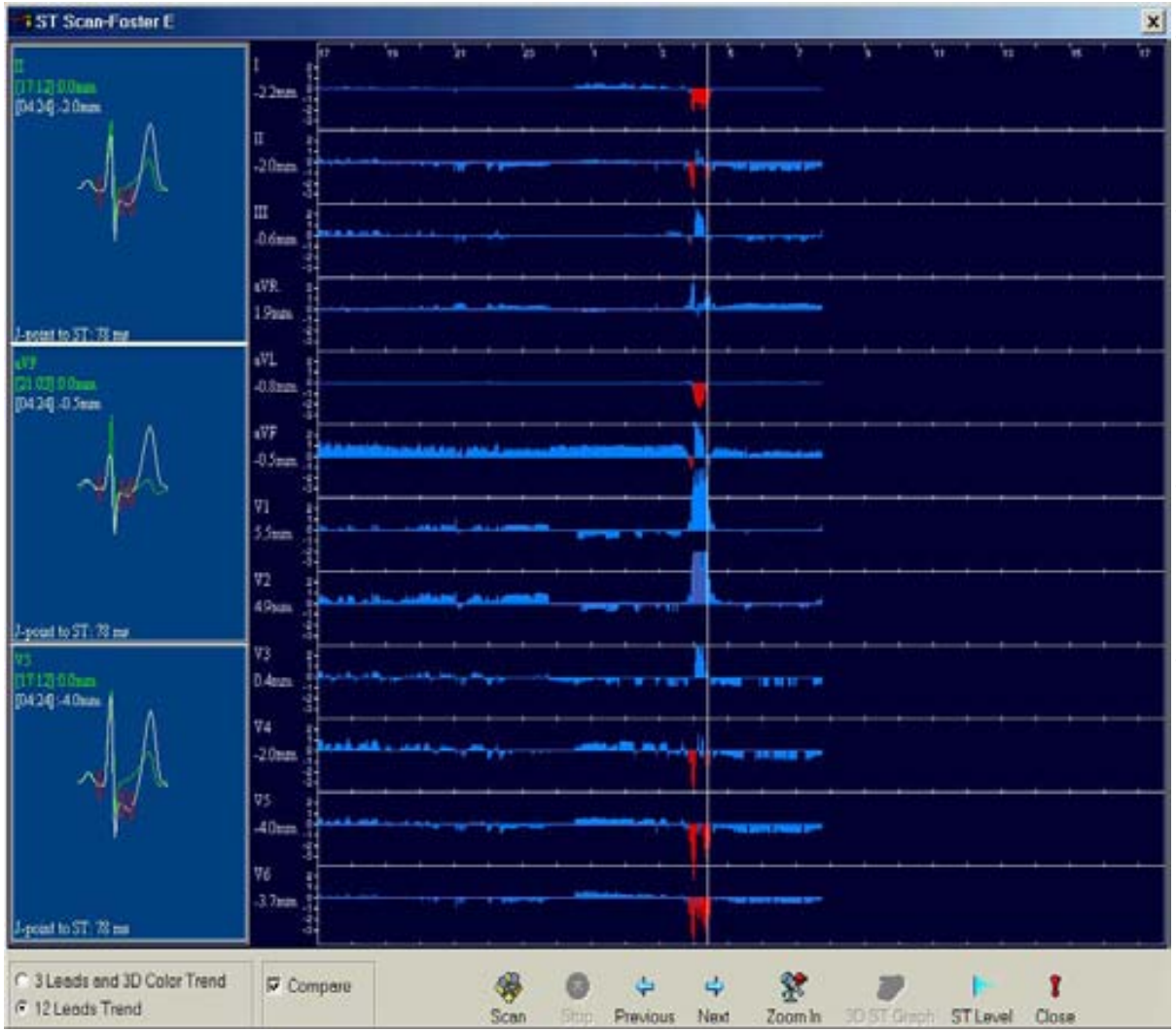
- ASCII outputs can send this HRV data to a HRV research computer.

- Sample rates are recorded and outputted from 128 to 1,024 samples per second.

ST Segment Analysis

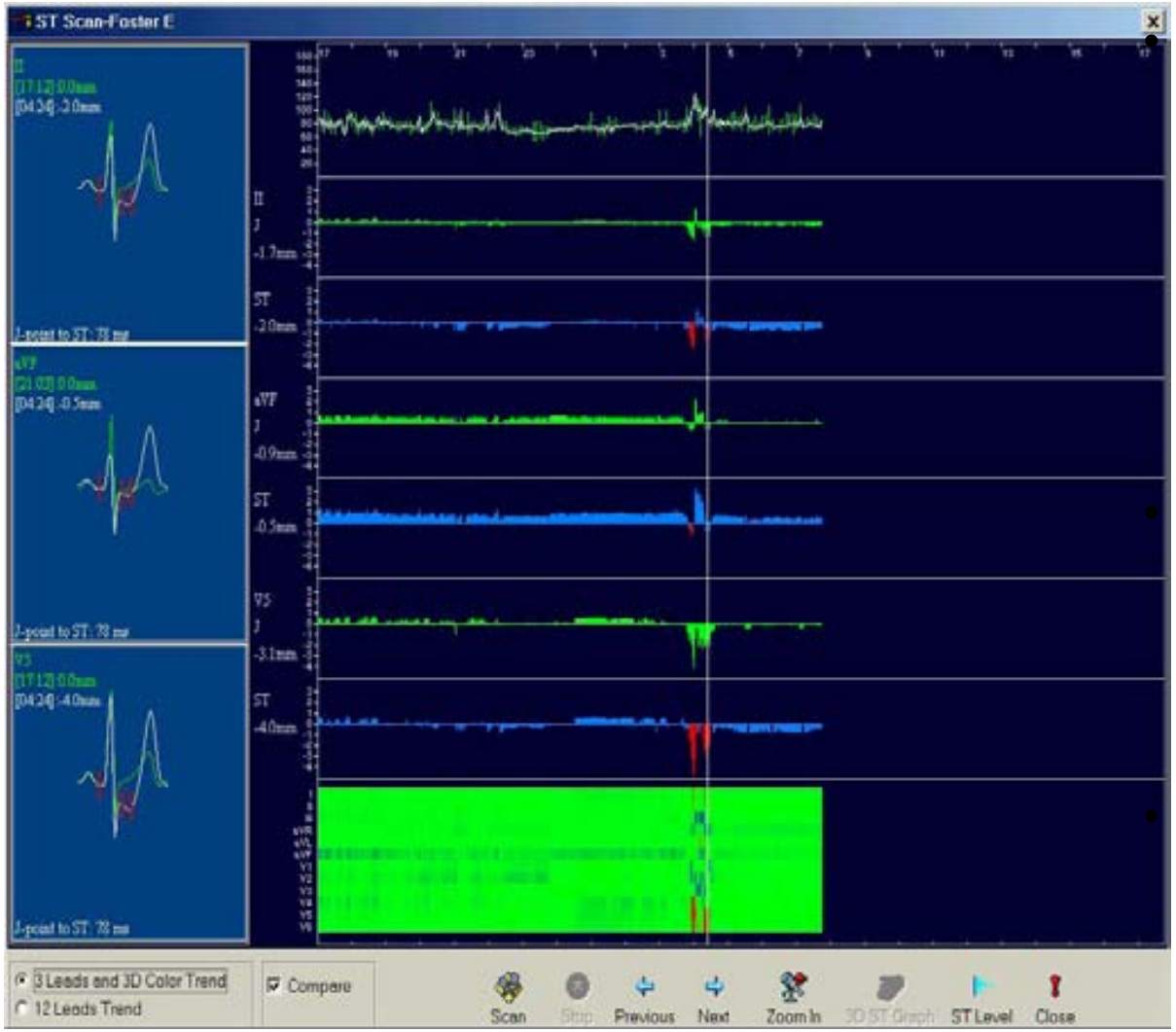
- **For 3-Lead or 12-Lead ST Segment analysis, click on the ST Scan icon.**
- **ST is measured by the Delta or Absolute modes.**
- **The ST can be selected from either the ST point or the J-point.**
- **In Delta ST, the reference ST baseline is determined by the most common ST level for each lead over the 1440 minutes.**

ST Scan



- **ST Anallysis can be shown in either 12-Lead or 3-Lead.**
- **In this 12-Lead, the red color shows the Leads and the time of significant J and ST Depression.**
- **3-Leads of superimposed ECG are shown at far left.**
- **The green color is the baseline reference ST, and the white color is the current time ST level. You can see the ST change in Leads II and V5.**

ST Scan

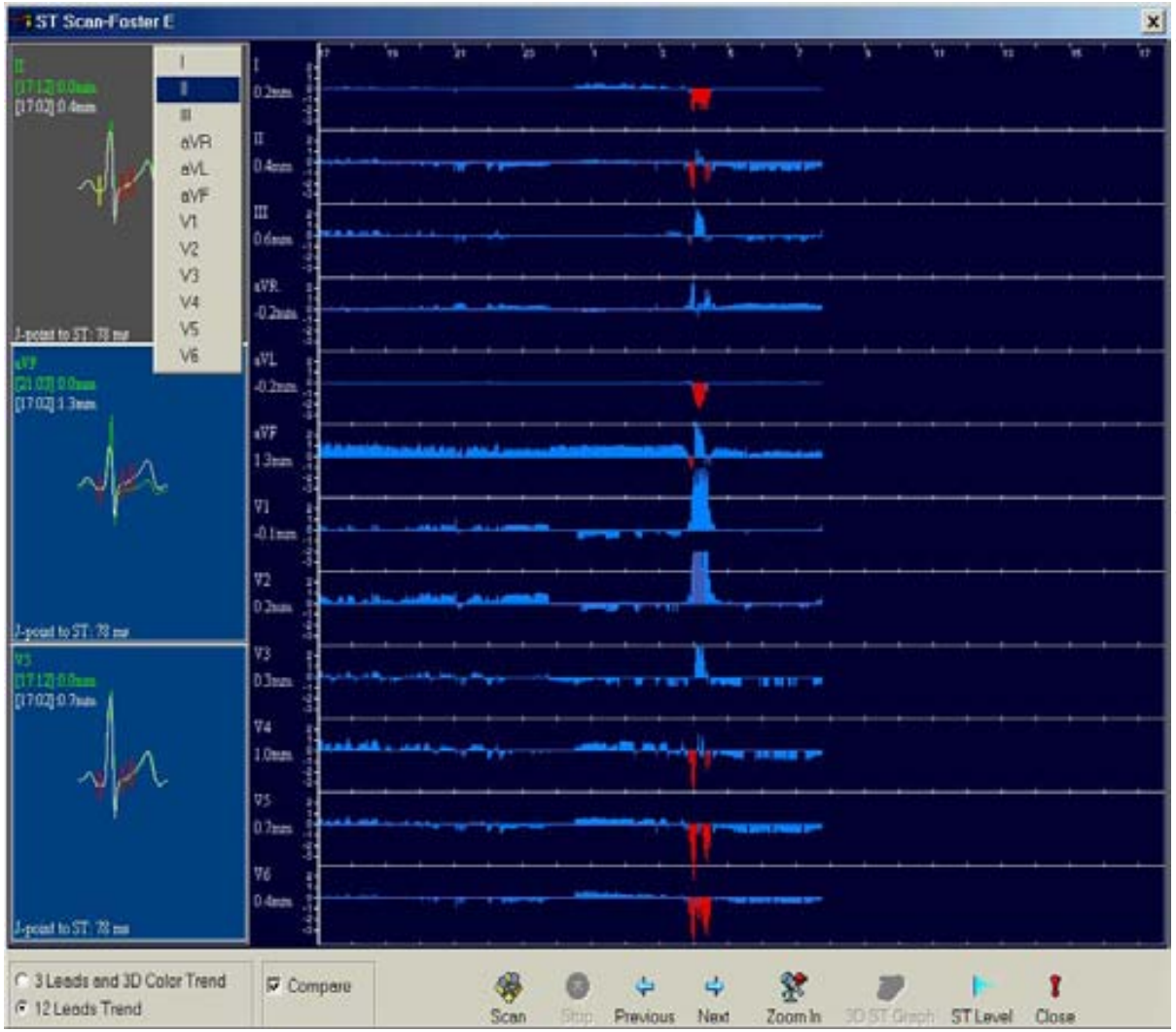


This is a 3-Lead display of ST analysis. The top trend is Heart Rate. Then the J and ST trend for Ch. 1. Then the J and ST trend for Ch. 2. Then the J and ST trend for Ch. 3.

Note the HR increase at the same time as the ST depression, as shown in the red trend color

If you click on the Scan icon you will see a 3-Lead Superimposition that shows P-wave and ST changes.

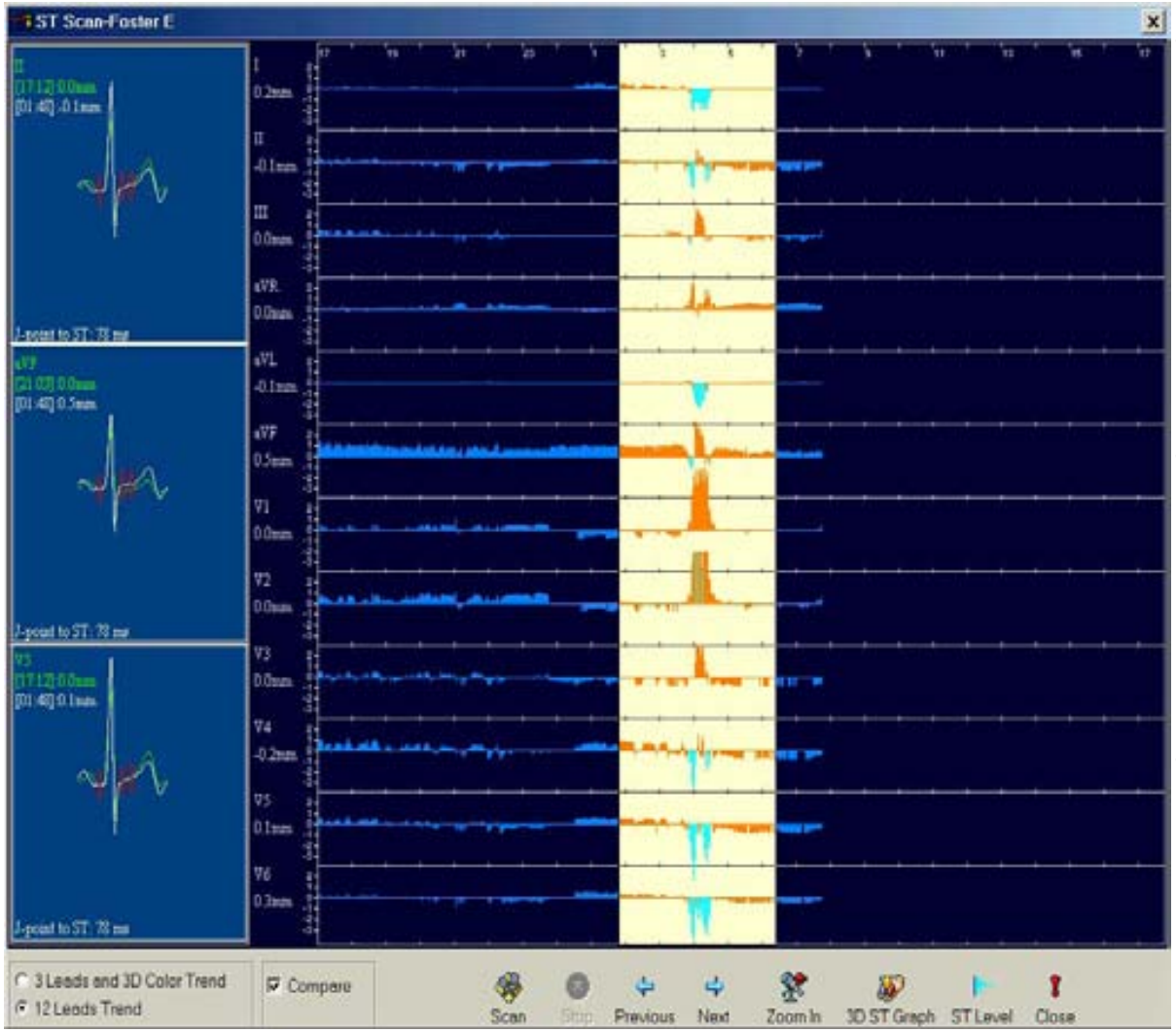
ST Scan



- **You can place any Lead in any Superimposition box by moving the mouse arrow to the box, and a right mouse click. Select your desired Lead with a left mouse click.**

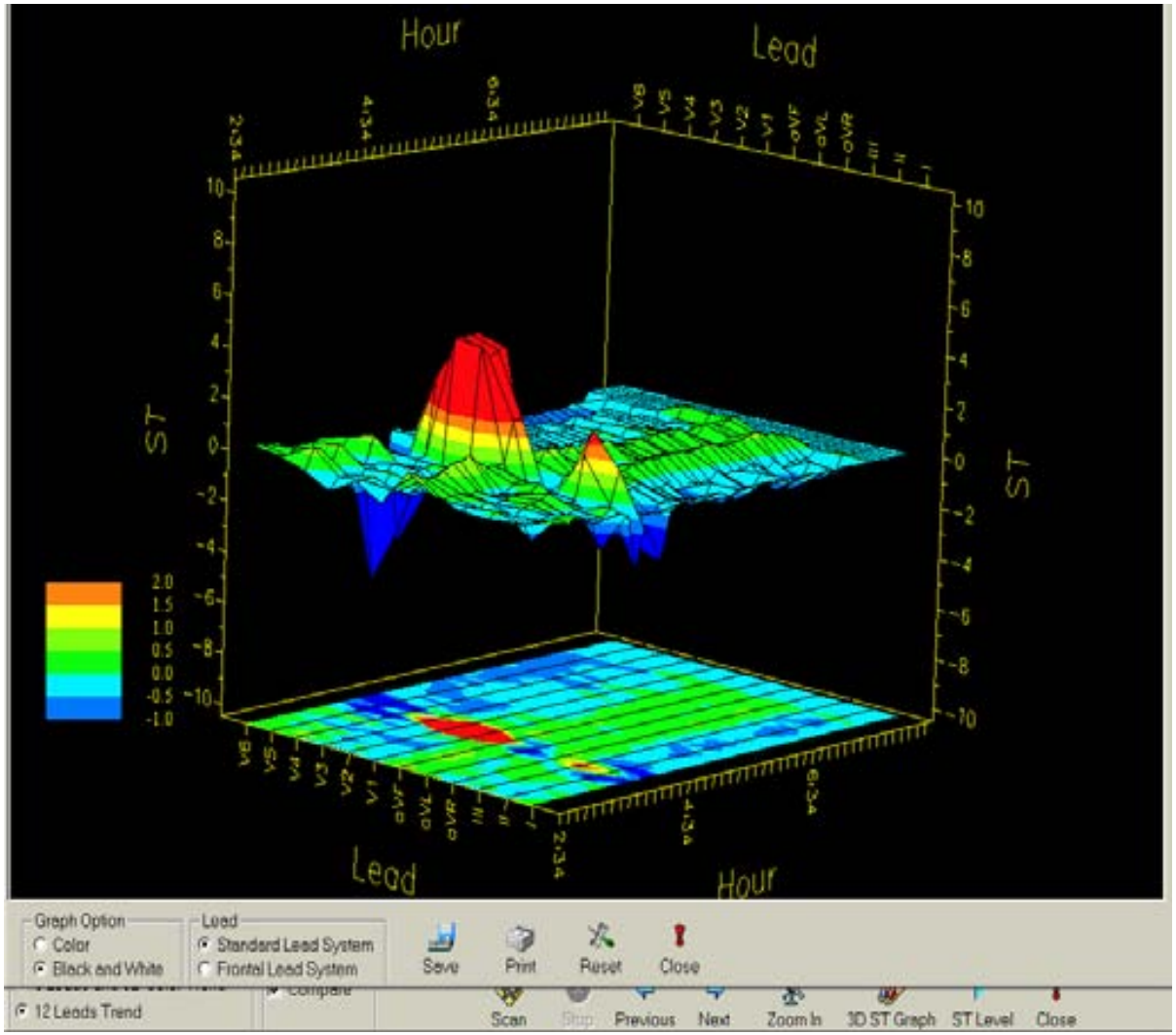
- **If you to delete a Lead from ST analysis (such as aVR), place the mouse arrow in the aVR trend, and do a right mouse click. A window will appear, and click on the Delete command.**

ST Scan



- If you want to view and print a 3D presentation of a ST event, use the mouse for a point and drag for the time period pre and post ST as shown.
- The 3D ST Graph icon will light up. Click on the icon and you will see the next slide.
- You will be able to print the 3D ST Graph in either color or B&W.

ST Scan

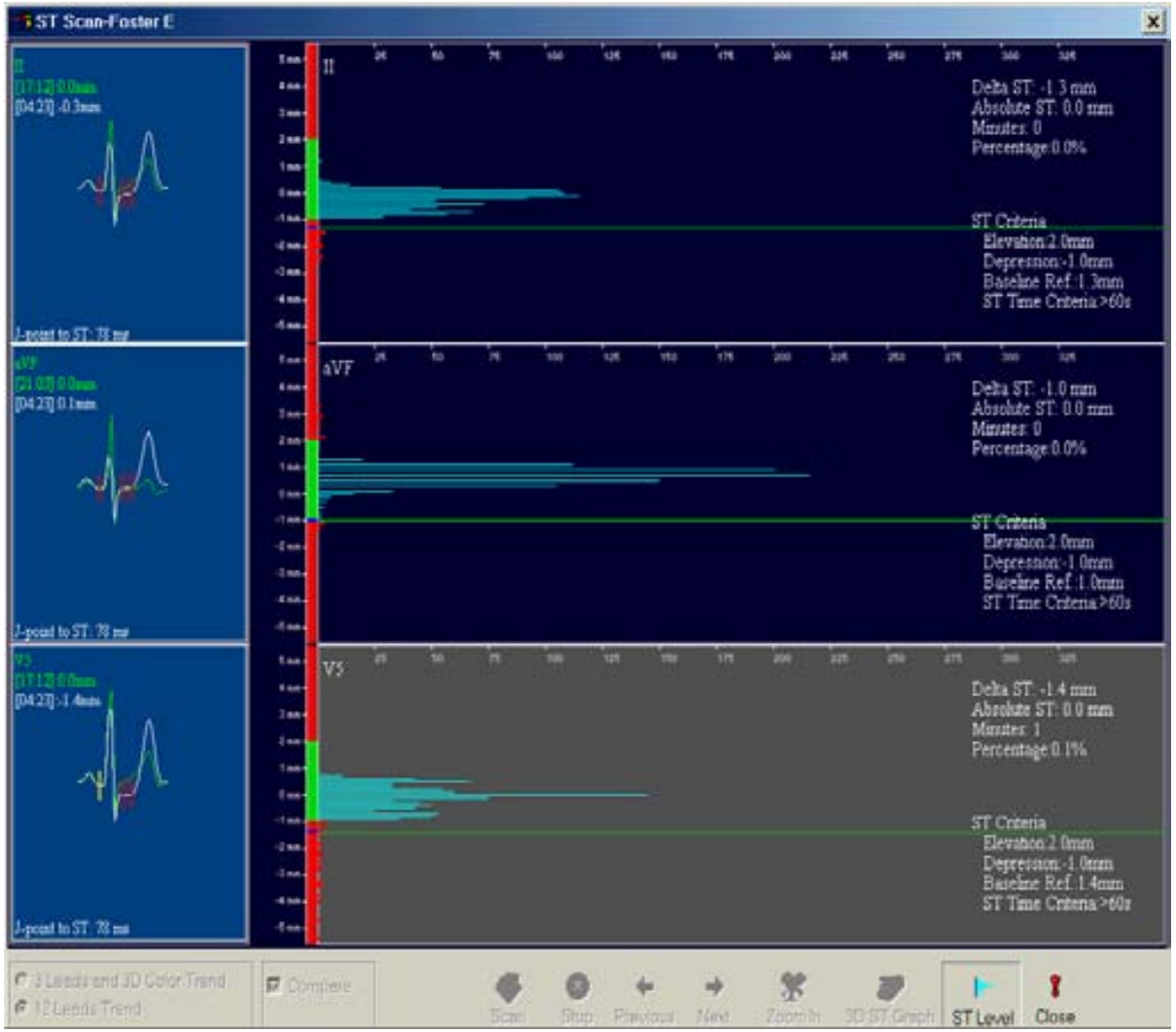


- **The top graph is 3D and the bottom graph is 2D.**
- **The dark blue shows the ST depression. II, V4, V5, and V6 show a significant amount of ST depression.**
- **This graph can be rotated in any direction with the mouse point and drag function.**
- **To print in color, click on the color button at lower left. Then click on Print command, or store for print from Report menu.**

ST Scan

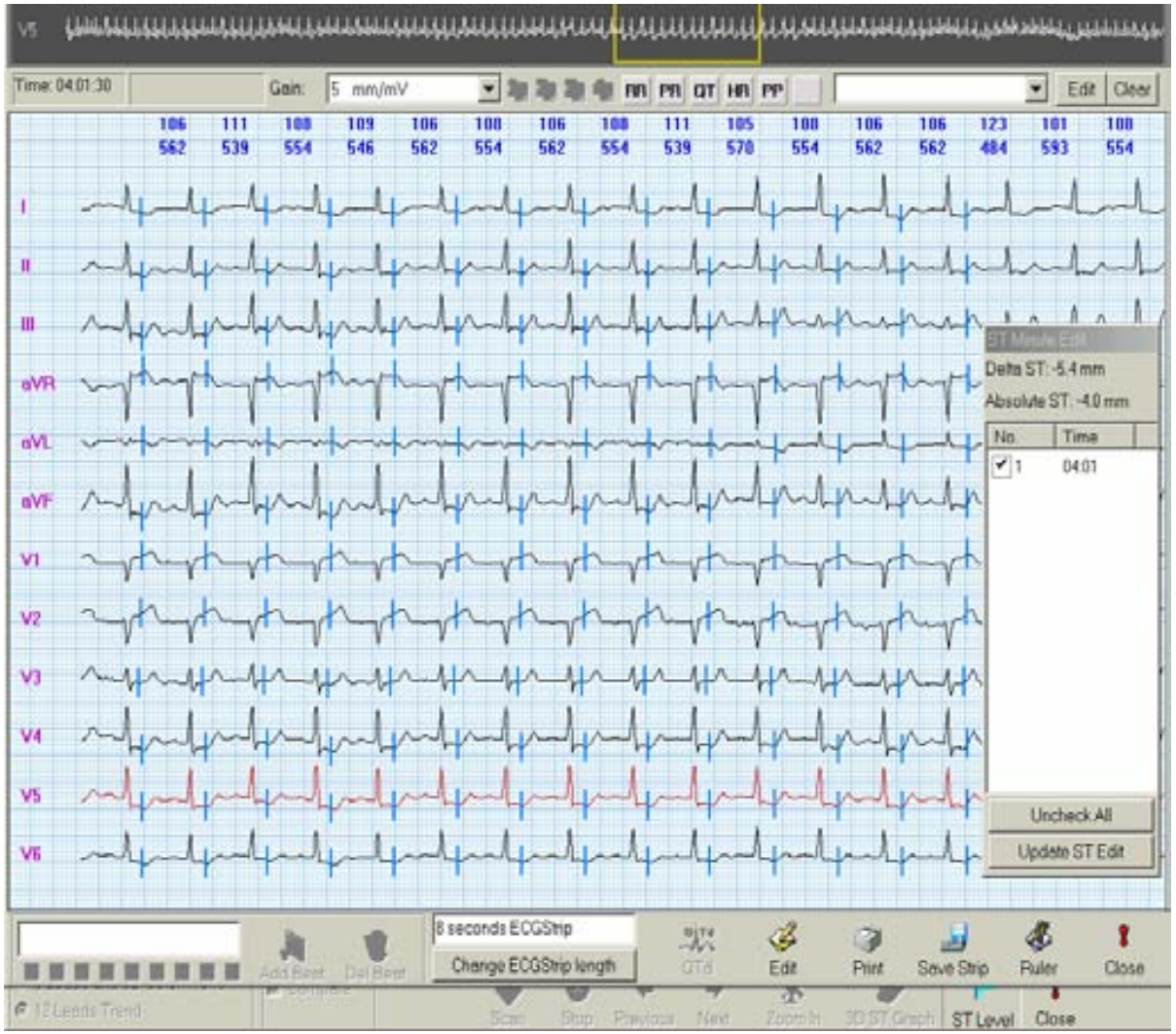
- **To edit ST analysis, click on the ST Level icon, and this display will appear.**
- **The blue horizontal lines are a histogram of each minute's ST level. You can view each of the 12-Leads by a mouse arrow and right click in any ECG box to the far left.**
- **In Delta ST, the ST "0" baseline is the the ST level that occurred most often for that ECG Lead.**

ST Scan



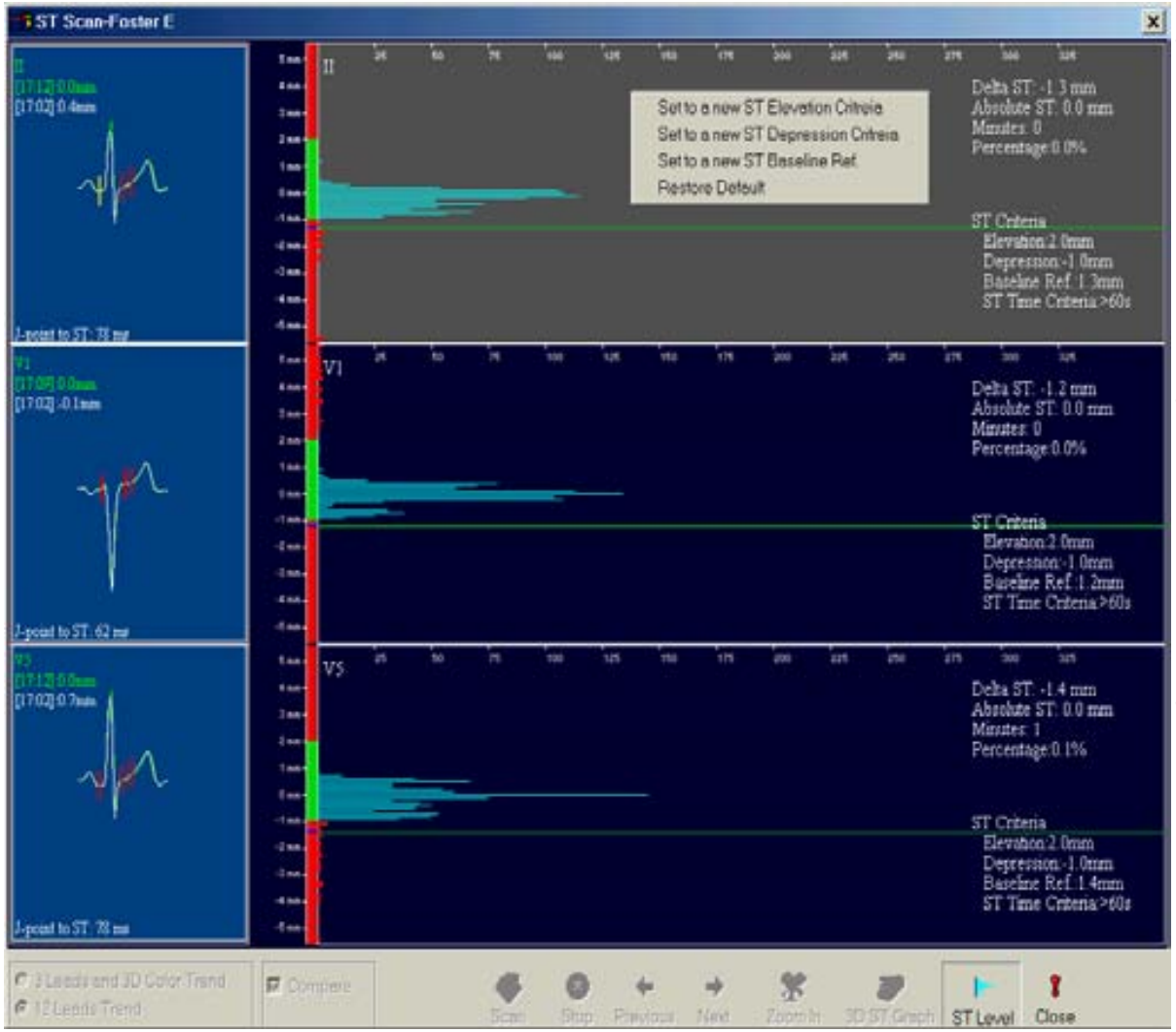
- **For ST editing, click on the bottom histogram, and the background color will change from black to gray.**
- **You can move the long horizontal green line with the arrow keys. Move the green line to the top, and then press and hold the down arrow key.**
- **In just a few seconds you will have scanned the ST Level for the entire 24-hours. The red ST level at the bottom is Max ST. To verify press Enter.**

ST Scan



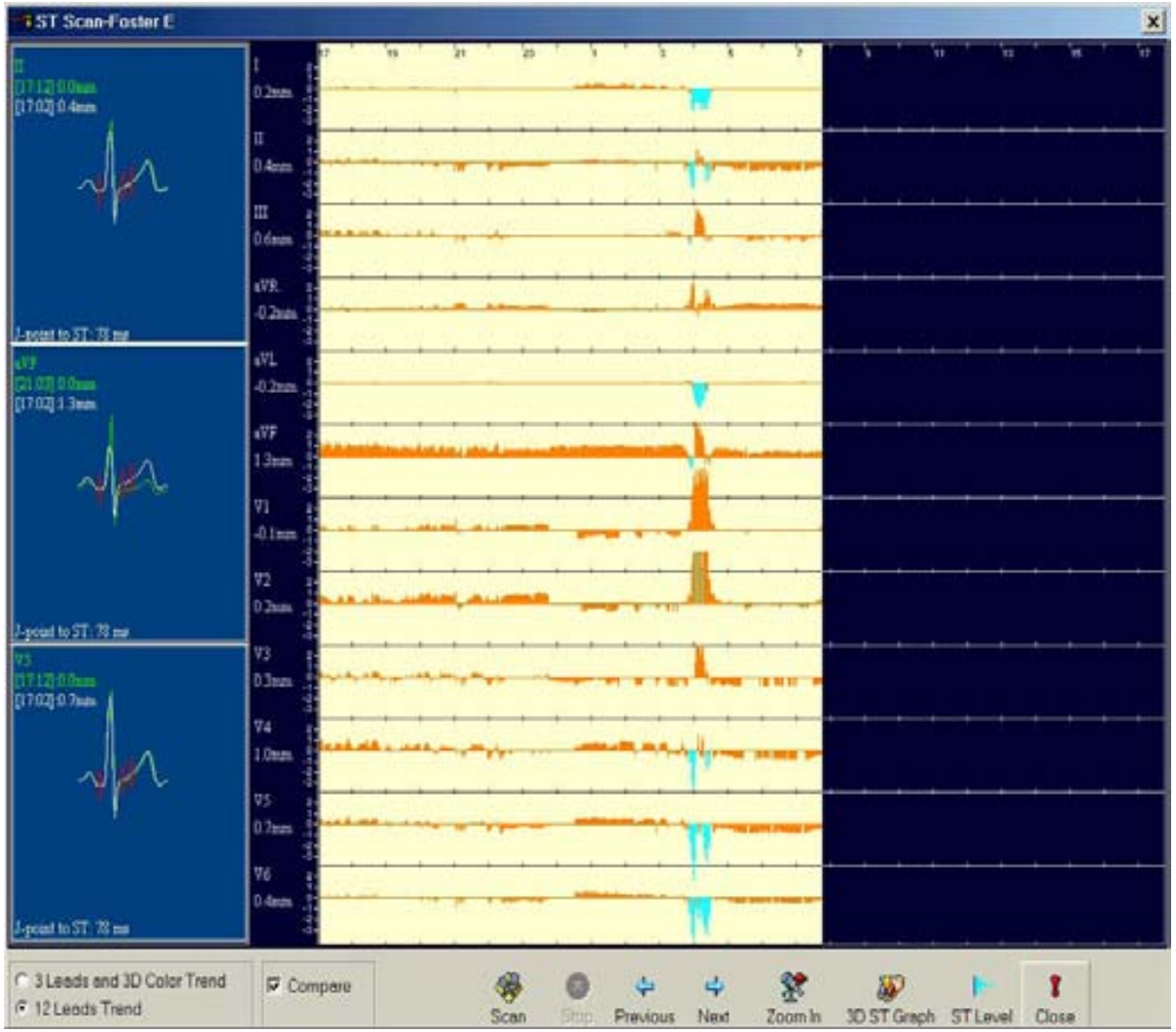
- **The red V5 color shows that you came from the V5 histogram.**
- **The blue vertical markers verify that the ST was analyzed at the proper ECG location.**
- **The window to the right side allows you to reject a false ST reading by removing the check mark, and clicking on Update ST.**
- **See manual for more ECG Strip display functions.**

ST Scan



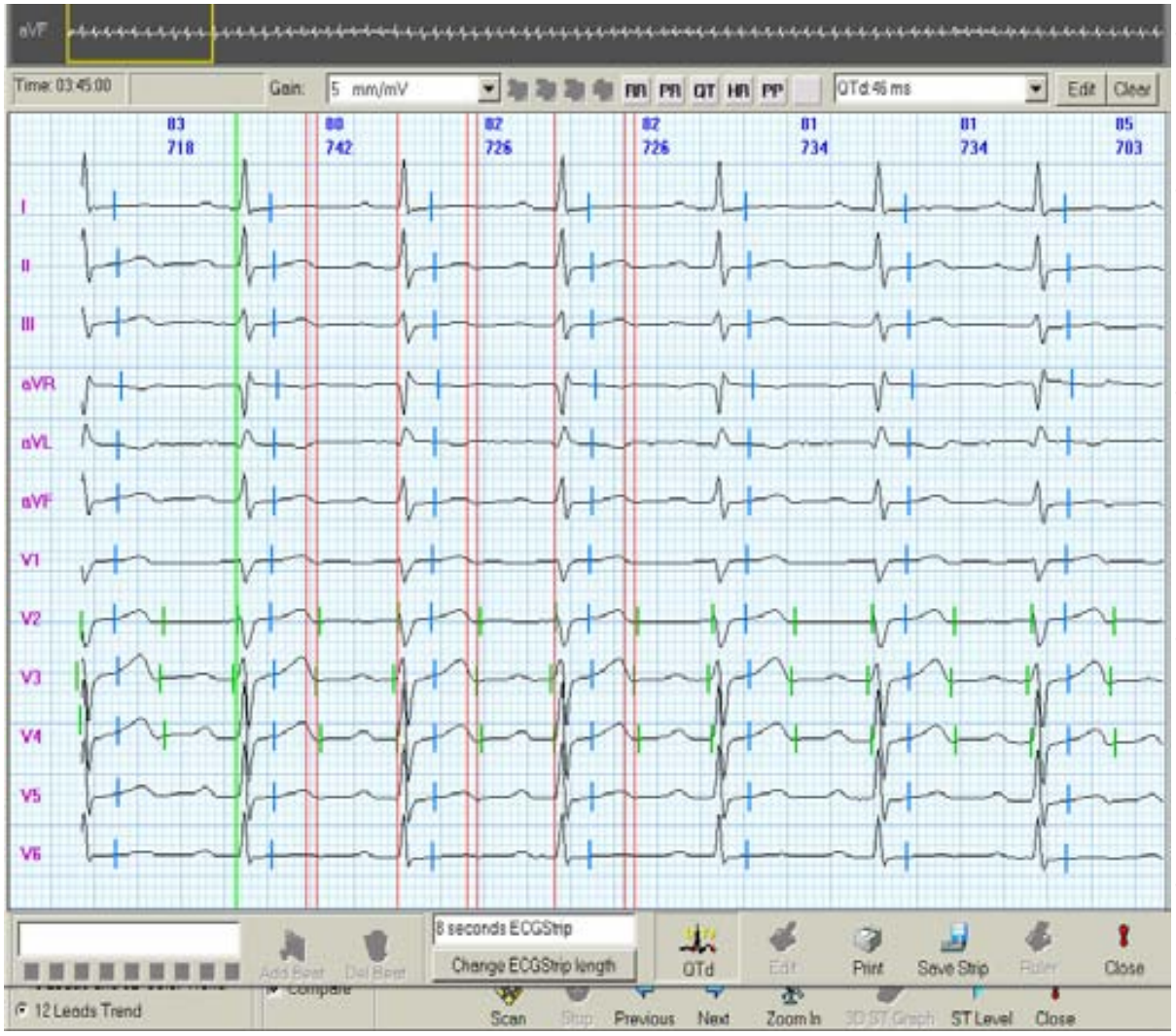
- **You can change the ST analysis algorithm by placing the mouse arrow in the histogram, and a right mouse click.**
- **Move the green line to a different level for a ST “0” baseline, and click on Set New ST Baseline.**
- **Use the similar technique for setting new criteria for ST Elevation and ST Depression.**

ST Scan



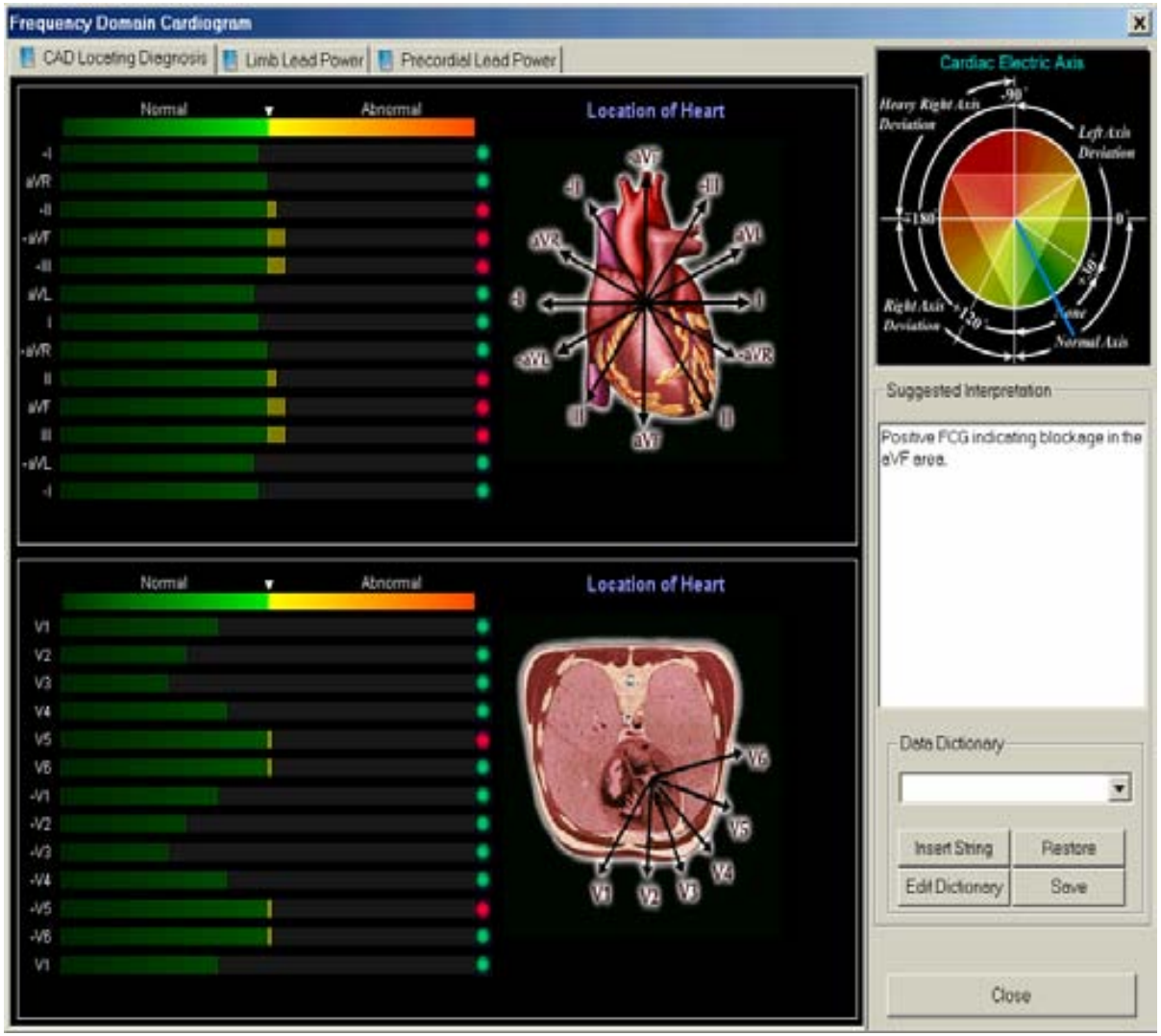
- If you want to re-analyze any ST Lead without disrupting any other Holter analysis, the process is as follows:
- Point and drag from beginning to end of ST Trend, as shown to left.
- Left mouse click on a ECG superimposition box.
- Set the 3 vertical cursors, using the Tab and Arrow keys.
- Press the Enter key.
- In a few seconds the Lead has a new ST analysis.

ST Scan & QT Dispersion



- You can do QT Dispersion in this ST Scan program.
- From a 12-Lead ECG display, click on the QTd icon at middle bottom.
- Use Tab key to move the green vertical marker. Use arrow keys to move green marker to Q.
- Press Tab and move green marker to Min end-of-T. Press Tab and move marker to Max end-of-T.
- Repeat process for 3 beats and QTd calculation is shown at top of display. Then click on Print icon.

FCG CADgram

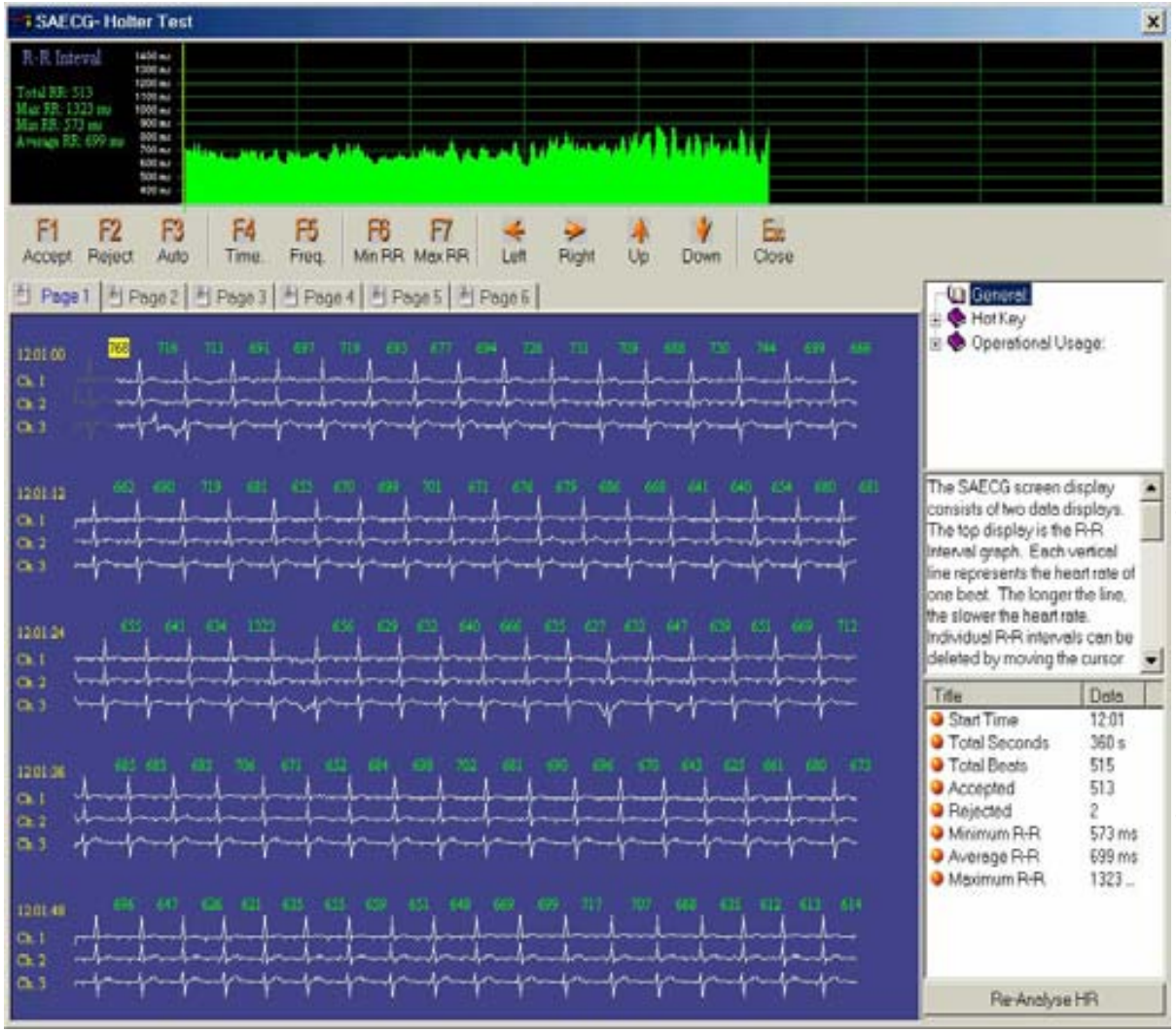


- **The FCG CADgram is a supplement to 12-Lead ST analysis.**
- **Its purpose is to use a Frequency power technique to detect and locate blockages.**
- **A positive FCG CADgram is simply an indication for doing and exercise stress test.**
- **The FCG CADgram does not require any exercise or high HR from the patient.**

SAECG Late Potentials

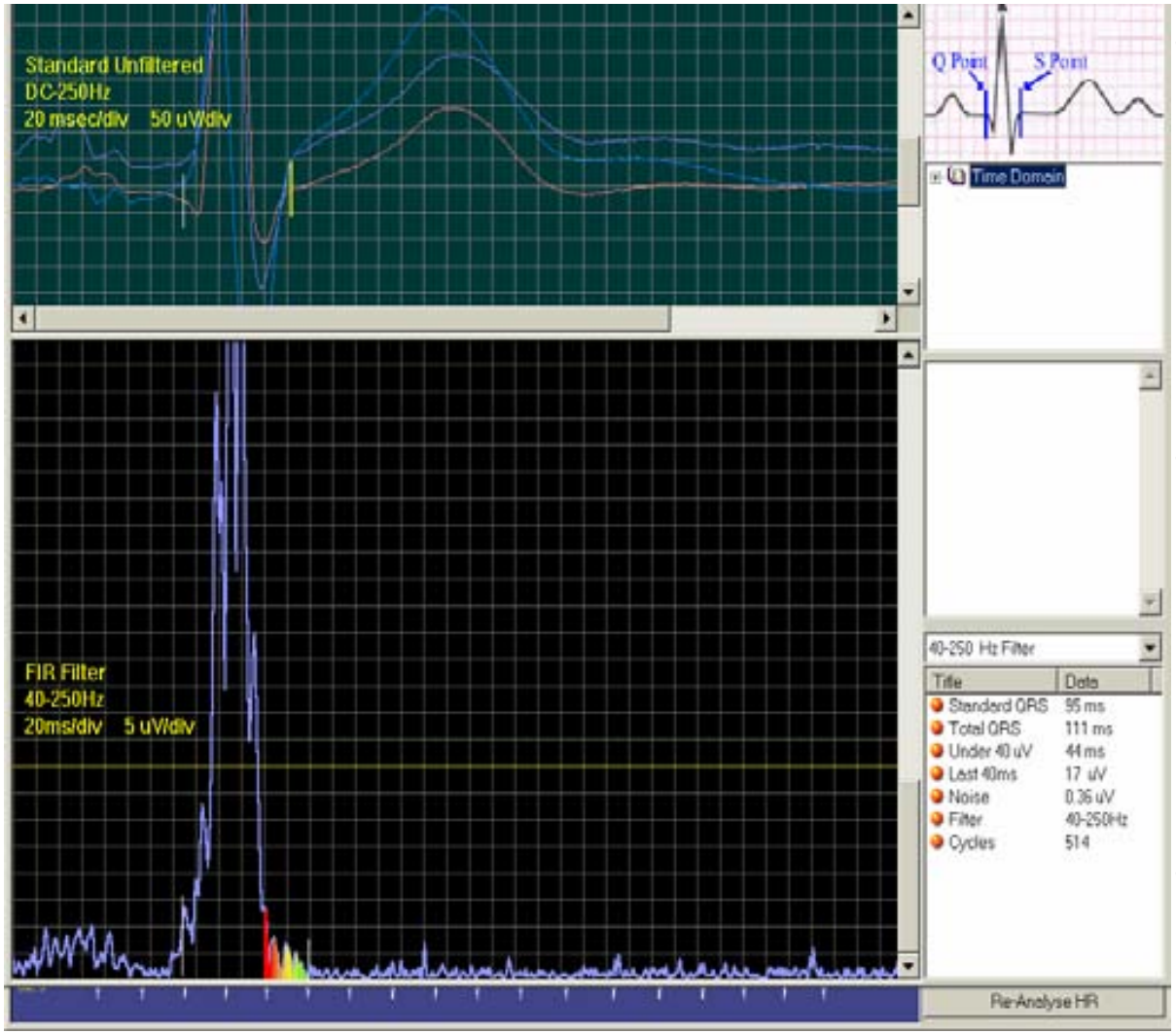
- **For SAECG and VCG, click on the icon.**
- **The first 10-minutes of the ECG file has a high frequency of 500.0 Hz and a sample rate of 1,024 per second, to meet the requirements for a diagnostic SAECG test.**
- **After you click on the icon, the next slide will display the data for SAECG. You must enter into Time Domain and Frequency in order to print a report.**

SAECG Late Potentials



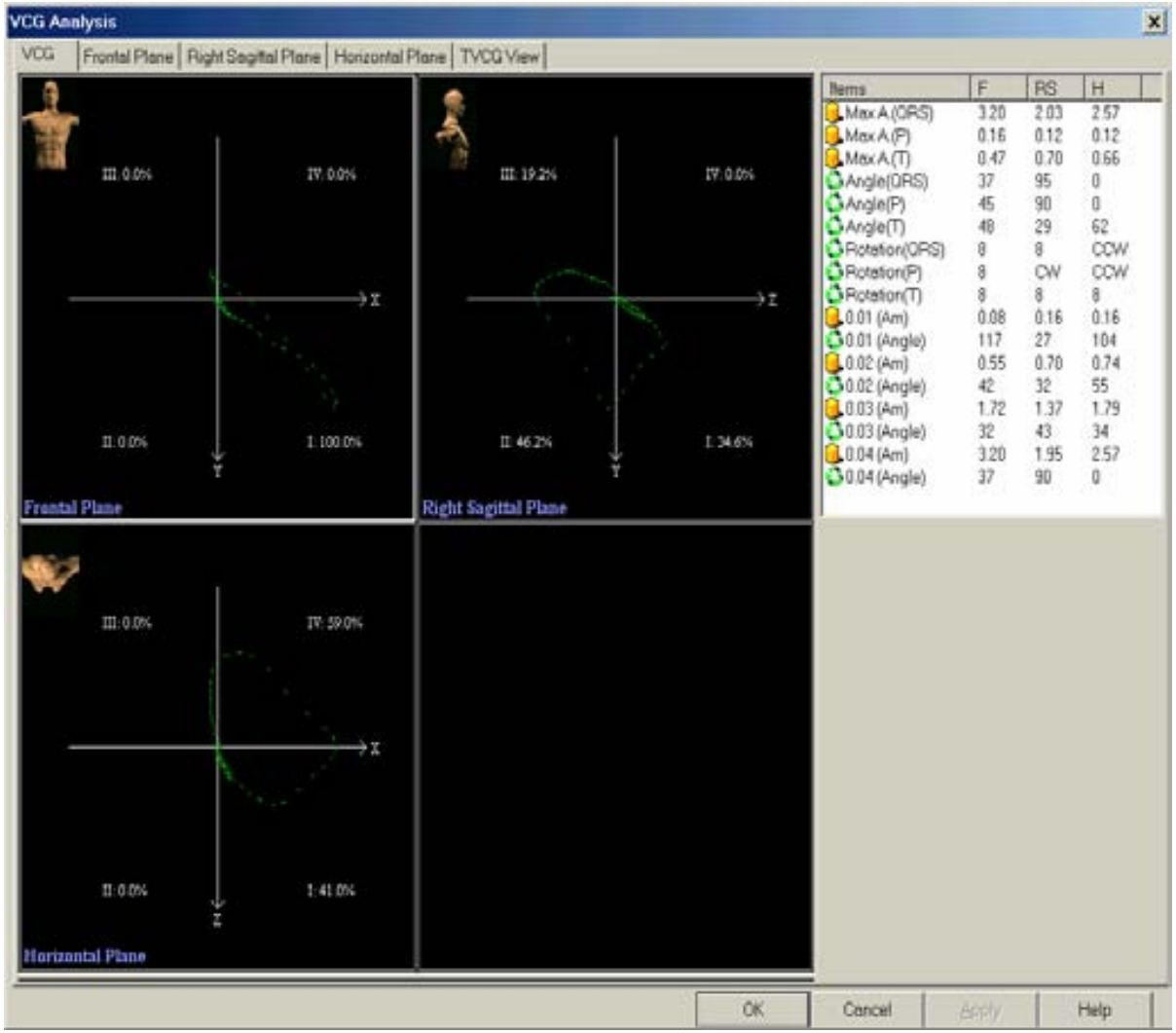
- **This screen display shows you the first minute of the SAECG file. You have icons to select Page 1 through 6, which are the selected 6 minutes of data for SAECG.**
- **To get a clean SAECG file, the patient show lay down for the first 10-minutes of the Holter recording.**
- **Play with the Accept and Reject icons, and use mouse arrow and click to reject artifact ECG's, and then press Time icon.**

SAECG Late Potentials



- **Press the Tab key until the bright yellow marker is shown at the end of the top QRS, and move marker with arrow keys to the end of QRS.**
- **The filtered SAECG at bottom uses a computer algorithm for the filtered QRS width, but you can adjust by using the Tab and Arrow keys.**
- **Press ESC and select Freq icon to explore Frequency SAECG. ESC to get back to Data Access Choices.**

VCG (Vectorcardiogram)



- **The VCG program is intuitive and easy to access.**
- **Click on any of the five (5) top tabs to access the VCG.**
- **If you click on the TVCG (Timed VCG), you will see the data on the following slide.**
- **XYZ electrode placement is required for VCG.**

VCG

- **The red arrow at top is the beat displayed in VCG mode to the far right.**
- **Use the arrow key to move the red beat marker. Moving the red marker to a VE beat presents an improved method of locating the foci of an arrhythmia beat.**
- **The VCG below the ECG is shown in the same spatial relationship as the ECG.**
- **It shows a truer picture of the end of T-wave.**