Sentry*Scope*™ User Manual

Release 4.00

1/8/2007

Spectrum San Diego, Inc.
10907 Technology Place
San Diego, CA 92127
Ph: 858 676-5382
Fax: 858 676-5385

Table of Contents

1. User Manual Status

This is Release 4.00 version of the user manual.

2. Warranty Statement

Sentry*Scope* is warranted to be free from defects in material and workmanship for three (3) years under normal use and service, beginning on the date of shipment. This warranty covers only hardware, software, and accessories as supplied by Spectrum San Diego, Inc. Software, parts, and services are warranted for 90 days. Product repairs in warranty do not restart the three (3) year period. Product repairs outside the warranty period are warranted for 90 days. This warranty extends only to the original buyer or end user customer of a Spectrum San Diego reseller.

Spectrum San Diego resellers shall extend this warranty on new and unused products to their end user customers only but have no authority to extend a greater or different warranty on behalf of Spectrum San Diego. Warranty support is available if product is purchased through a recognized sales outlet or buyer has paid the applicable international price. Spectrum San Diego reserves the right to invoice buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

Spectrum San Diego's warranty obligation is limited, at Spectrum San Diego's option, to refund of the purchase price, free of charge repair, or replacement of defective product which is returned to an authorized Spectrum San Diego service center within the warranty period.

To obtain warranty service, contact your nearest Spectrum San Diego authorized service center, obtain a Return Material Authorization (RMA) number, and send the product (Spectrum San Diego will pay transportation costs) to your nearest authorized service center. If the product failure is deemed to be from normal use and service, following the warranty repair the product will be returned to buyer with transportation prepaid by Spectrum San Diego. If Spectrum San Diego determines the failure is due to misuse, alteration, accident, or abnormal condition of operation or handling Spectrum San Diego will provide an estimate of the repair costs. Upon obtaining authorization for the work, Spectrum San Diego will repair the product. Following the repair, the product will be returned to the buyer transportation prepaid and the buyer will be billed for the repair and return transportation charges (FOB shipping point).

THIS WARRANTY IS THE BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SPECTRUM SAN DIEGO SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, WHETHER ARISING FROM BREACH OF WARRANTY OR BASED ON CONTRACT, TORT, RELIANCE OR ANY OTHER THEORY.

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion of limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this warranty is held invalid or unenforceable by a court of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

3. Customer Support Information

Authorized service centers:

Spectrum San Diego, Inc.
10907 Technology Place
San Diego, CA 92127

Ph: 858 676-5382
Fax: 858 676-5385

Customer support contact information:

Phone support hours: 7AM – 4PM PST
Ph: 858 676-5382, x104
Fax: 858 676-5385
E-mail: support@spectrumsdi.com

4. Sentry*Scope* Setup

a) Initial Screen

After installation of Sentry*Ware*, double click on the lock icon [lock icon] . The following screen will appear (Figure 1):
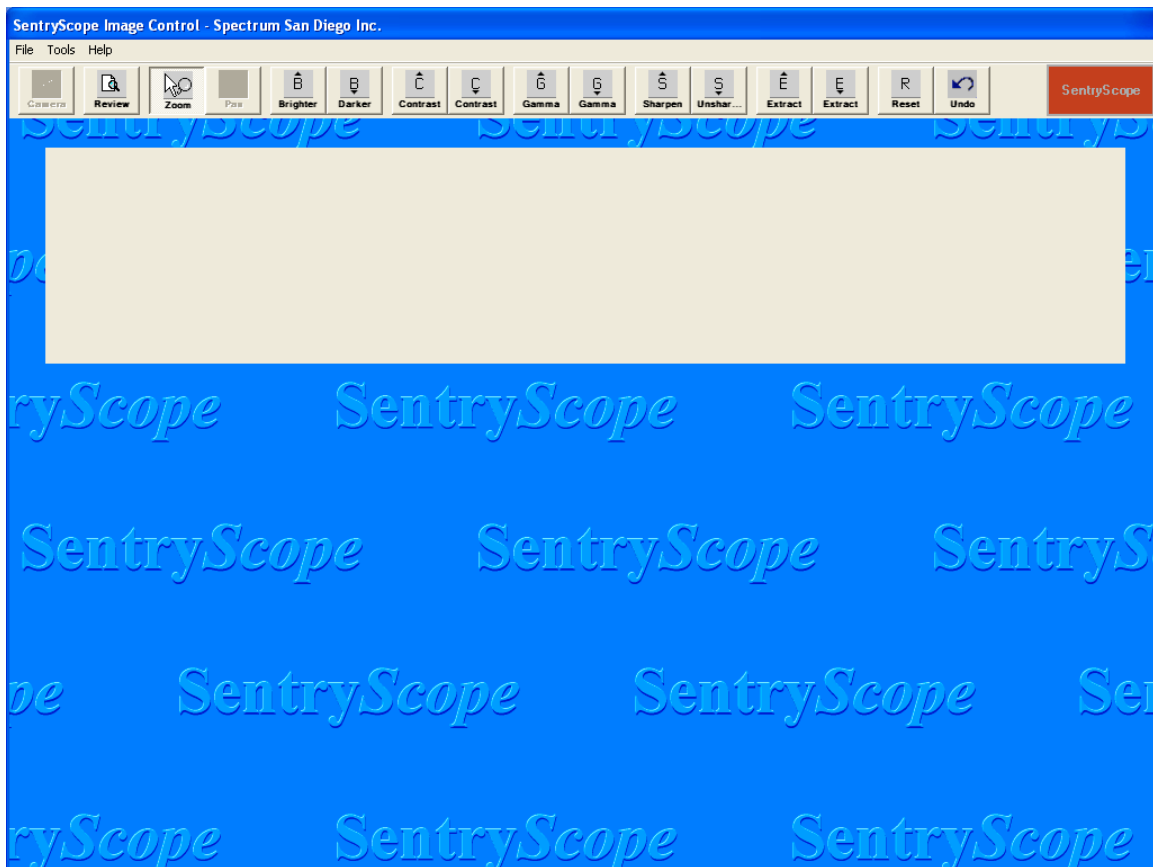

Figure 1

The box in upper right hand corner displays the following status conditions:

      Brick red – Camera not available
      Bright red – Camera available, not recording images
      Green – Camera available, recording images

If the Sentry*Chroma* color camera overlay is installed, this box will look as follows (Figure 2) with status boxes for each camera:
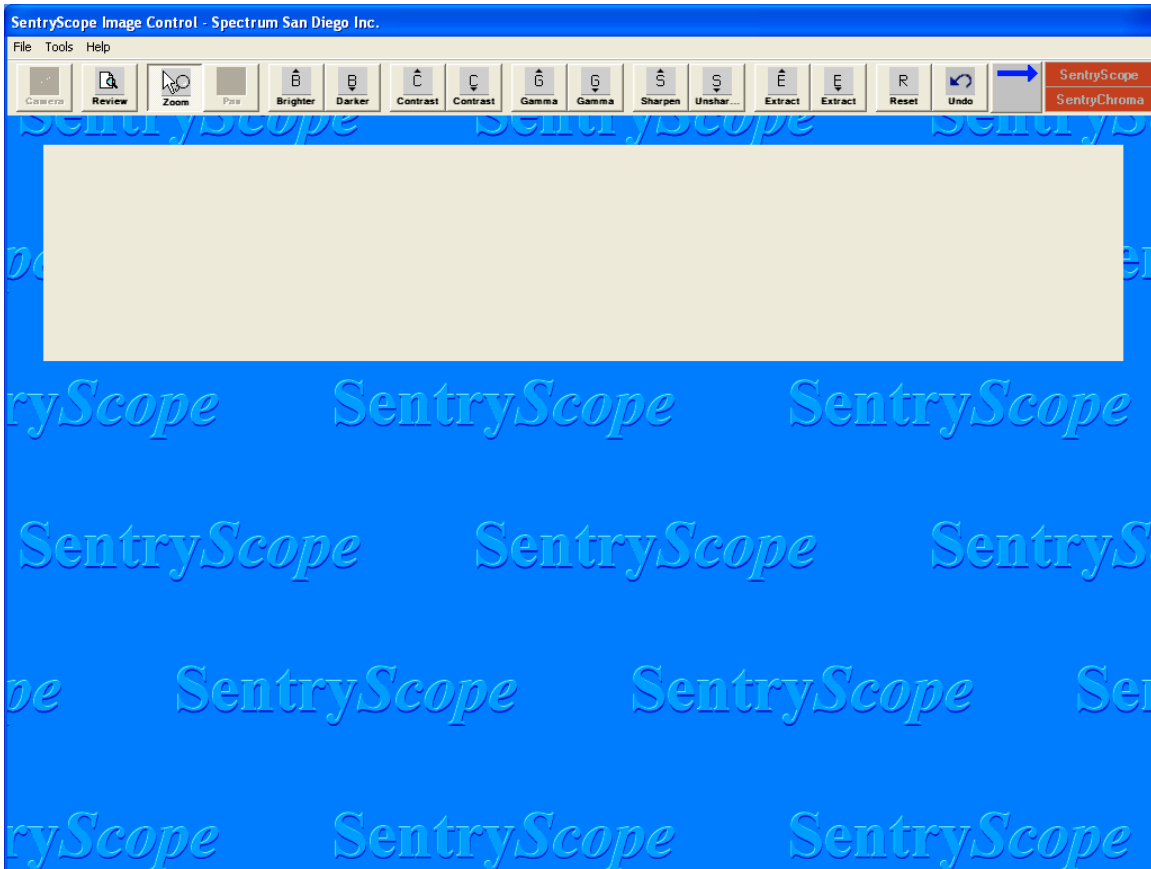
Figure 2

The remainder of this document will assume that Sentry*Chroma* is installed.

There are three (3) pull-down menus on top from left to right in Figure 2:

File – Save images as Windows® bitmaps, copy or print images, create image clips

Tools – Setup the camera before taking images

Help – Provides image and diagnostic data for maintenance purposes and software release information. With an image on the screen select "Image Properties" and the following screen will appear (Figure 3):
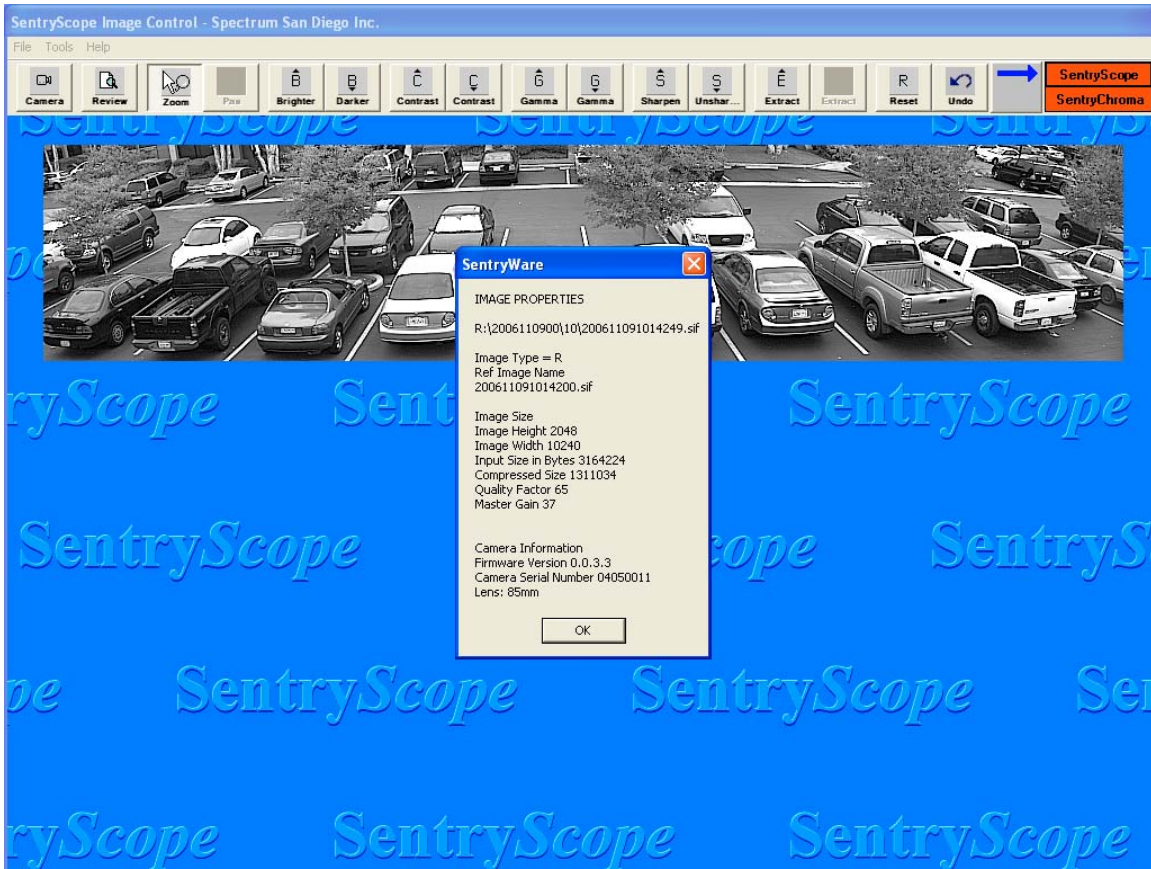
Figure 3

This data is used for diagnostic purposes. Click under the blue arrow in Figure 4 to switch to Sentry*Chroma* images. Select "Image Properties" again and the following screen will appear (Figure 4):
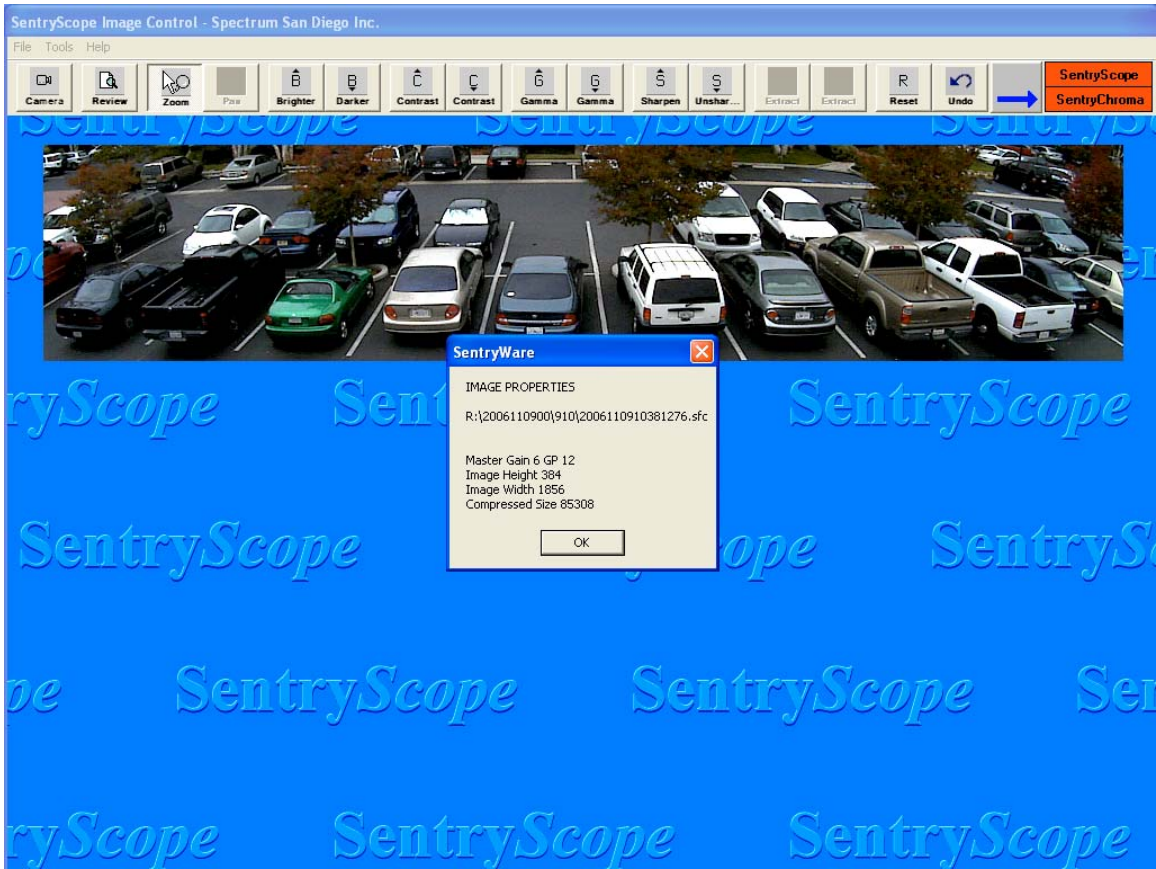
Figure 4

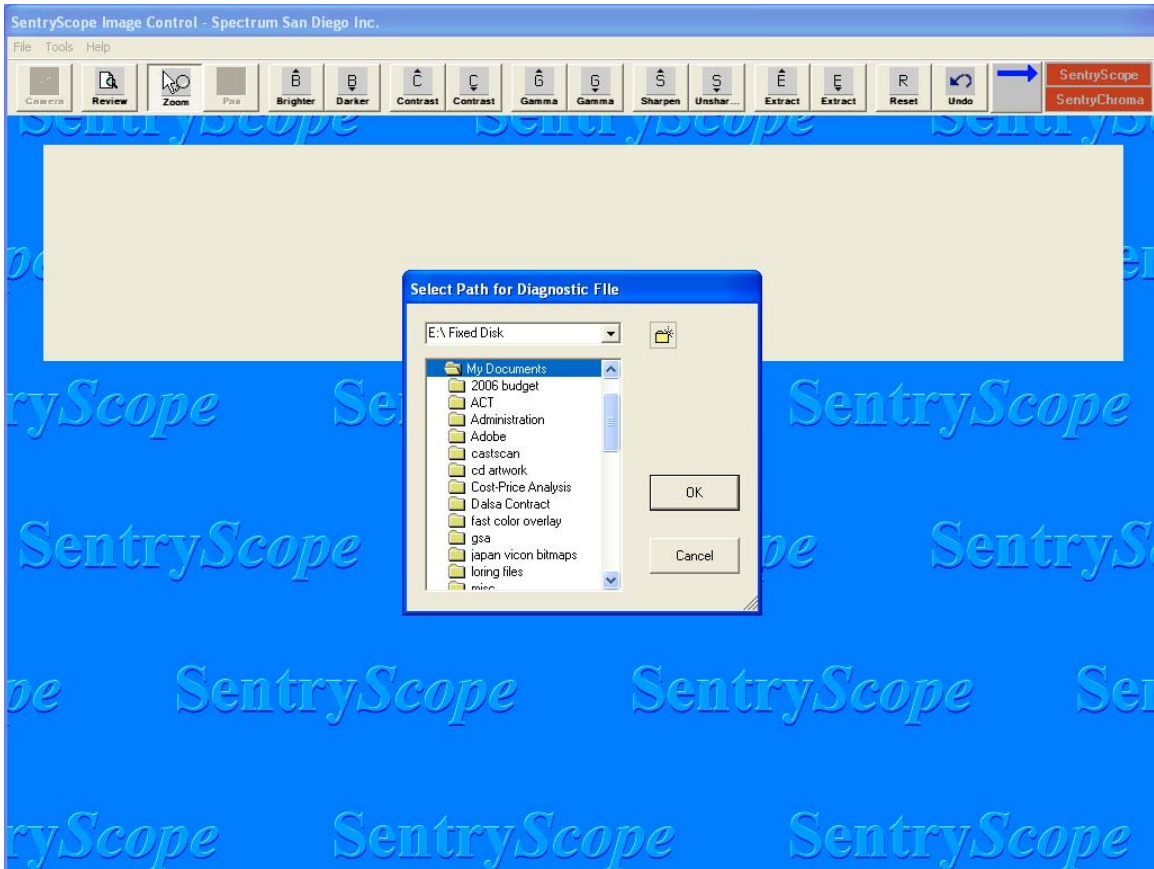From the "Help" pull-down menu select "Diagnostic File" and the following screen will appear (Figure 5):

Figure 5

Navigate to the desired directory and select "OK". The diagnostic file will be written to this location for subsequent analysis by Spectrum San Diego. From the "Help" pull-down menu select "About" and the following screen will appear (Figure 6) showing software release and camera setup information:
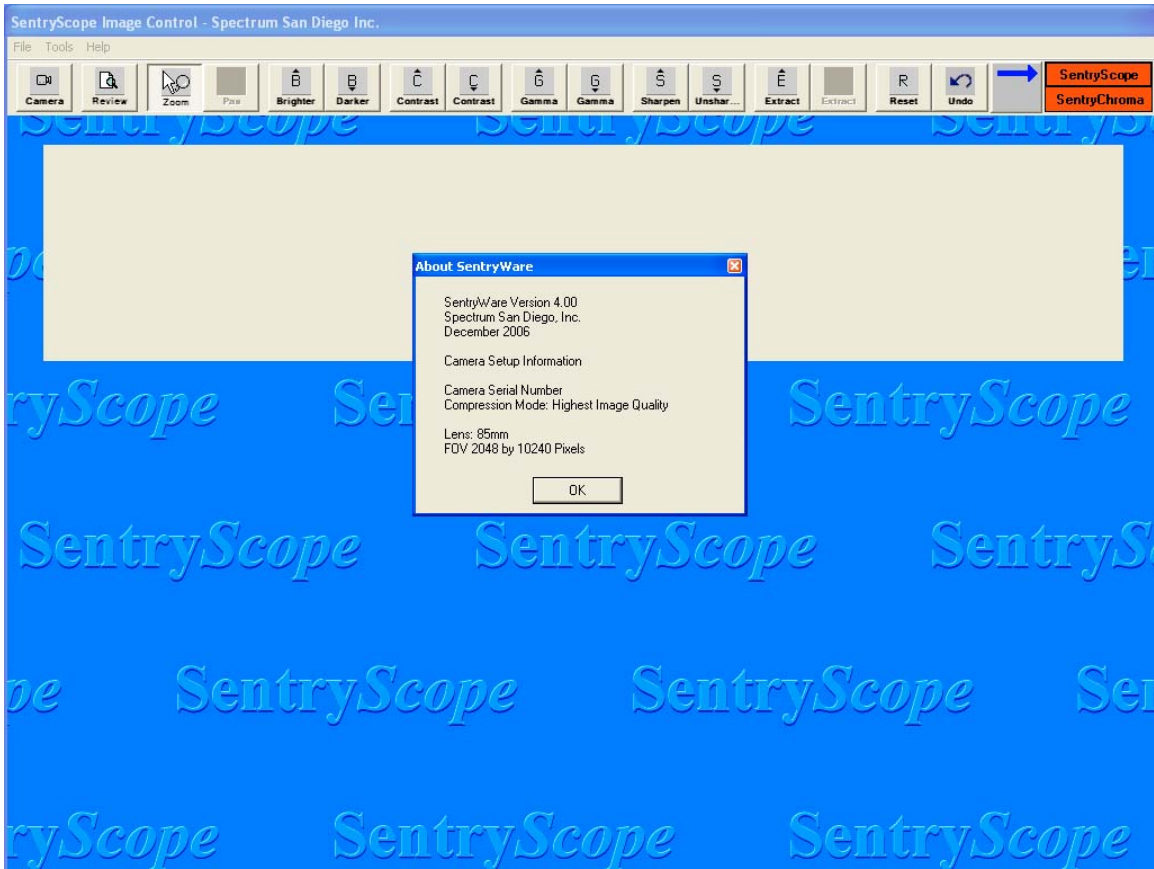
Figure 6

There are seventeen (17) operational icons from left to right in Figure 6:

Camera –	Indicates camera readiness for taking images
Review –	Provides tools to review any or all of the stored images
Zoom –	Zooms using the cursor
Pan –	Pans image at current zoom level using cursor
Brighter –	Increases brightness
Darker –	Decreases brightness
Contrast Up –	Increases contrast
Contrast Down –	Decreases contrast
Gamma Up –	Increases gamma
Gamma Down –	Decreases gamma
Sharpen Up –	Increases sharpness
Sharpen Down –	Decreases sharpness
Extract Up -	Extracts objects from dark, light, or glary regions
Extract Down -	Moves extracted objects back into background
Reset –	Resets image to default image enhancements
Undo –	Undoes last image enhancement on displayed image
Arrow –	Switches between black and white and color images

The "Camera" button will be highlighted once Sentry*Ware* finds either one of the connected cameras (Sentry*Scope* or Sentry*Chroma*). Pushing this button will initiate image recording from the connected camera(s). IF BOTH CAMERAS CANNOT BE FOUND BY SENTRY*WARE* THE "CAMERA" ICON WILL BE GRAYED OUT AND UNUSABLE. MAKE SURE THE CAMERA(S) WITH A STATUS COLOR OF BRICK RED HAVE POWER AND THE ETHERNET CABLES ARE PROPERLY TERMINATED AT THE CAMERA AND THE SERVER. CALL SPECTRUM SAN DIEGO IF THE CAMERA(S) STILL CANNOT BE FOUND BY SENTRY*WARE*.

b) Tools Pull-Down Menu – Camera Setup, Setup Tab

Select the "Tools" pull-down menu, and select "Camera Setup". Select the "Setup" tab and the following screen appears (Figure 7):
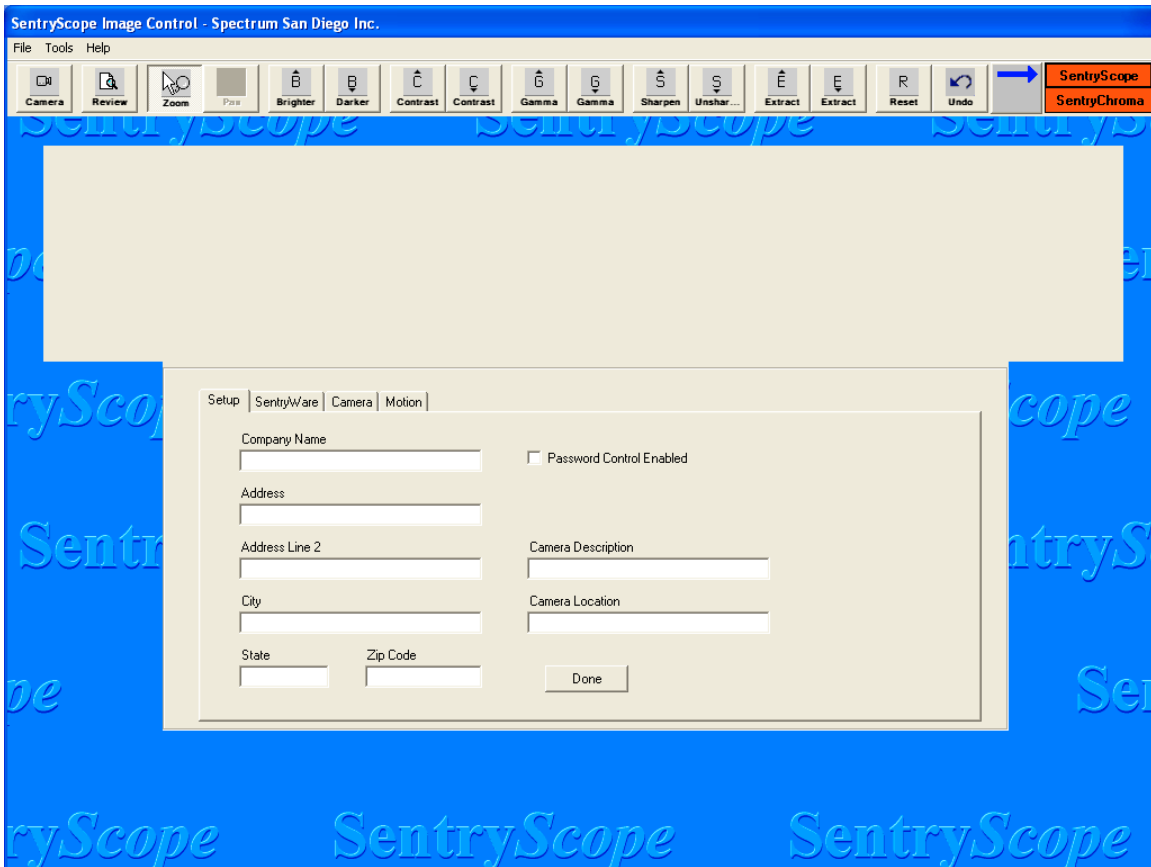

Figure 7

Fill in the appropriate boxes in Figure 7 with information about who owns the camera and where it is installed. Camera location is important for multiple camera installations being remotely monitored. This data will appear on the status bar of each camera displayed by Sentry*Manager*.

Check the "Password Control Enabled" box to password protect all camera settings. The following screen appears (Figure 8):
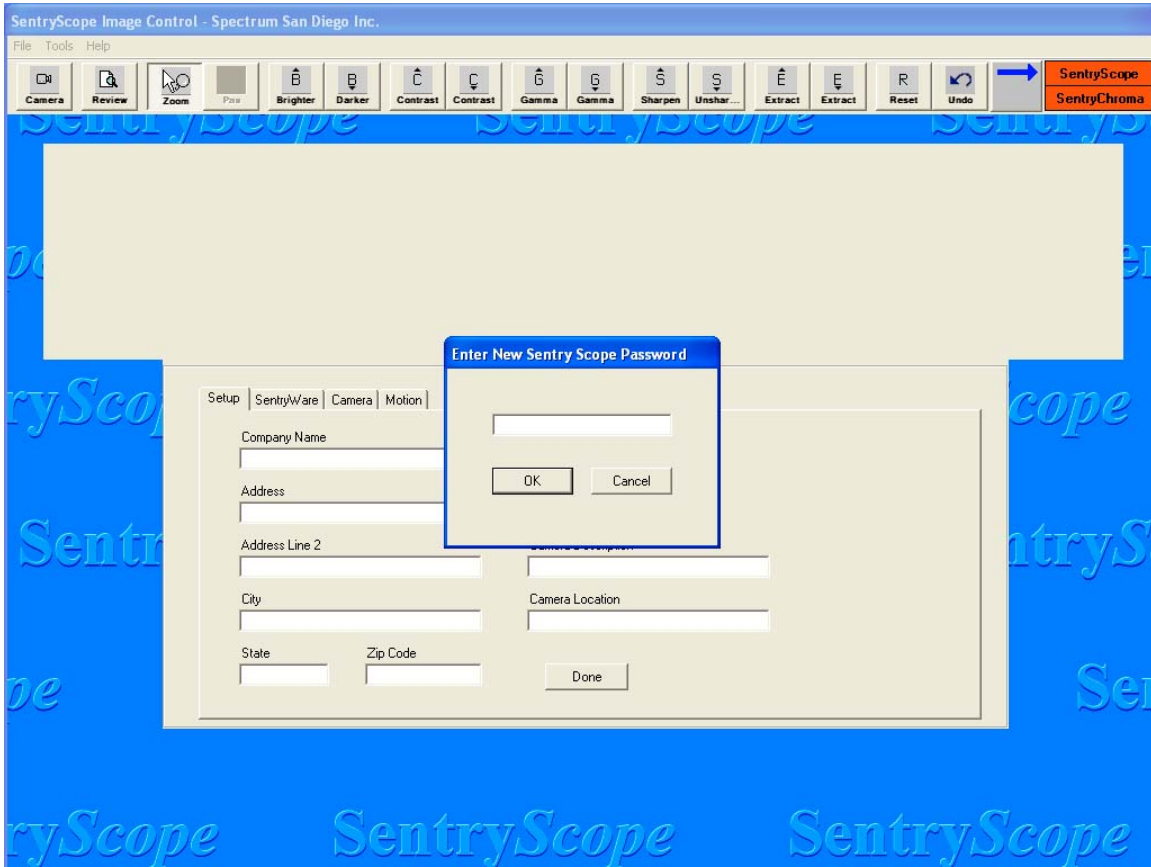

Figure 8

The default password is "SentryScope" and is case sensitive. Enter the password. A dialog box requesting confirmation will appear. Passwords must be at least eight (8) characters and can be any combination of keystrokes. All camera setup functions, camera utilities, the ability to start and stop the camera, and the ability to exit Sentry*Ware* will be password protected. To change the password or undo password control, uncheck the "Password Control Enabled" box. A dialog box will appear requesting the current password. After successfully entering the password, the box will be unchecked. To enter a new password, recheck the box and the dialog box requesting the new password will appear.

c) Tools Pull-Down Menu – Camera Setup, Sentry*Ware* Tab

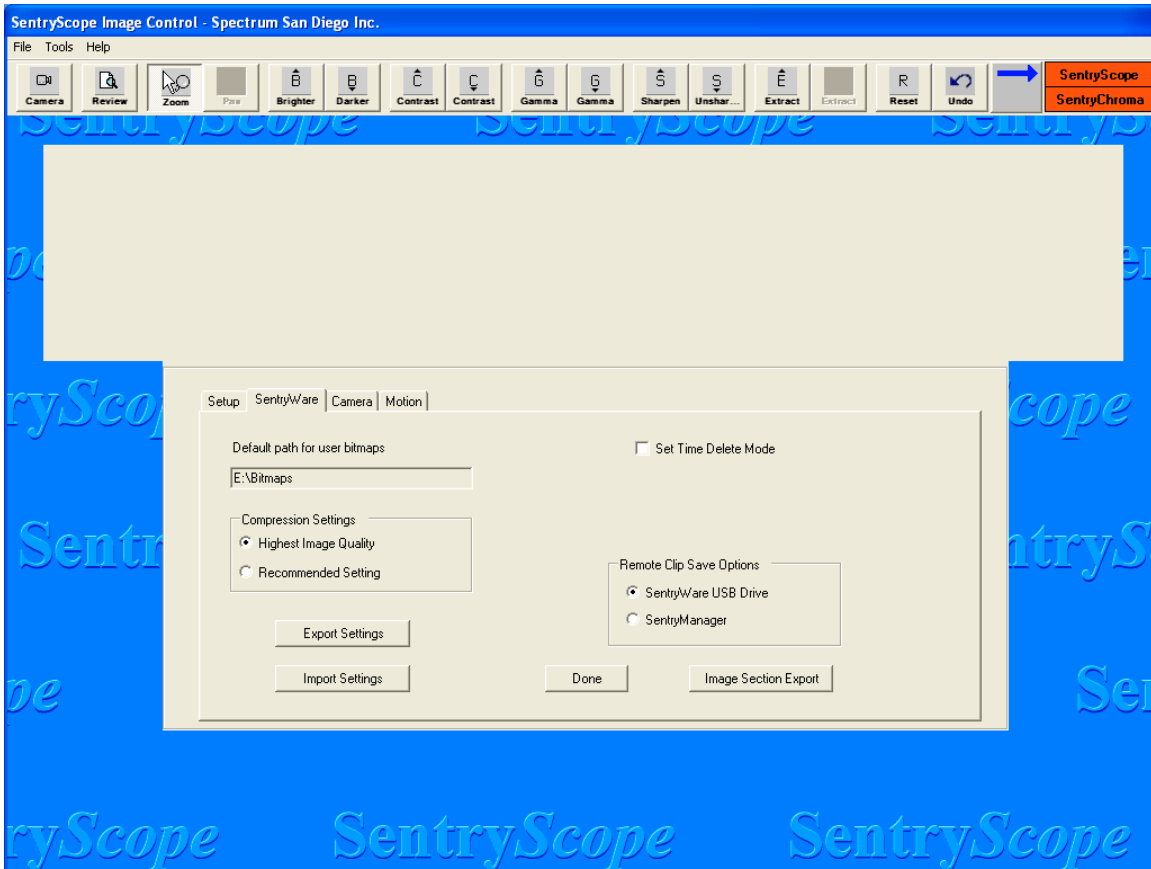Click the Sentry*Ware* tab and the following screen appears (Figure 9):

Figure 9

Click into the default path name where Sentry*Ware* will store image bitmaps for use in other applications. A dialog box will appear as shown below in Figure 10. When a bitmap is saved, the dialogue box will allow the default directory to be overridden. This control is used for both Sentry*Scope* and Sentry*Chroma*.
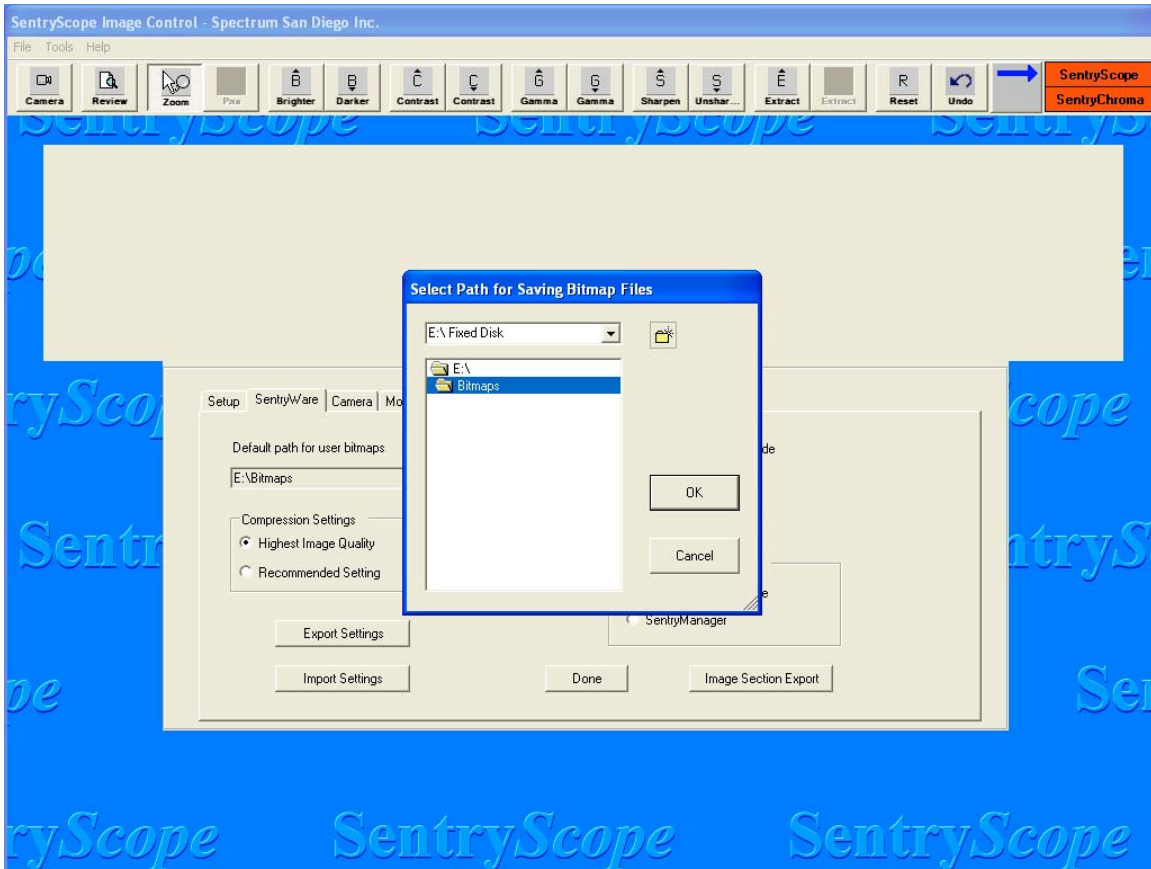
Figure 10

The Compression Settings dialog box provides two different compression settings for Sentry*Scope* depending on customer requirements as follows:

> Highest Image Quality – uses approximately 100-120 Gbytes of disk storage per 24 hours of continuous recording.

> Recommended Setting – uses approximately 80-100 Gbytes of disk storage per 24 hours of continuous recording.

This control has no affect on Sentry*Chroma*.

To show status of remaining image storage, click on the "Tools" pull-down menu and select "Disk Space Status". A status bar will appear showing how much disk space is remaining. If other dialogue boxes are open, the bar will be behind the boxes. Once the other dialogue boxes are closed, the screen will look like Figure 11 below:
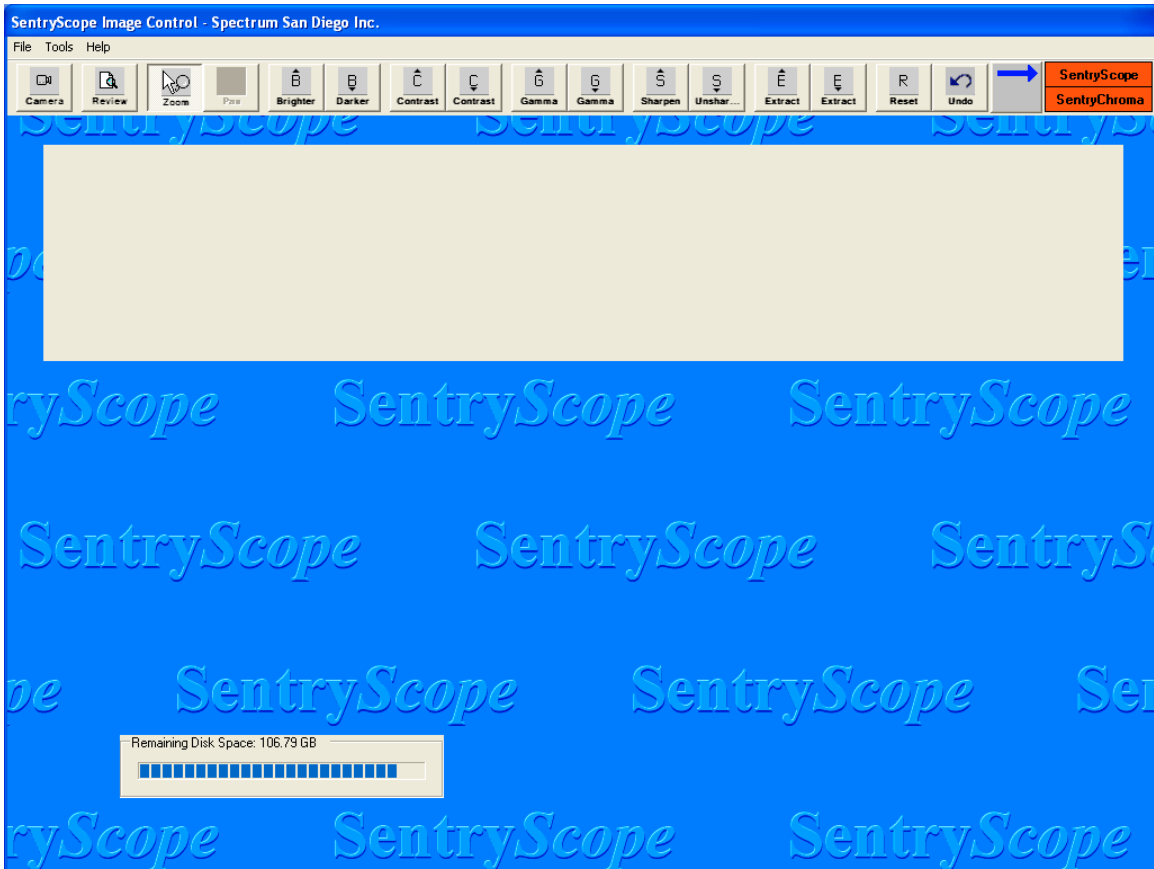
Figure 11

The "Remote Clip Save Options" dialog box in Figure 10 is used when remote Sentry*Manager* users are creating video clips. Select "SentryWare USB Drive" to write the clip to a local USB drive. Select "SentryManager" to transfer the clip over a network connection to the remote Sentry*Manager* work station.

The "Export Settings" box in Figure 10 is used to export camera settings for both Sentry*Scope* and Sentry*Chroma* to a file, typically a network location or a removable drive. This is useful in case of server failure to easily restore settings upon repair or if the setup is to be replicated across multiple cameras. Select the "Export Settings" button and the following screen will appear (Figure 12):
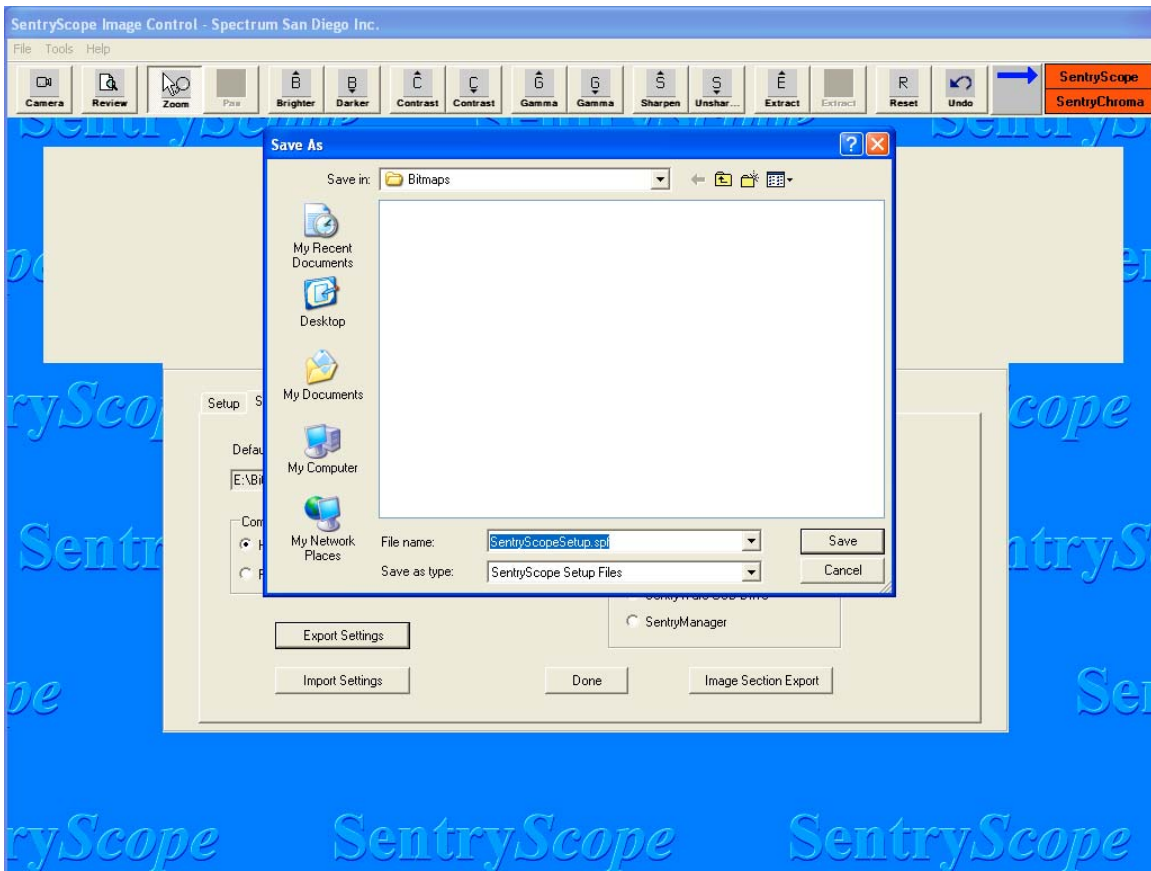
Figure 12

Select the location and then click "Save". Do not change the file extension.

The "Import Settings" button is used to restore saved settings or to perform initial camera setup from already stored settings. Press the "Import Settings" button and the following screen will appear (Figure 13):
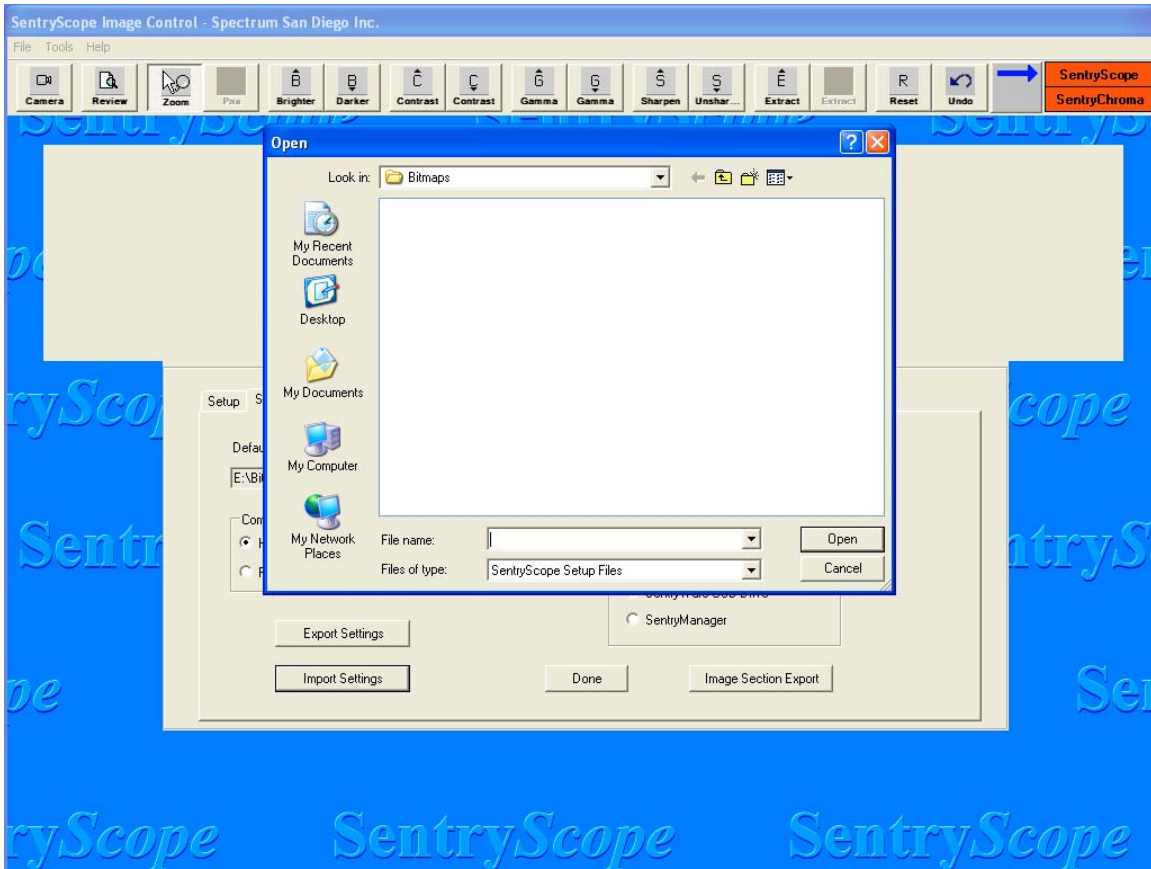
Figure 13

Navigate to the location and select the file name of the saved settings. Click the "Open" button and settings will be restored.

The "Set Time Delete Mode" control is used in installations where images are prohibited from being stored for more than a set amount of days. Click in the box and the following screen will appear (Figure 14):
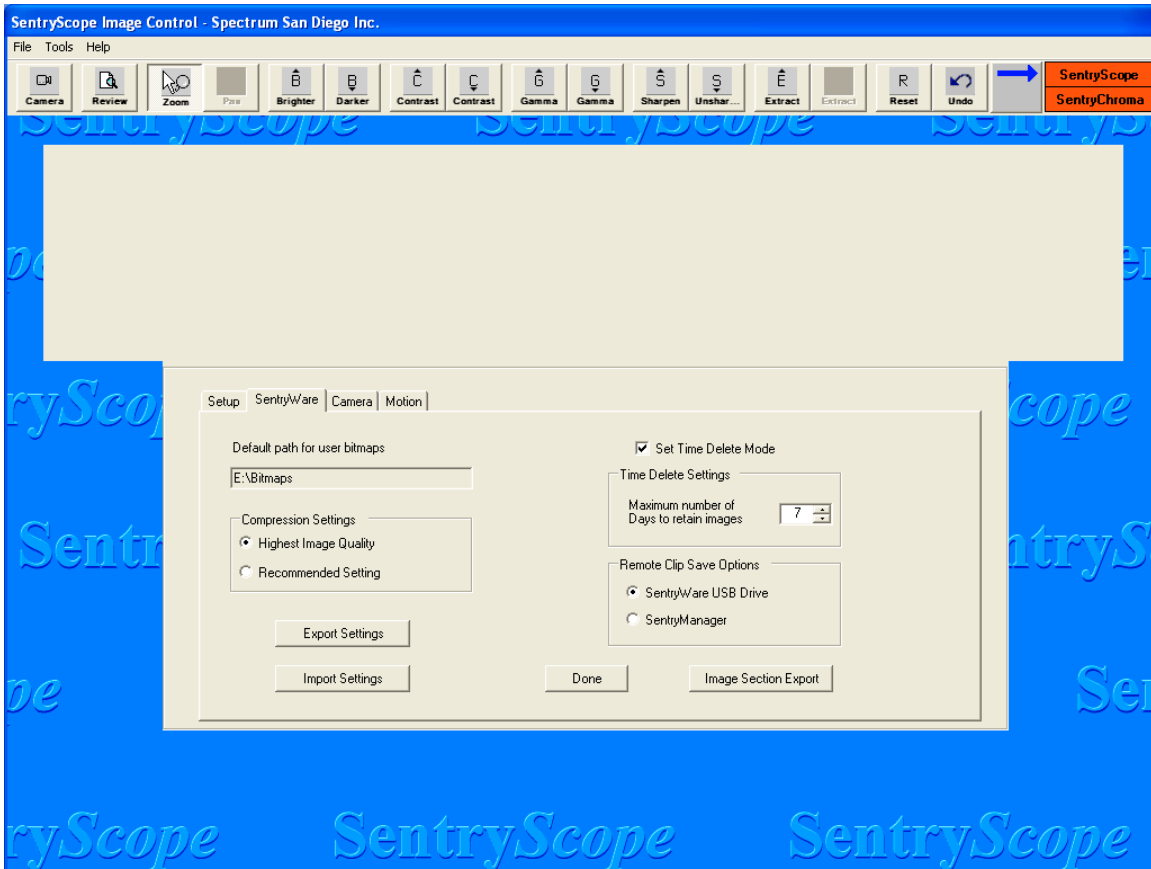
Figure 14

Use the arrow buttons to select the appropriate number of days for both Sentry*Scope* and Sentry*Chroma*. Images older than the setting will automatically be deleted first in first out. Click in the box again to disable this control.

The "Image Section Export" feature is used to automatically export defined sections of the image to a network drive. 3rd party software can then analyze these image sections off-line in applications such as license plate recognition. Click on the "Image Section Export" button and the following screen will appear (Figure 15):
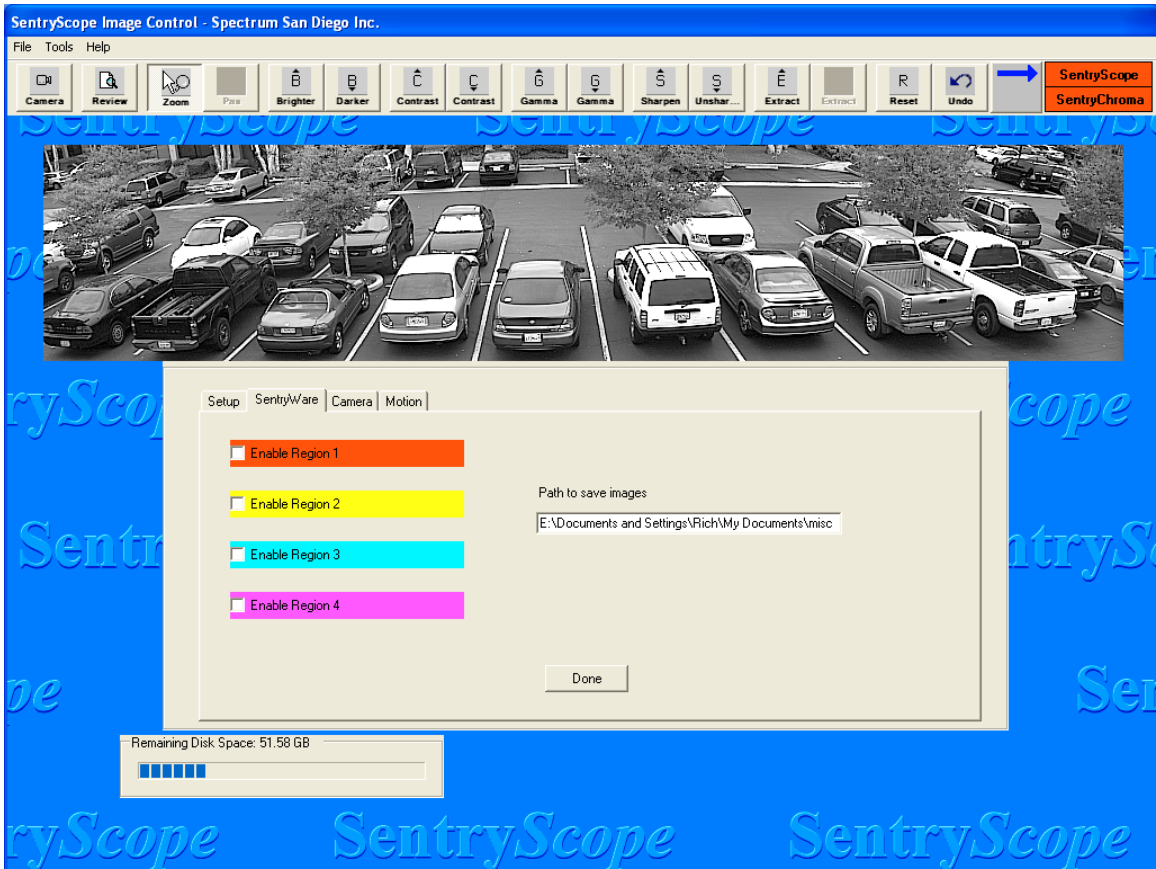
Figure 15

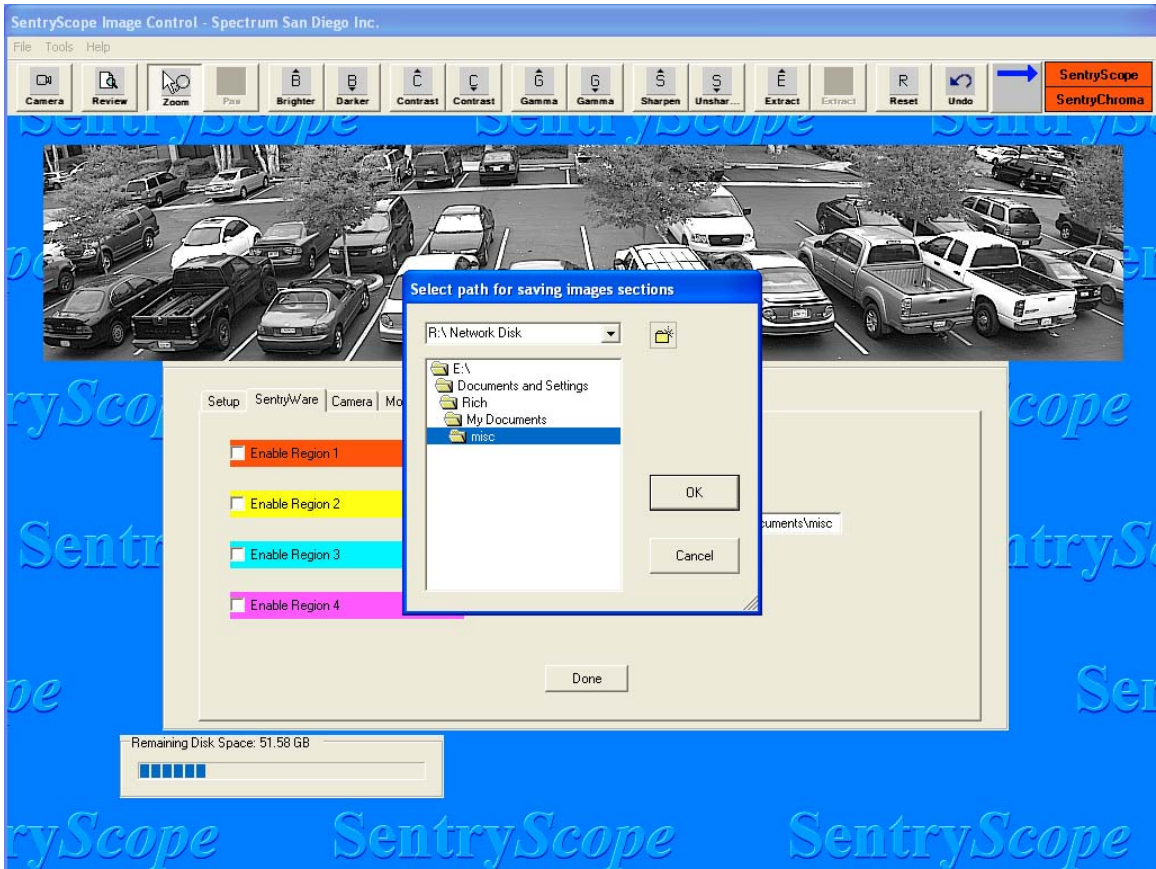Click in the dialog box "Path to save image" and the following screen will appear (Figure 16):

Figure 16

The desired location must be a network drive mapped by Windows. Once complete check "Enable Region 1" and the following screen will appear (Figure 17):
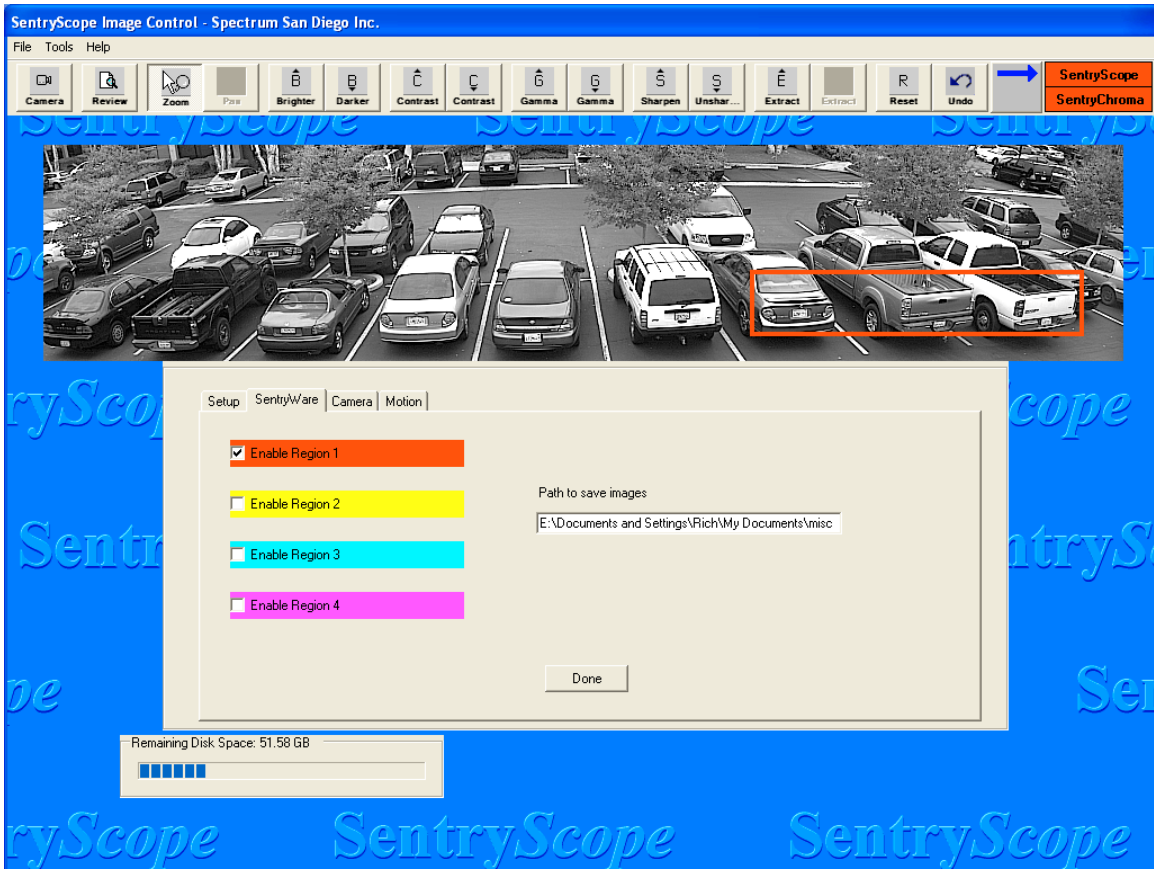
Figure 17

Using the cursor grab the top line of the box and position in the upper left hand corner of the desired location within the image. Grab the lower right hand corner of box to size it properly. Repeat these steps for regions 2-4 as necessary. Click the "Done" button when finished. As each full image is stored on the server, jpeg images from one or all of the regions will be exported to the defined location. This control will operate for either Sentry*Scope* or Sentry*Chroma* images. Each region will have a unique file name (time and data stamp followed be the region number) to allow for easy identification by 3rd party software.

d) Tools Pull-Down Menu – Camera Setup, Camera Tab

Select the "Tools" pull-down menu, select "Camera Setup", click on the "Camera" tab, and the following screen will appear (Figure 18):
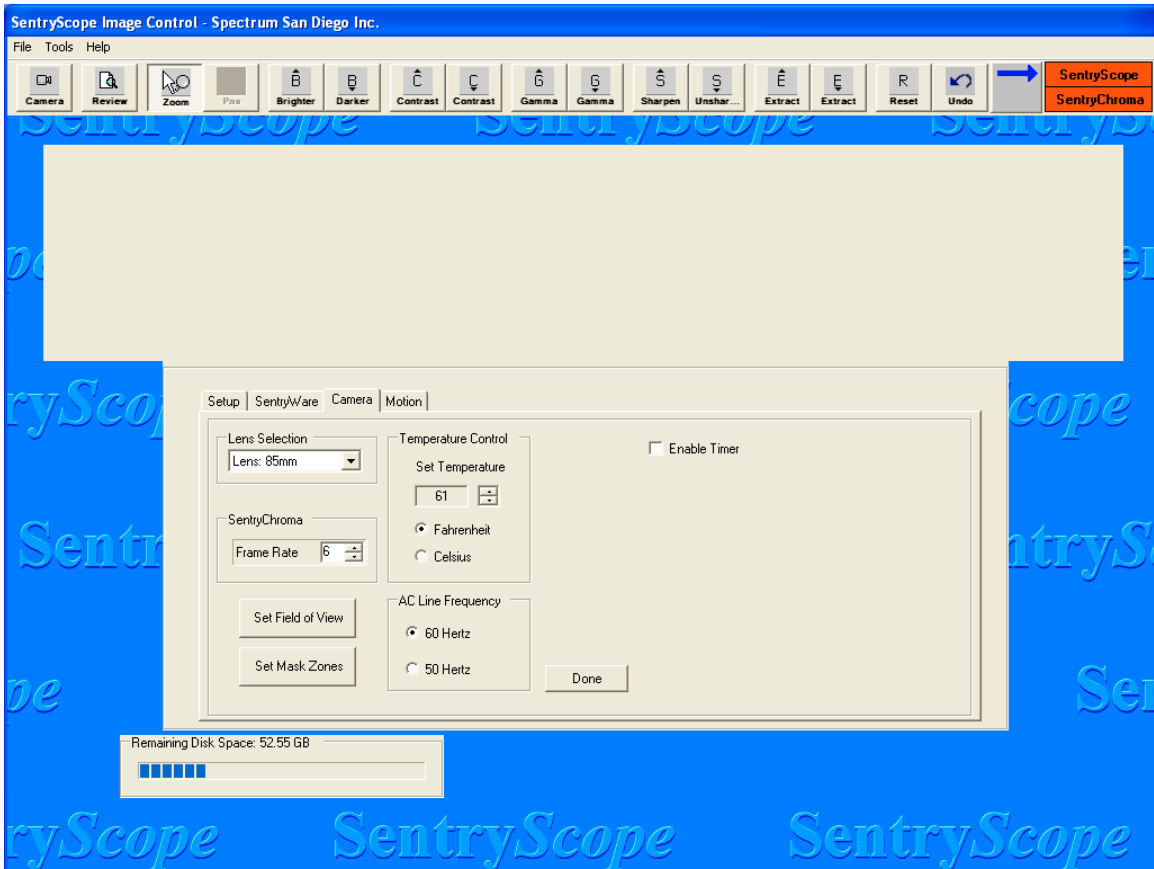
Figure 18

Sentry*Scope* has two lens options 50mm and 85mm. The lens setting will be set at the factory based on customer purchase order. The frame rate for Sentry*Chroma* is settable from 2-12 frames per second. The "Set Temperature" dialog box controls the temperature when the heater/blower turns on in outdoor applications. Set this appropriately to ensure condensation does not form on the mirror or front window. This setting will control the heater assembly in Sentry*Chroma*. For AC Line Frequency, select 60 Hertz for installations in North America. The 50 Hertz setting is applicable in many international installations.

Selecting "Enable Timer" will bring up the screen has shown in Figure 19 below:
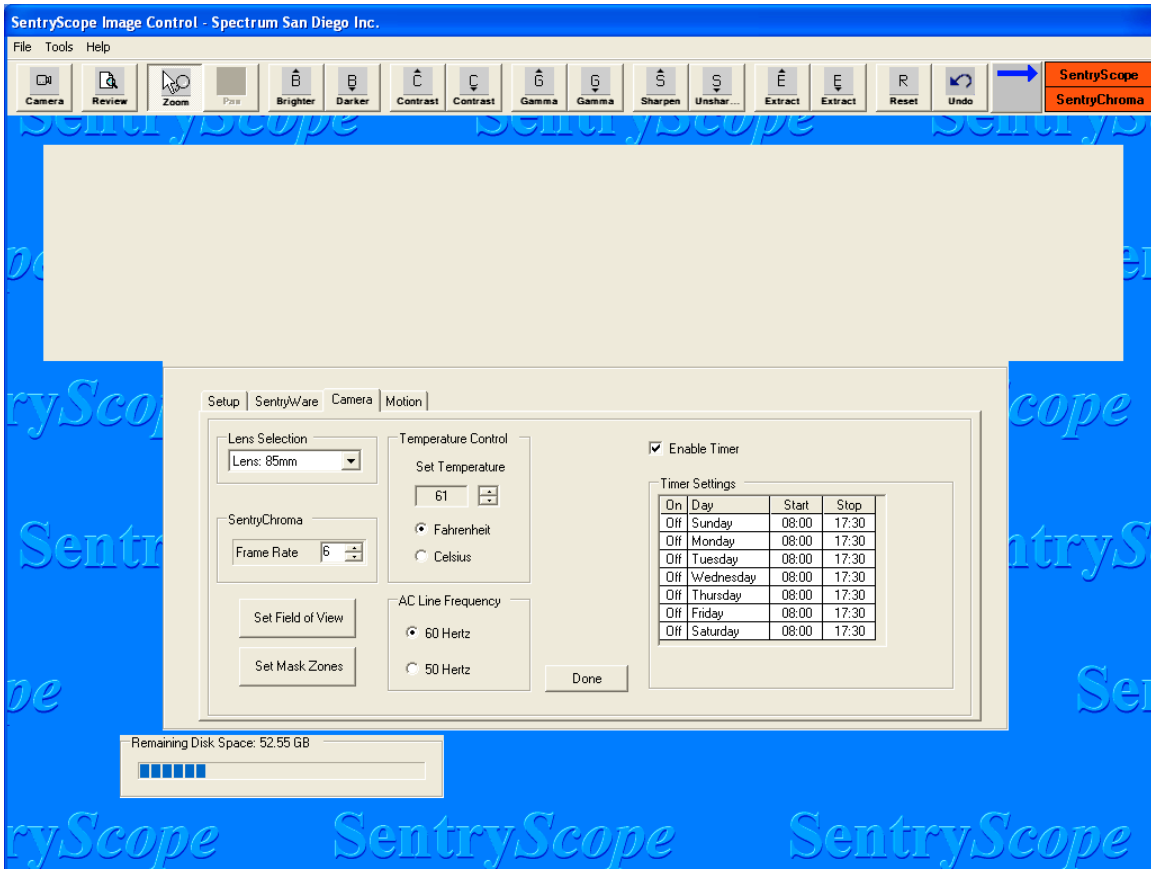
Figure 19

This setting is useful when there is a standard schedule of unattended and attended video surveillance. The camera can be turned on or off by day and by start and stop time. If the "On" column is set to "Off" the camera will not automatically start or stop on that day.

Click into the box marked "OFF". This will toggle the timer to "ON" for that day. Click into the "Start" and/or "Stop" boxes. Boxes will appear to set the hour and/or minute to the desired time.

To set the timer to run through midnight, set the start time on the appropriate day and the stop time for that day to any setting BEFORE the start time. On the next day set the stop time to the appropriate setting and the start time to any setting BEFORE the stop time. All time is in military format. Repeat these steps for as many days as appropriate.

The timer program turns the camera on and off once at the displayed time. If the operator clicks the "Camera" button in the icon bar and manually turns the camera on or off, this will override the timer function and the camera will stay turned on or off until the next scheduled timer event. The timer controls both Sentry*Scope* and Sentry*Chroma*.

e) Tools Pull-Down Menu – Camera Setup, Motion Tab

Enabling motion regions will cause images to be marked as alarmed only after Sentry*Scope* has detected motion in the defined region. This is useful to quickly search for images where motion occurred in key areas and/or alert operators in real time of motion events. Select the "Motion" tab and Figure 20 below will appear:
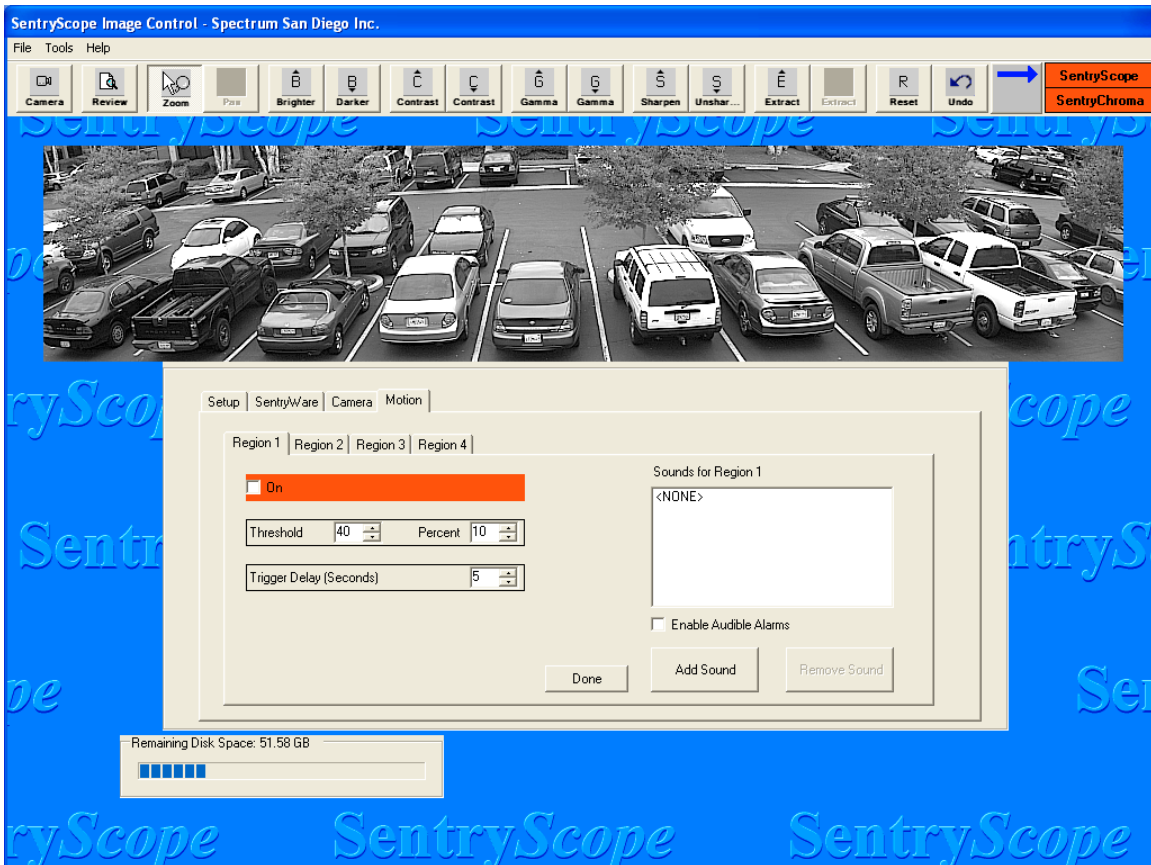

Figure 20

Up to four (4) regions can be defined. Click on the "Region 1" tab and then check the box marked "On" and Figure 21 below will appear:
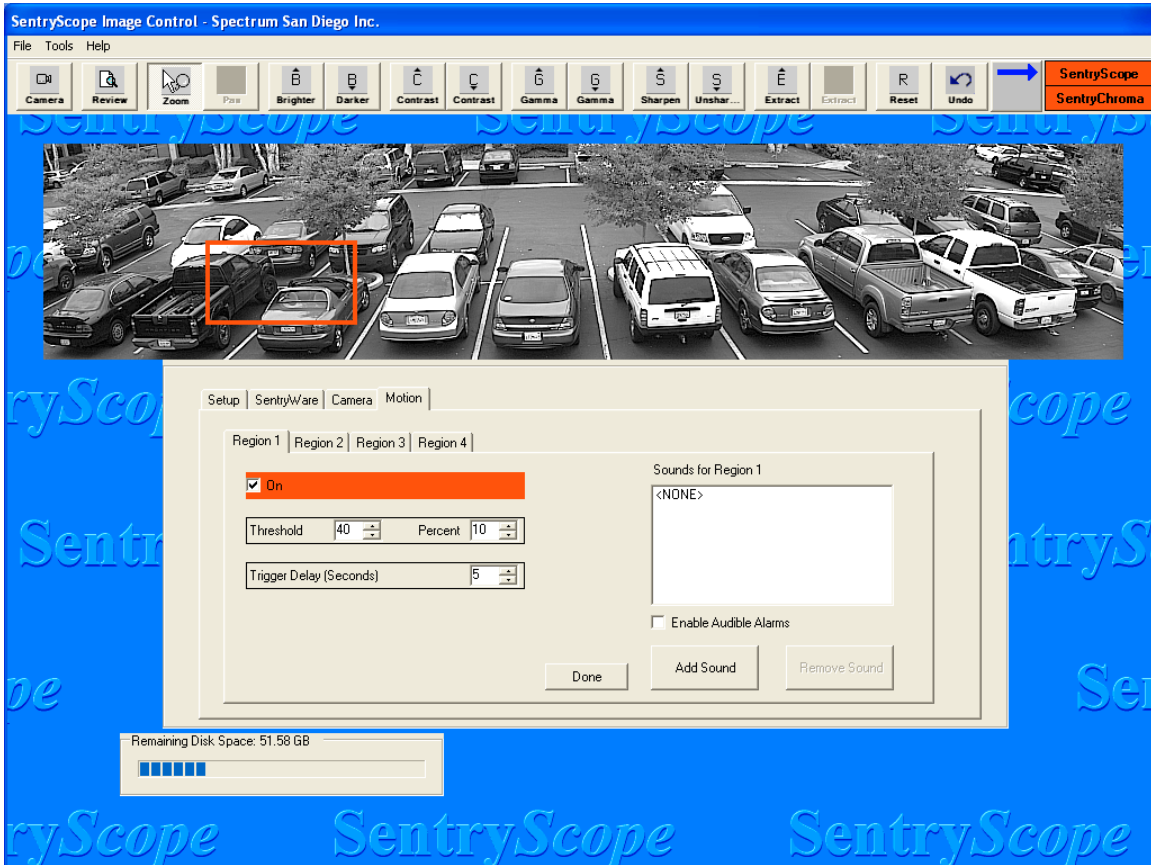

Figure 21

Grab the top line to move the box to the desired location. Grab the lower right hand corner to set the size of the box.

Set the "Threshold". This measures the absolute value change of the pixels in the motion region. Set the "Percent" level (0%-100%). This setting measures the number of pixels in the region that must change by the assigned threshold value before a motion event occurs. Set the "Trigger Delay" (0-999 seconds). This setting measures how long the first two conditions must be met before a motion even occurs. These three settings allow fine tuning of the motion event to prevent as many false alarms as possible.

The first image that triggered the motion event will be marked as alarmed. All images subsequently will be marked as alarmed until the motion conditions are no longer met. The motion region will then reset and wait for the next event.

In Figure 21, the "Enable Audio Alarms" check box is used to globally enable or disable the playing of all audio files for all motion regions or external triggers. This option will appear under each motion region. Click this box. Then press the "Add Sounds" button and Figure 22 below will appear:
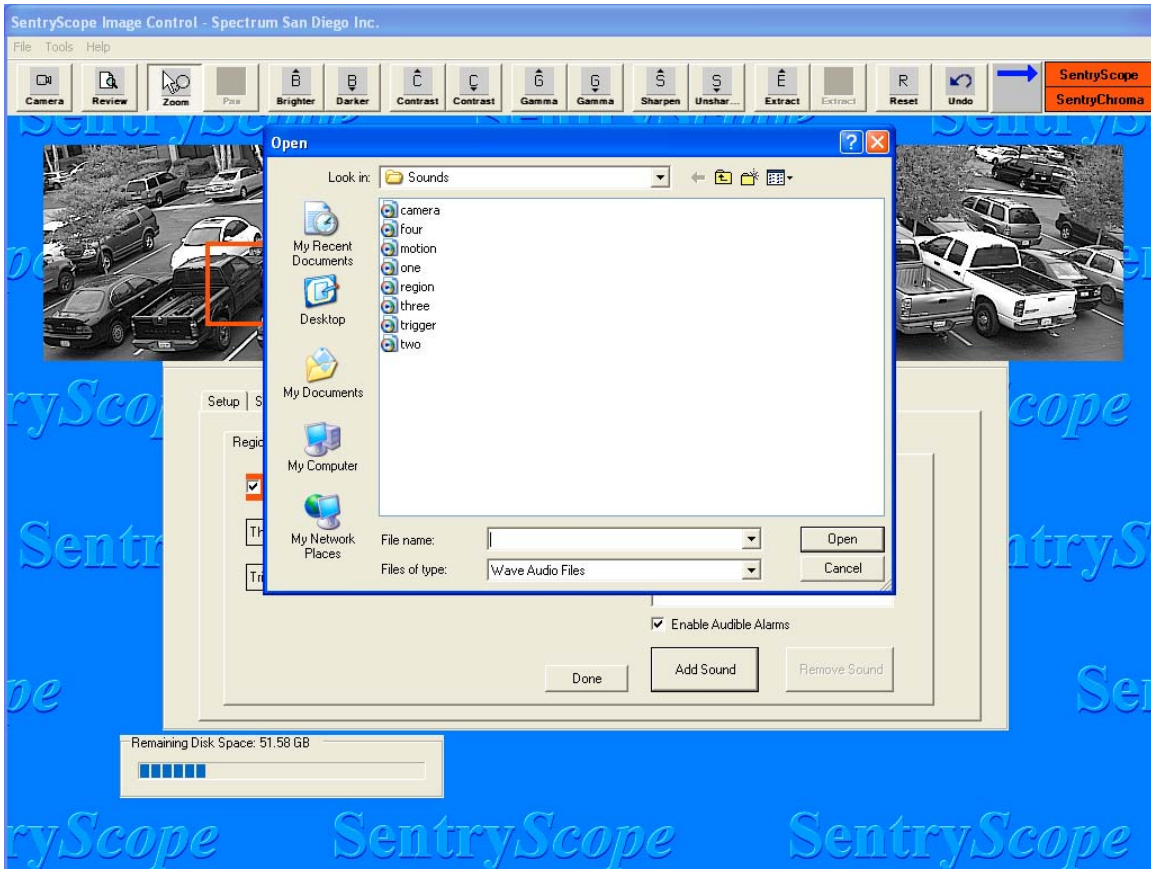
Figure 22

The "Sounds" folder is automatically created upon Sentry*Ware* installation with the above listed default ".wav" files. Only ".wav" files can be selected. Use this folder and files or navigate to a user defined folder with appropriate user defined ".wav" files. Double click on the appropriate ".wav" file and Figure 23 below will appear:
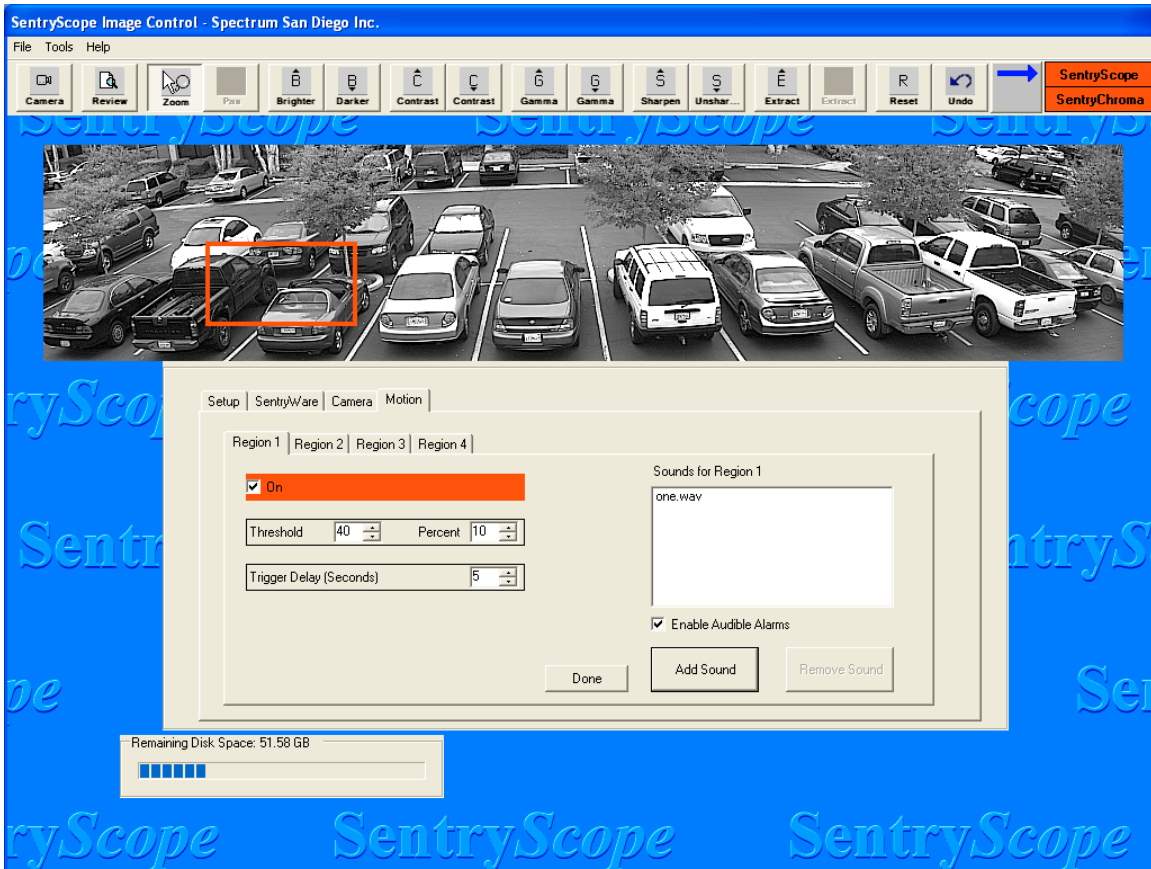
Figure 23

Up to five (5) audio files may be associated with these events. Repeat the steps in Figures 21 and 22 as many times as necessary. The ".wav" files will be played in the order added as each motion event occurs that has audio files assigned.

To remove an audio file from the sequence, click on one of the files and the "Remove Sound" button will be enabled. Click this button and the audio file will no longer be played when the associated event occurs.

Motion zones and audible files can be set up in Sentry*Chroma* using these same controls.

Repeat these steps for each motion region as necessary. Click "Done" when finished.

f) Tools Pull-Down Menu – Camera Setup, Trigger Tab

A dry contact board is available as an option. When this board is installed the motion zones discussed above are automatically associated with specific switches (see the Installation Manual for more detail). In addition to playing audible files when a motion event occurs the associated dry contact switch will be closed giving the operator additional notification of an event. When the dry contact board is installed and the

"Tools" pull-down menu is selected an additional tab will appear called "Trigger". Select this tab and Figure 24 below will appear:
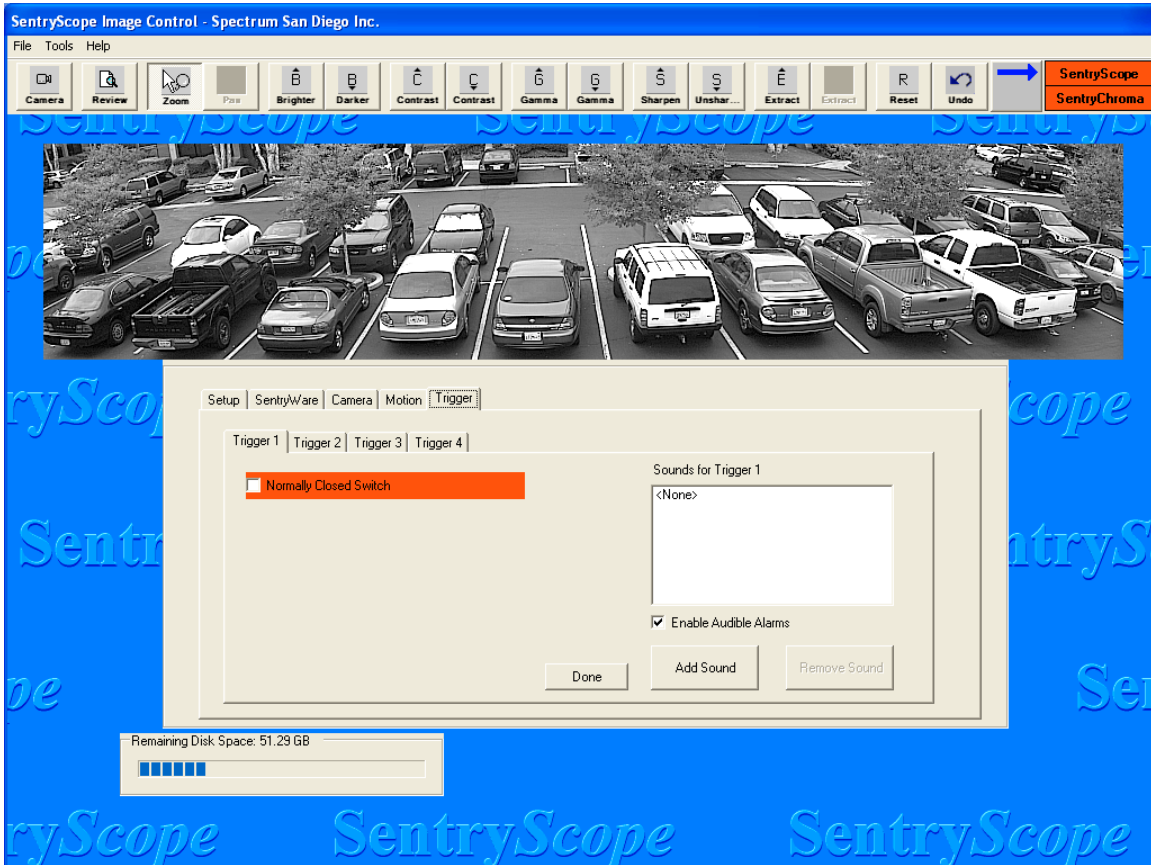

Figure 24

Up to four external triggers may be used as inputs. Each trigger is assigned to a switch on the dry contact board (see the Installation Manual for more detail). Each trigger can be set up to be either normally open or normally closed. If the switch is normally open, leave the "Normally Closed Switch" box unchecked. If the switch is normally closed, check this box. Each trigger may have associated audible files. Follow the directions in outlined for Figures 21-22 to assign sounds to the appropriate triggers.

Images will be marked alarmed as long as the switch is either closed or open, as defined in Figure 24, allowing for quick searching of events. All images will be marked alarmed until the switch changes state causing the trigger to reset and wait for the next event.

Repeat these steps as necessary for each trigger. Click "Done" when finished.

When the dry contact board is installed and/or motion enabled the "Tools" pull-down menu will have an additional selection named "Motion or Trigger Status". Select "Tools" and this option and the following screen will appear (Figure 25):
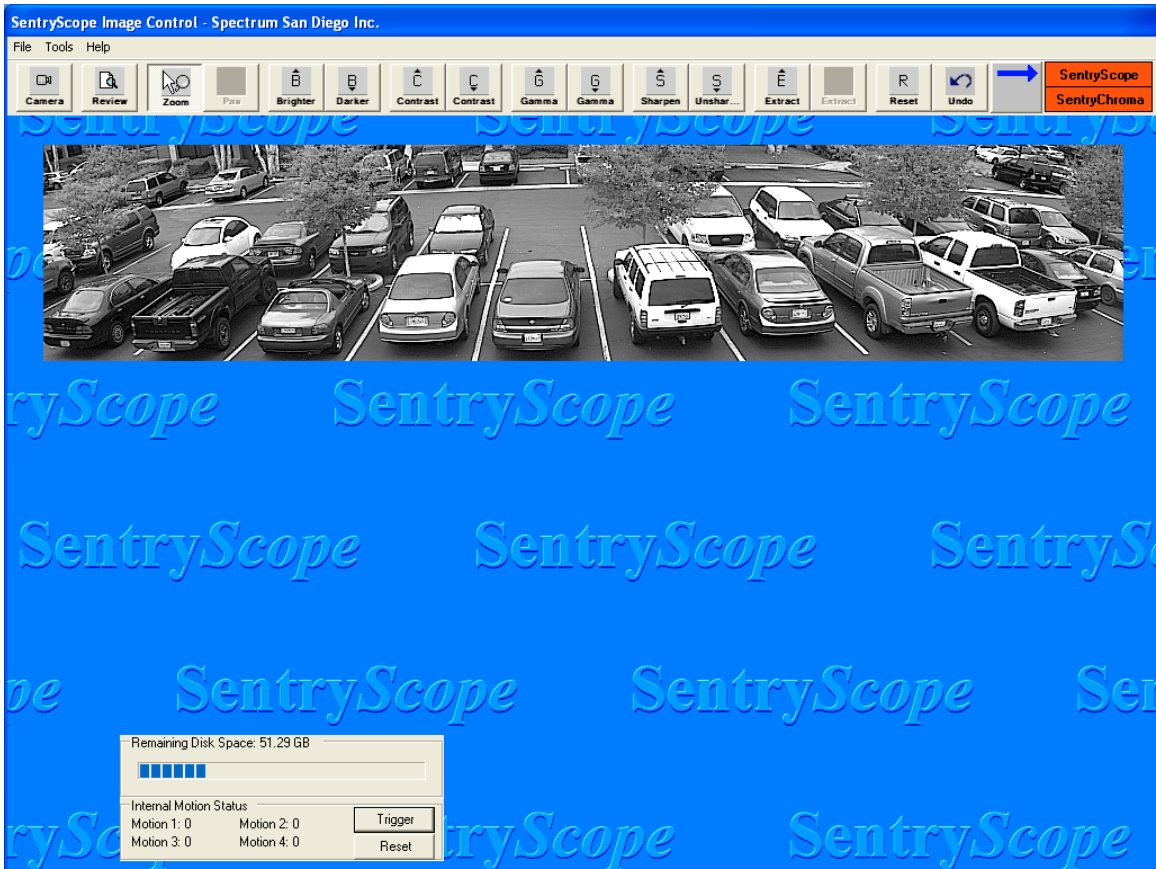
Figure 25

The number of motion events will be displayed for each region. Press the "Trigger" button and number of events for each trigger will be displayed. "Reset" is used to set the counters back to zero (0). The "Reset" button will have to be pushed once for "Triggers" and once for "Motion" to reset both counters to zero (0).

Sentry*Scope* and Sentry*Chroma* are ready to acquire images. Click the "Camera" icon to being taking images and the following screen will appear (Figure 26):
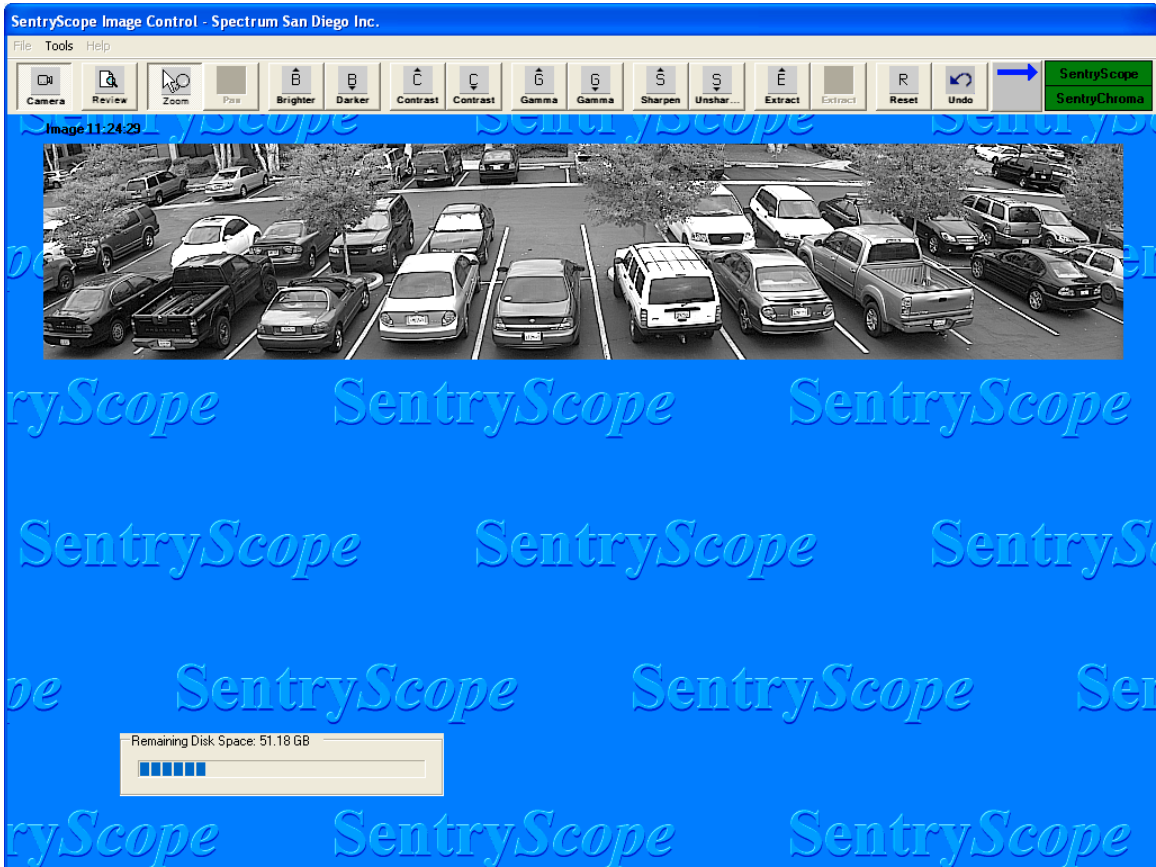

Figure 26

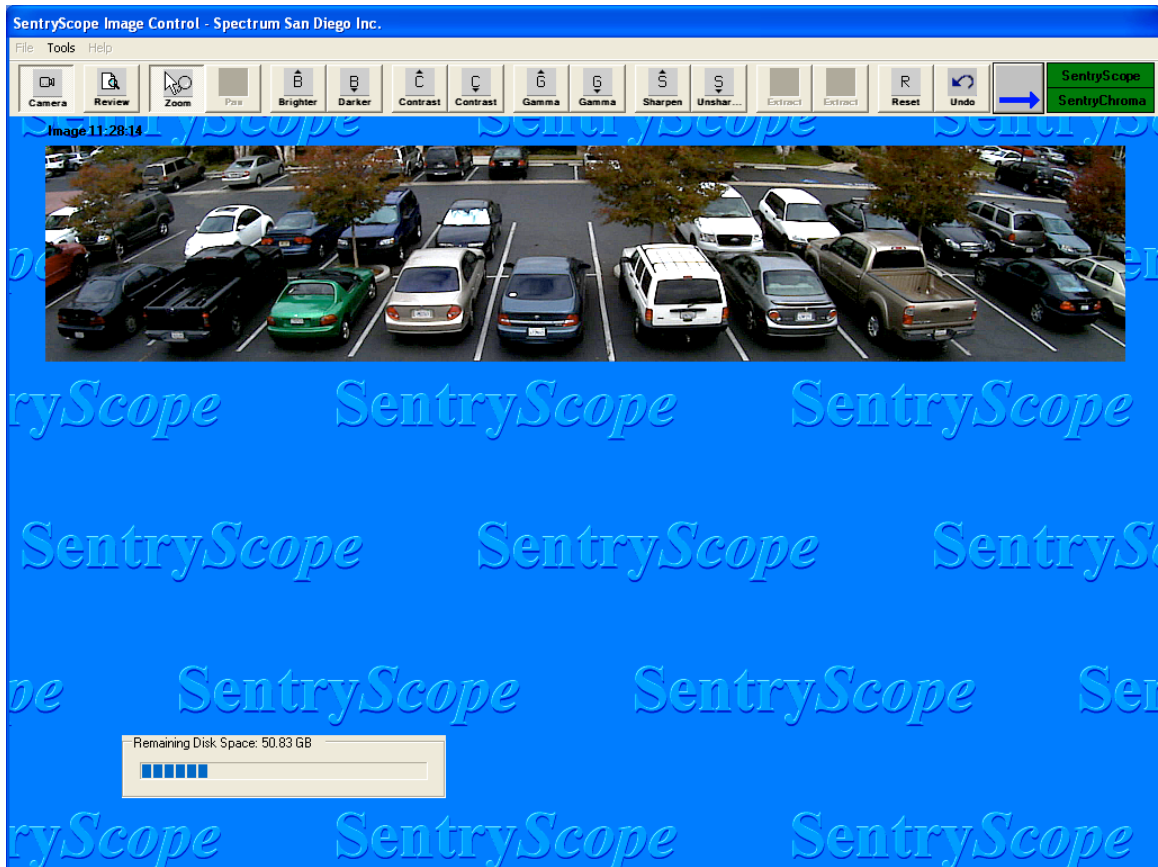Click below the blue arrow to switch to Sentry*Chroma* images and the following screen will appear (Figure 27):

Figure 27

g) Tools Pull-Down Menu – Camera Utilities, Focus

Sentry*Scope* and Sentry*Chroma* are now ready to be focused. With the blue arrow pointed at Sentry*Scope*, from the "Tools" pull-down menu, select "Camera Utilities" and the following screen will appear (Figure 28):
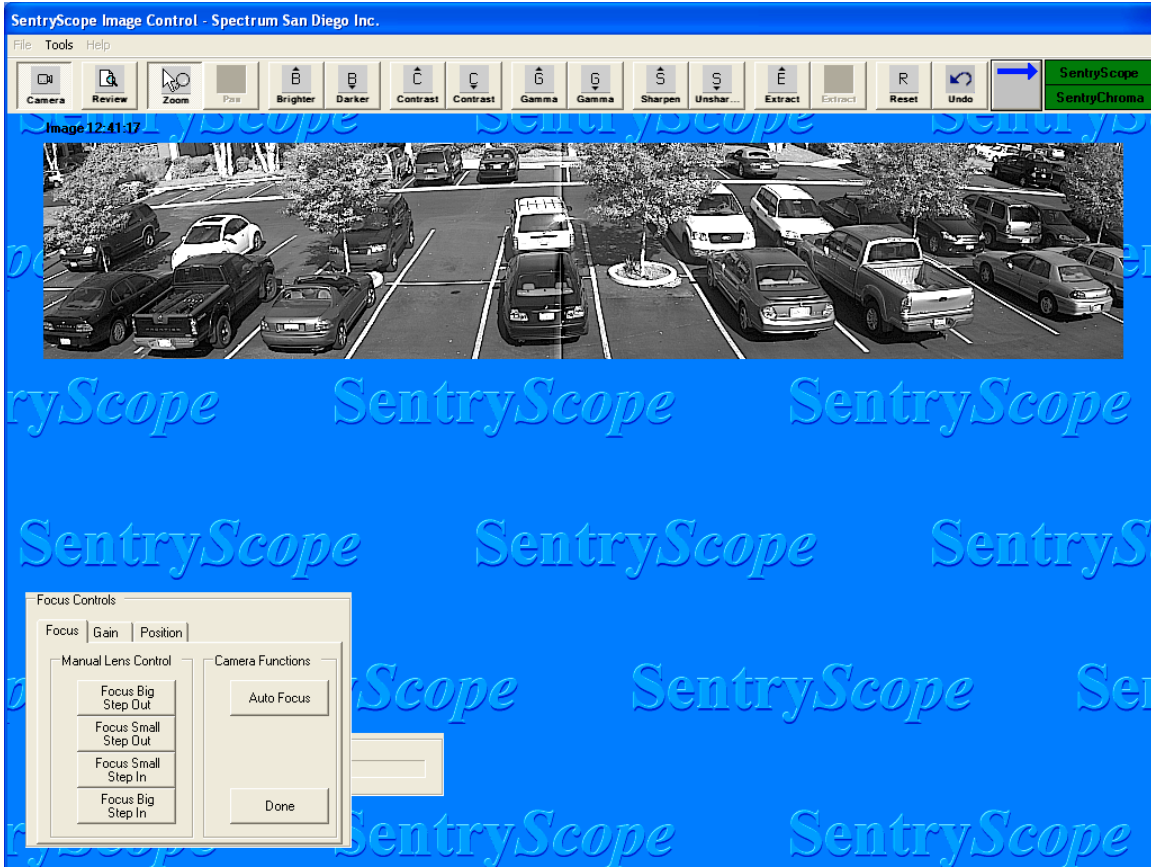

Figure 28

Focus at dusk when the lens aperture is more open than in well-lighted conditions. AUTO FOCUS RESULTS WILL NOT BE OPTIMAL IF PERFORMED IN DARK OR VERY BRIGHT CONDITIONS.

Click the "Auto Focus" button and Sentry*Scope* will automatically adjust to a 4X zoom level and focus around the center of the displayed image. This will take up to thirty (30) seconds during the day and up to one (1) minute at night. During this time a series of images will be displayed showing focus progress and a status message will be displayed as shown below in Figure 29:
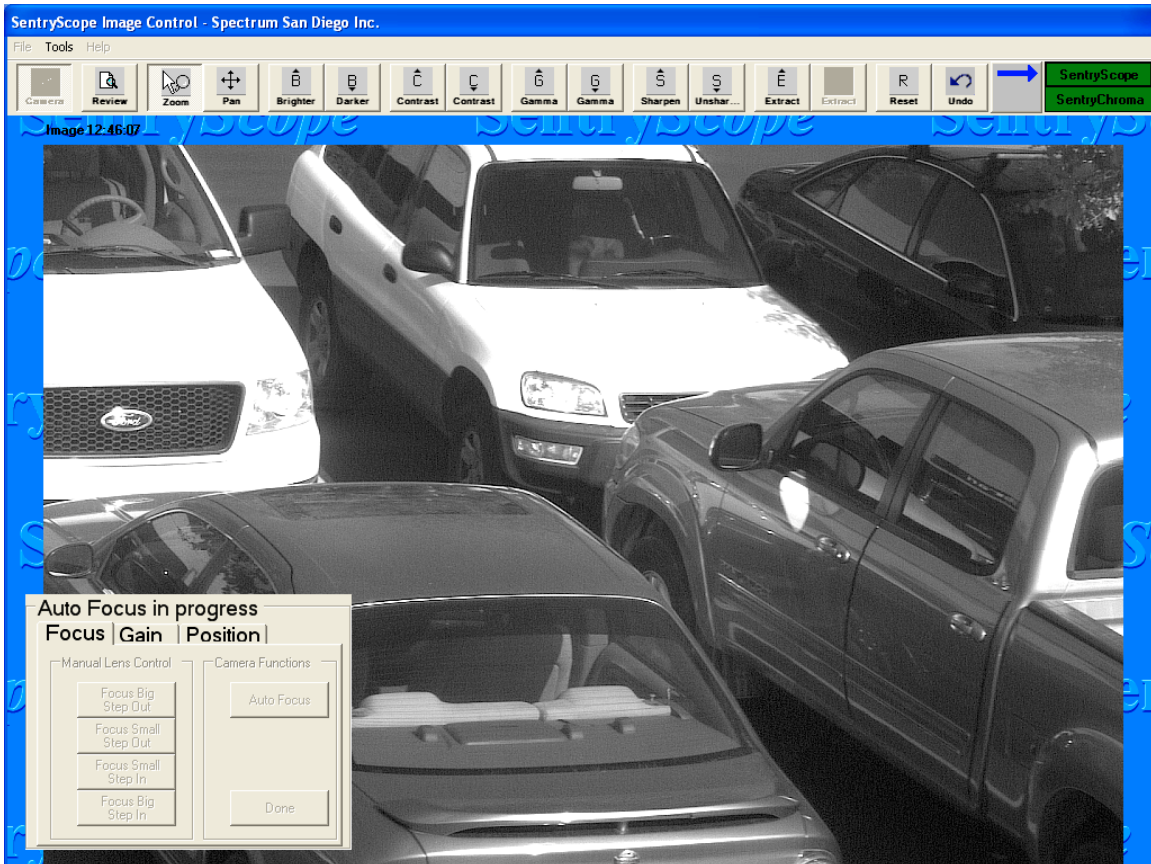
Figure 29

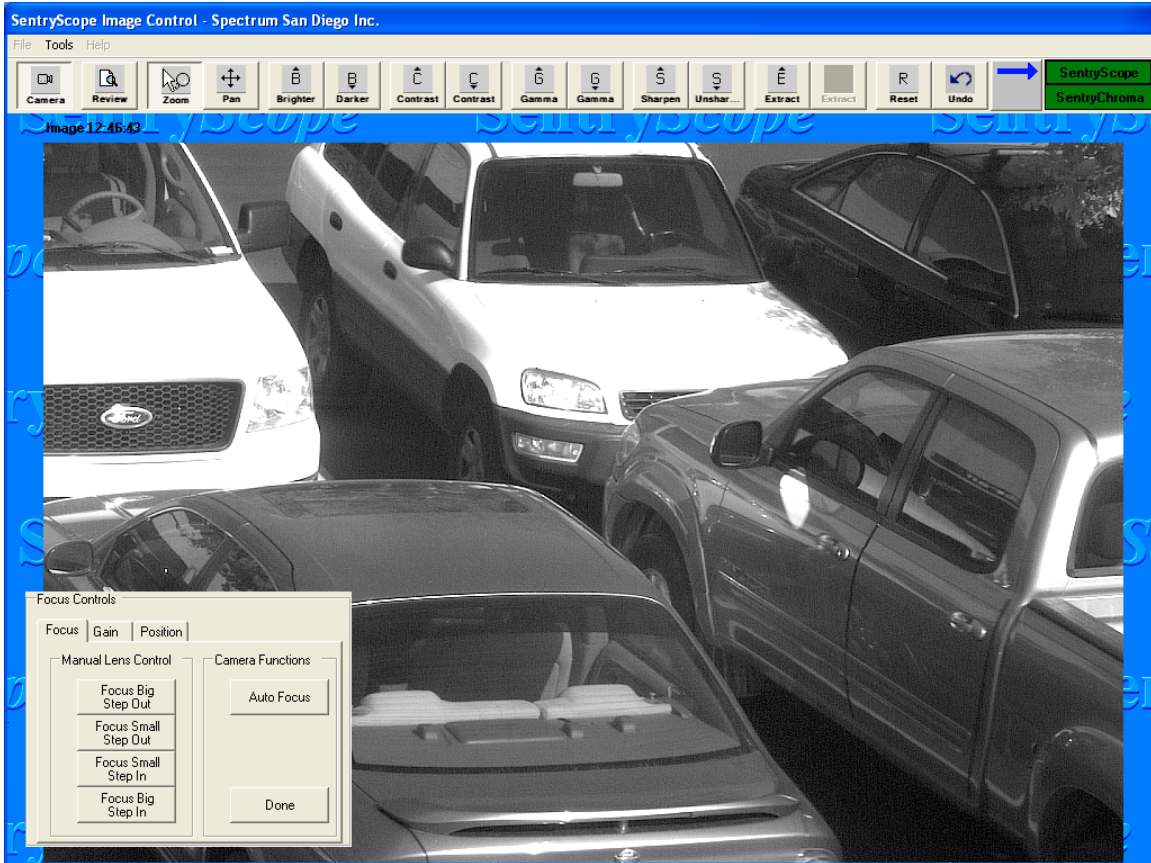When Auto Focus is complete, the screen will look like Figure 30 below.

Figure 30

Use the "Manual Lens Control" controls to fine tune the focus. Zoom further into an area or item of interest. Use the controls in Figure 30 to fine tune the focus on the area of interest. Observe the affects of each focus step. The small step is the smallest adjustment that can be made with the lens. The big step is equal to five (5) small steps. The screen will look like Figure 31 below:
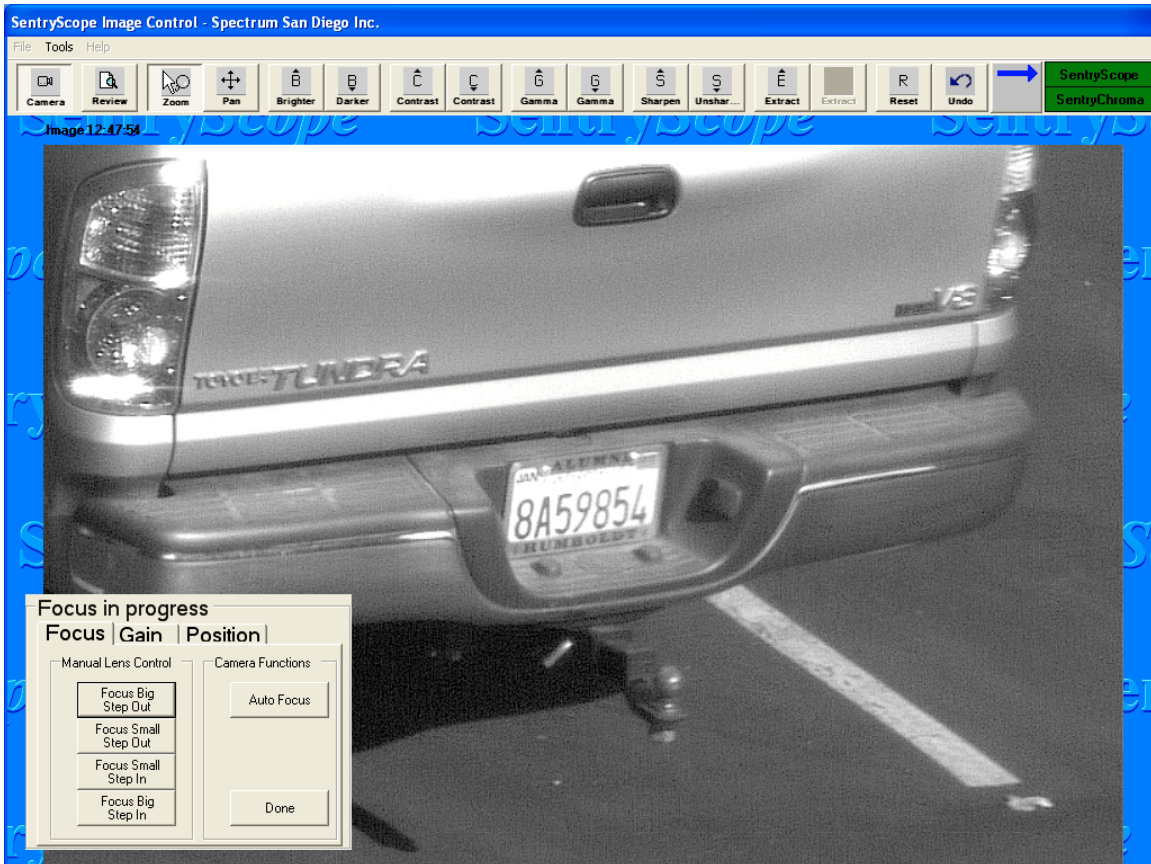
Figure 31

Keep the zoom at its current position and Sentry*Scope* will continue to show each image zoomed into the area of interest. Alternatively, point the cursor anywhere in the image and right click until the image is back to its' original state.

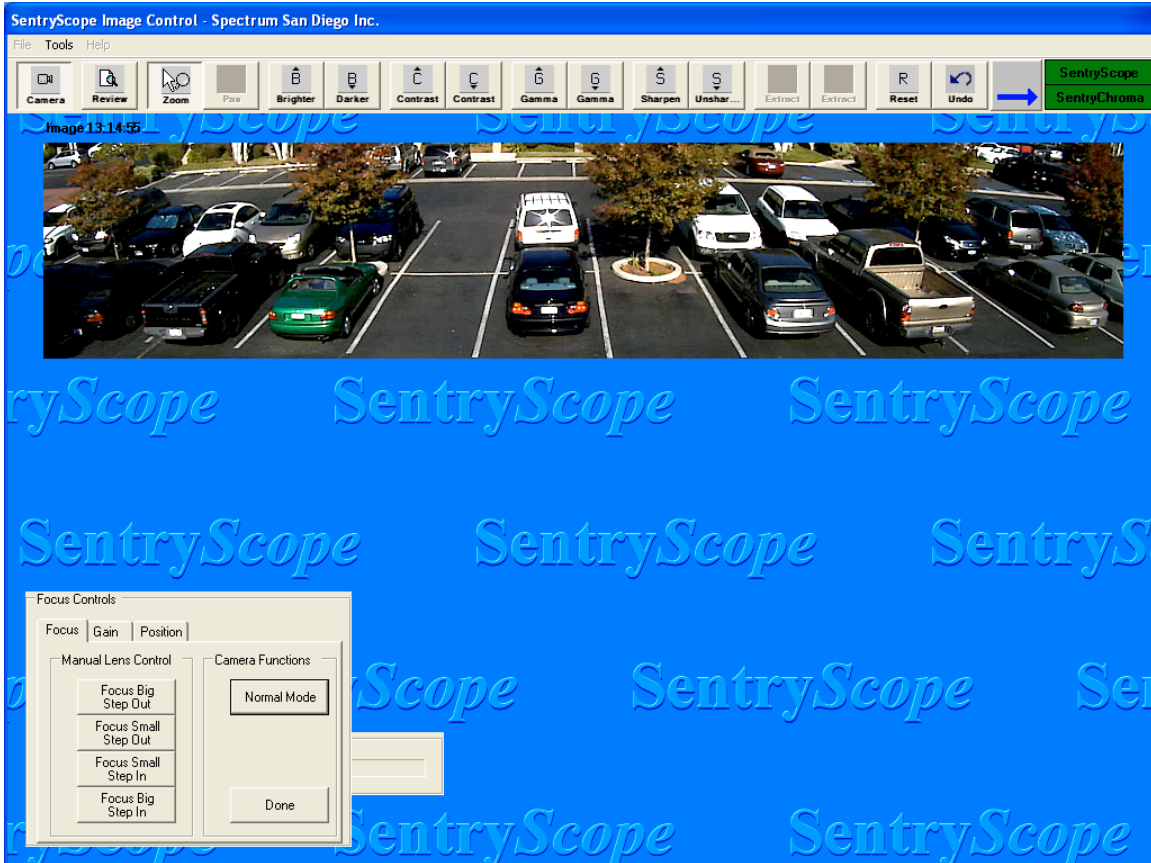Using the blue arrow switch to Sentry*Chroma* and Figure 32 below will appear:

Figure 32

There are two modes of focus. Normal mode displays images around one per second. Press the "Normal Mode" button, the mode will switch to "Focus Mode", and Figure 33 below appears:
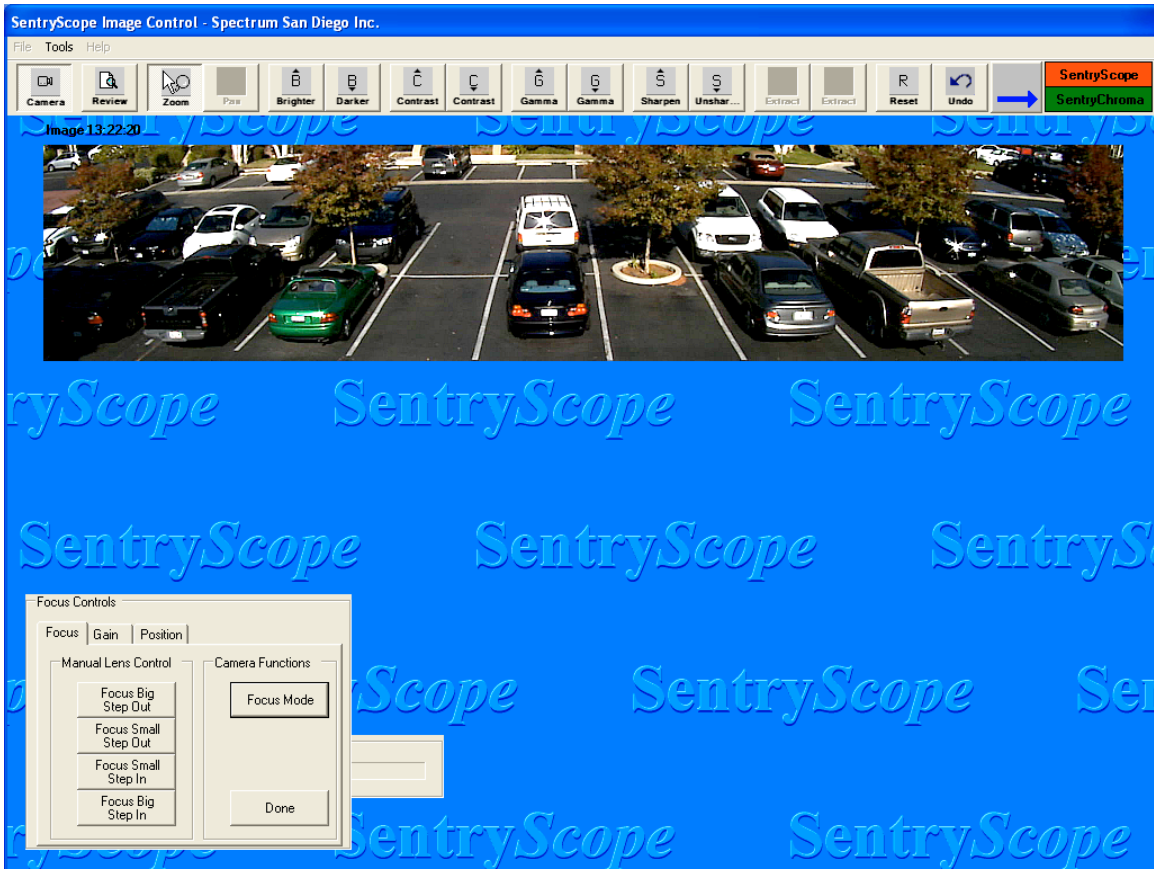
Figure 33

This mode displays images at the frame rate specified in Camera Setup. For best results, zoom in on an edge in the field of view (for instance a line delineating parking spaces in Figure 33) and use the big steps until the line is sharp.

Click "Done" when finished.

h) Tools Pull-Down Menu – Camera Utilities, Gain

Sentry*Scope* and Sentry*Chroma* gain values are now ready to be set. Using the blue arrow, switch back to Sentry*Scope* and click on the "Gain" tab. Figure 34 below will appear:
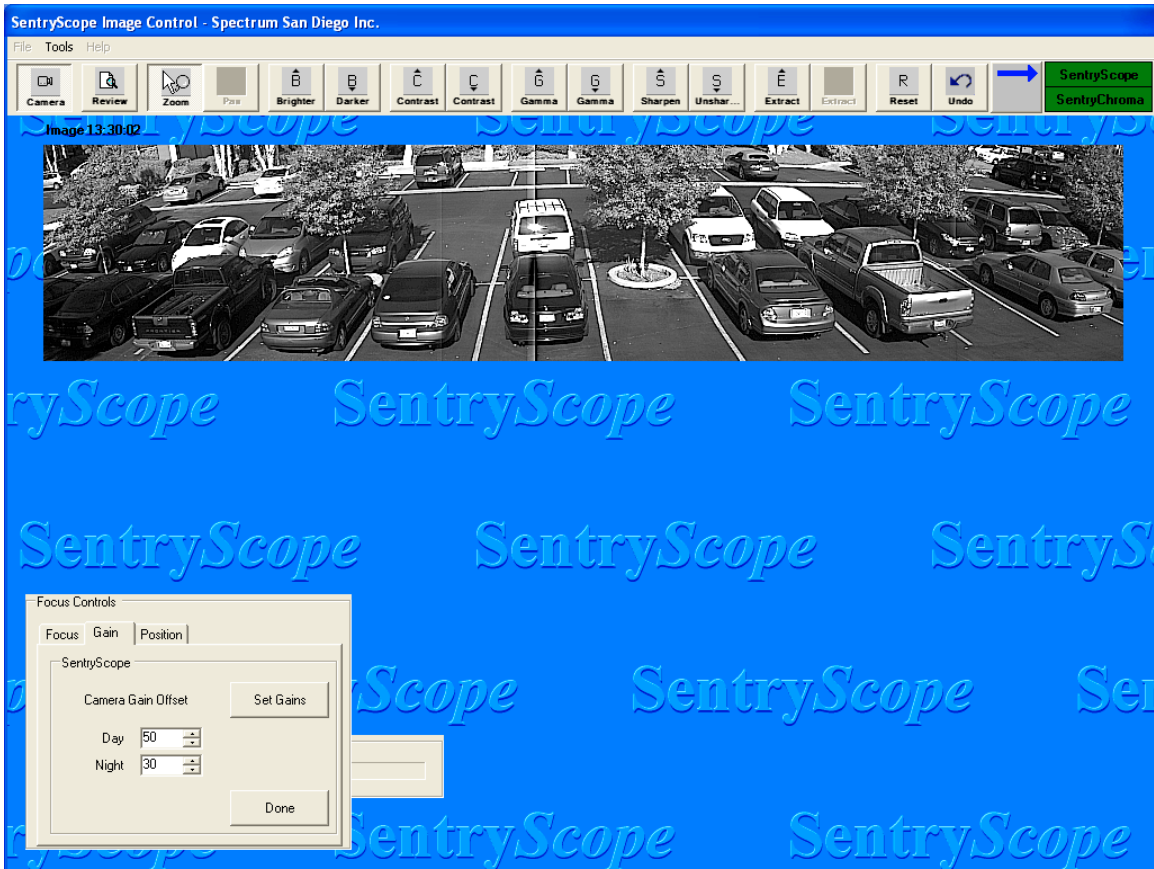
Figure 34

Set the values higher to increase the capability for Sentry*Scope* to bring out data in dark areas, areas in shadows, or glary areas. This will be at the expense of other areas of the image possibly saturating. Set the values lower to increase Sentry*Scope's* capability of bringing out data in bright areas at the expense of other areas possibly being too dark. Sentry*Scope* automatically switches from the Day to Night settings and vice versa. The "Set Gains" button must be pressed for any changes to take affect. See the "Sentry*Scope* Camera Gain Setup" document for more detail on these settings.

Using the blue arrow, switch to Sentry*Chroma* images and Figure 35 below will appear:
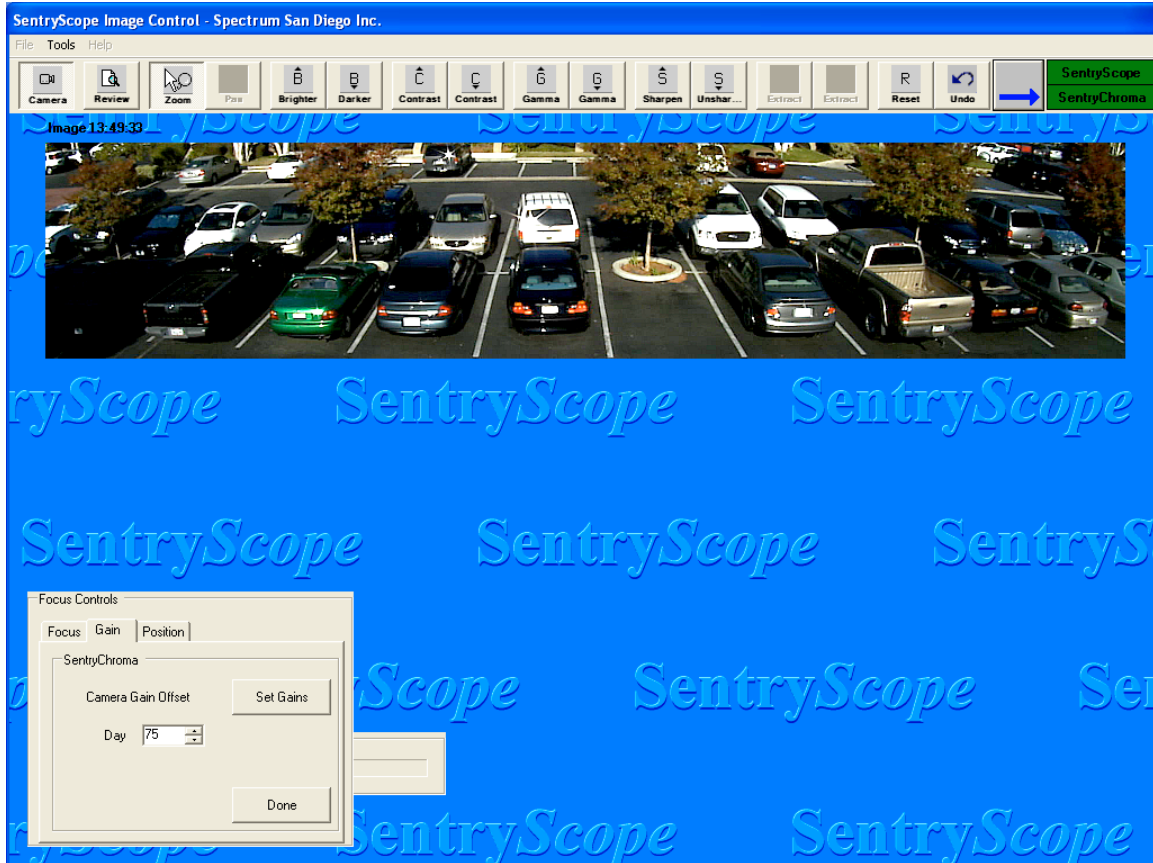

Figure 35

Follow the instructions outlined for Figure 34 above for the "Day" setting.

i) Tools Pull-Down Menu – Camera Utilities, Position

Sentry*Scope* and Sentry*Chroma* are now ready to be positioned. Using the blue arrow, switch to Sentry*Scope* images and click on the "Position" tab. Figure 36 below will appear:
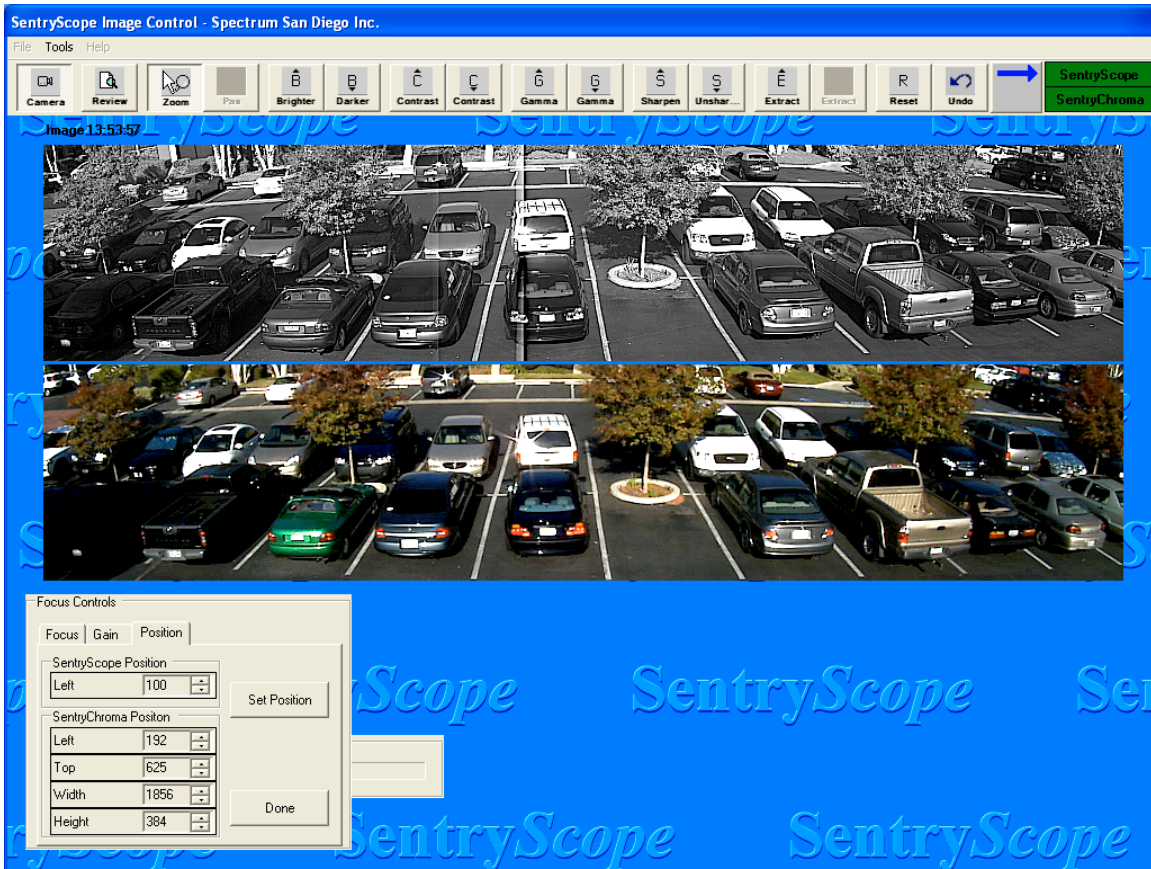

Figure 36

These controls are used to overlay the images as close to exact as possible. Make sure both cameras are recording images (indicated by green in both status boxes) so that the changes are immediately visible in subsequent images. First position Sentry*Scope*. The value for "Left" determines where the mirror begins sweeping across the field of view. If there is a vertical shadow on the left side of the image, increase this number because the front window in the camera enclosure is in the field of view. If there is a vertical shadow on the right side of the image, decrease this number (See Installation Instructions for more detail).

Sentry*Chroma* positioning tools utilize an X,Y grid scheme with 0,0 being the upper left hand corner of the image. Increasing the "Left" value moves the image away from the zero position or moves the image to the right. Decreasing this value moves the image back towards the zero position or moves the image left. Increasing the "Top" value moves the image away from the zero position or moves the image down. Decreasing this

value moves the image back towards the zero position or moves the image up. The "Width" and "Height" controls crop the image to fit the 5:1 aspect ration of Sentry*Scope*.

Once complete with the Focus, Gain, and Position adjustments, Sentry*Scope* and Sentry*Chroma* are covering the field of view in ultra-high resolution black and white and high frame rate color images.

j) Tools Pull-Down Menu – Camera Setup, Camera Tab, Set Field of View

The "Set Field of View" feature is used to fine tune the horizontal field of view anywhere between 36° to a full 90°. This adjusts the start and stop position of the mirror and could increase the image rate to as much as two images per second. Click the "Camera" button to stop taking images. Select the "Tools" pull-down menu and select "Camera Setup". Select the "Camera" tab and click on "Select Field of View" and the following screen will appear (Figure 37):
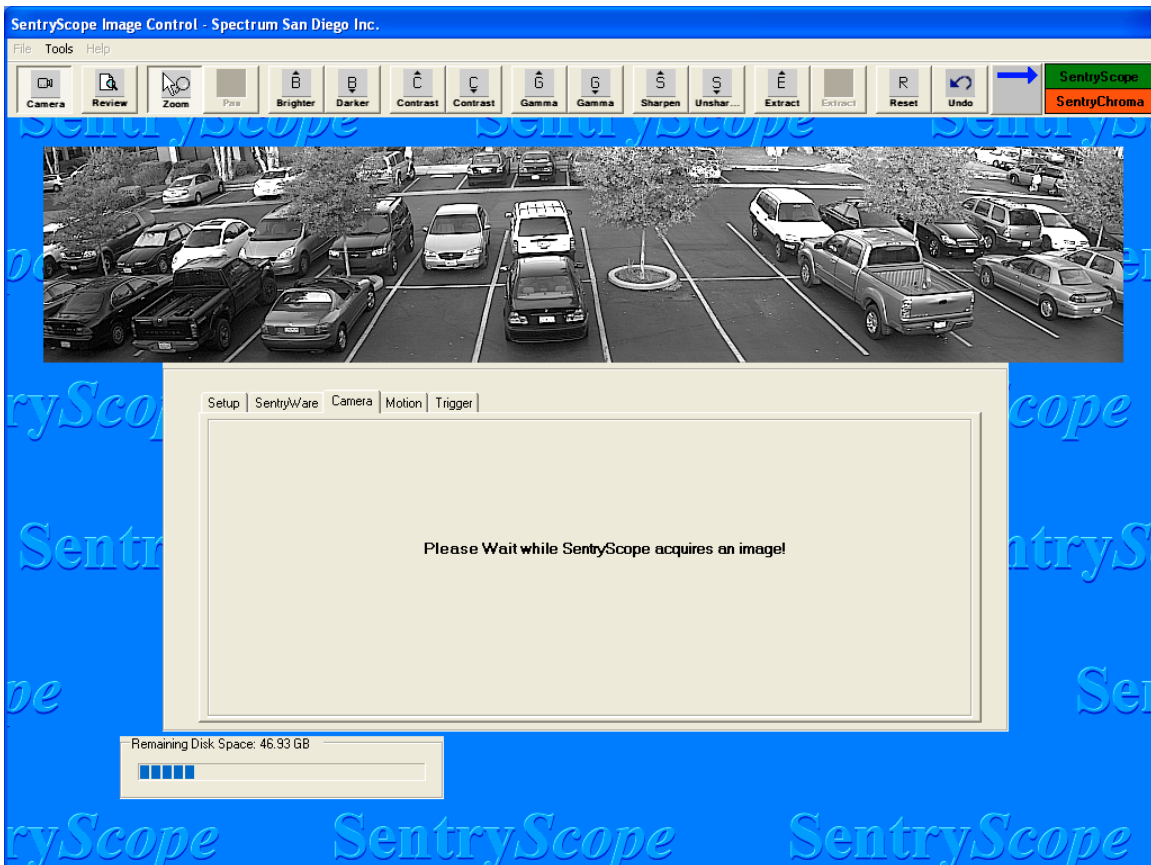

Figure 37

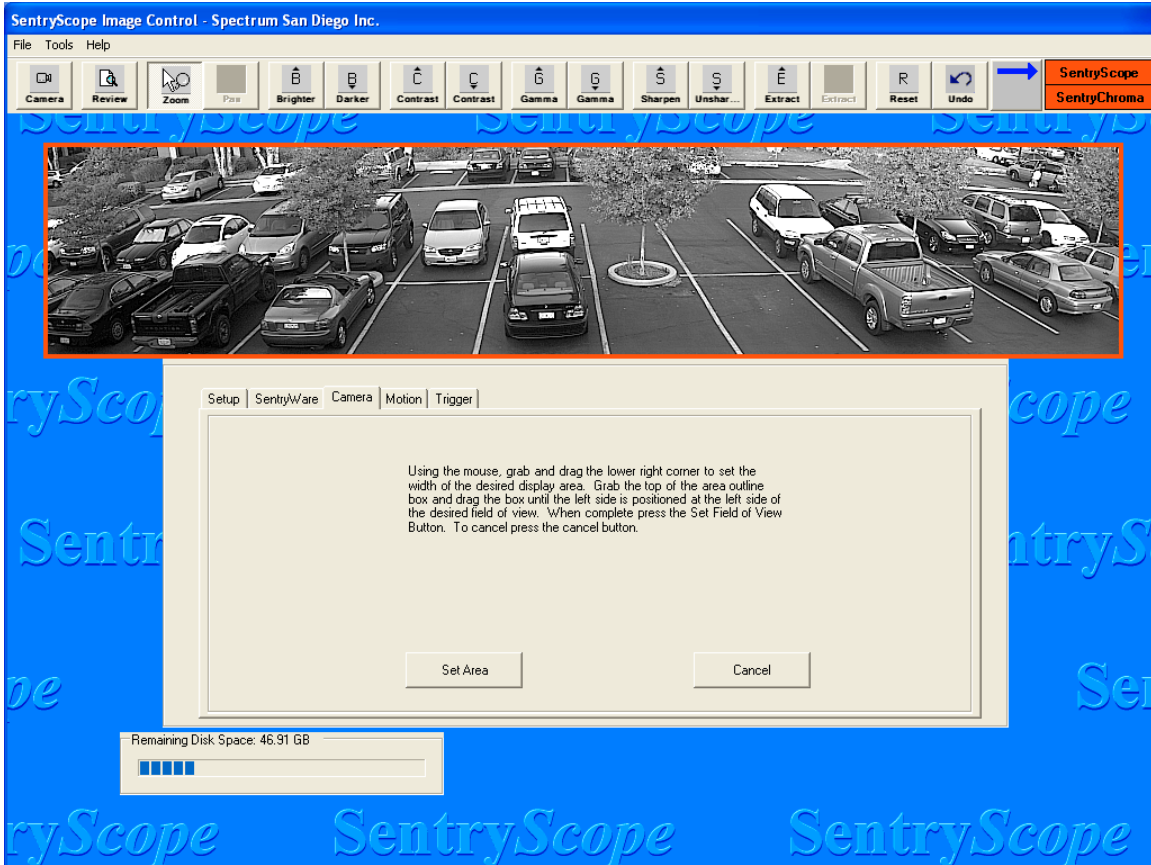Sentry*Scope* will acquire one image and Figure 38 below will appear:

Figure 38

A box with a red border will be shown. Using the cursor, grab the lower right hand corner and size the box appropriately. Then grab the top line of the box and position it in the field of view as desired. The screen will look like Figure 39 below. Note that only the horizontal aspect can be modified.
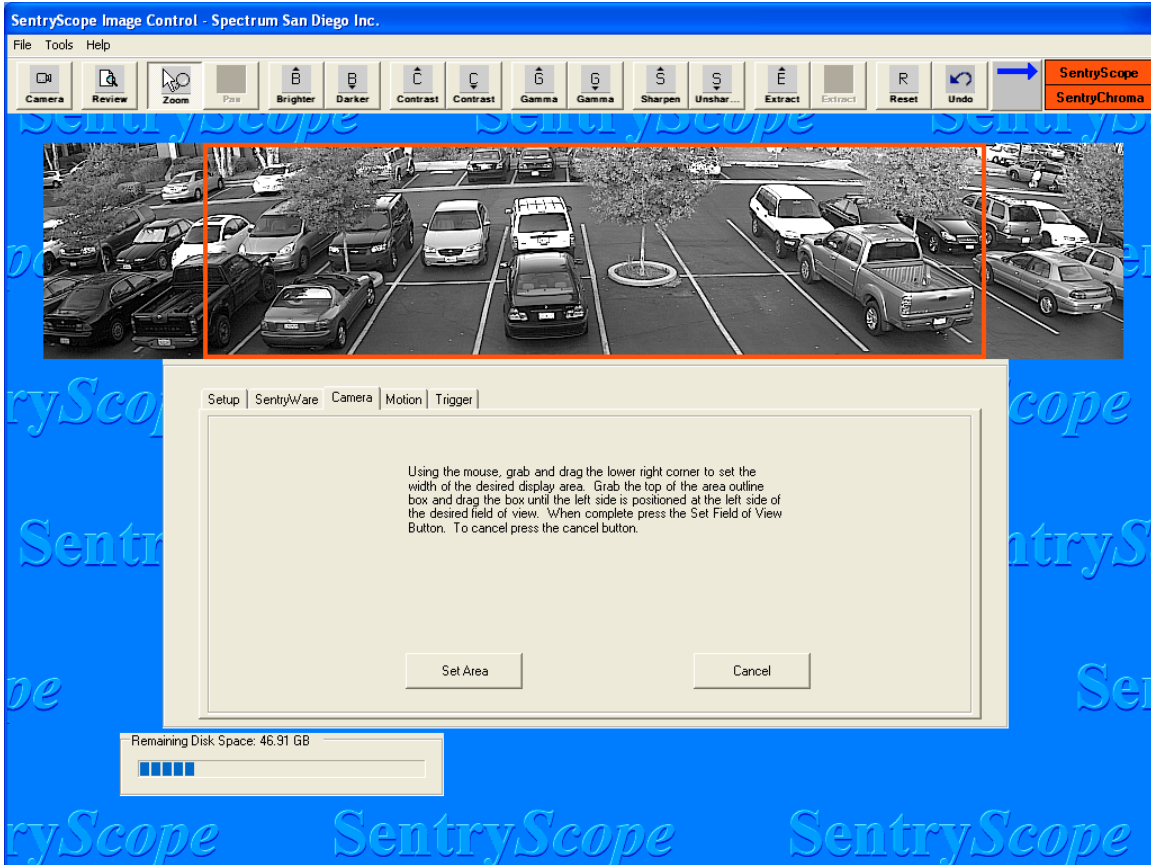

Figure 39

When finished, click "Set Area", then "Done". Click the "Camera" icon again to begin acquiring images. Setting a new field of view is only allowed from Sentry*Scope*. Use the "Position" tab under "Camera Utilities" to re-position Sentry*Chroma* to overlay the new field of view.

k) Tools Pull-Down Menu – Camera Setup, Camera Tab, Set Mask Zones

The "Set Mask Zones" feature is used to "gray out" certain portions of the image. This allows the masking out of areas in the image that are deemed to be "private" as well as portions of the image that aren't critical to monitor or record that may have substantial motion (trees, sky, etc.). This has the affect of reducing file size as compression is greater in masked out zones. Select the "Camera" tab and click on "Set Mask Zones". If there isn't a valid image on the screen the following will appear (Figure 40):
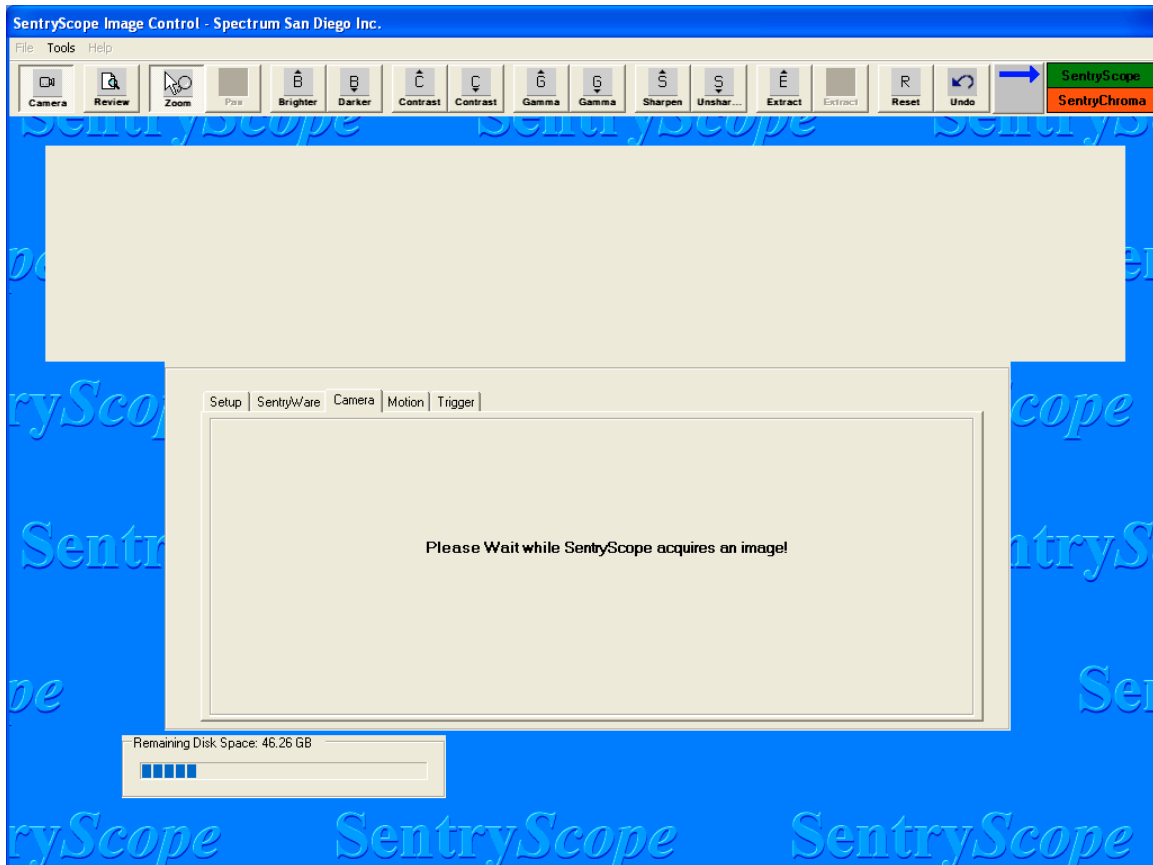

Figure 40

Sentry*Scope* will acquire one image and Figure 41 below will appear:

Figure 41

Up to four regions in the image can be masked. Click "Mask Zone 1" and "Mask Zone 2" and Figure 42 below will appear:
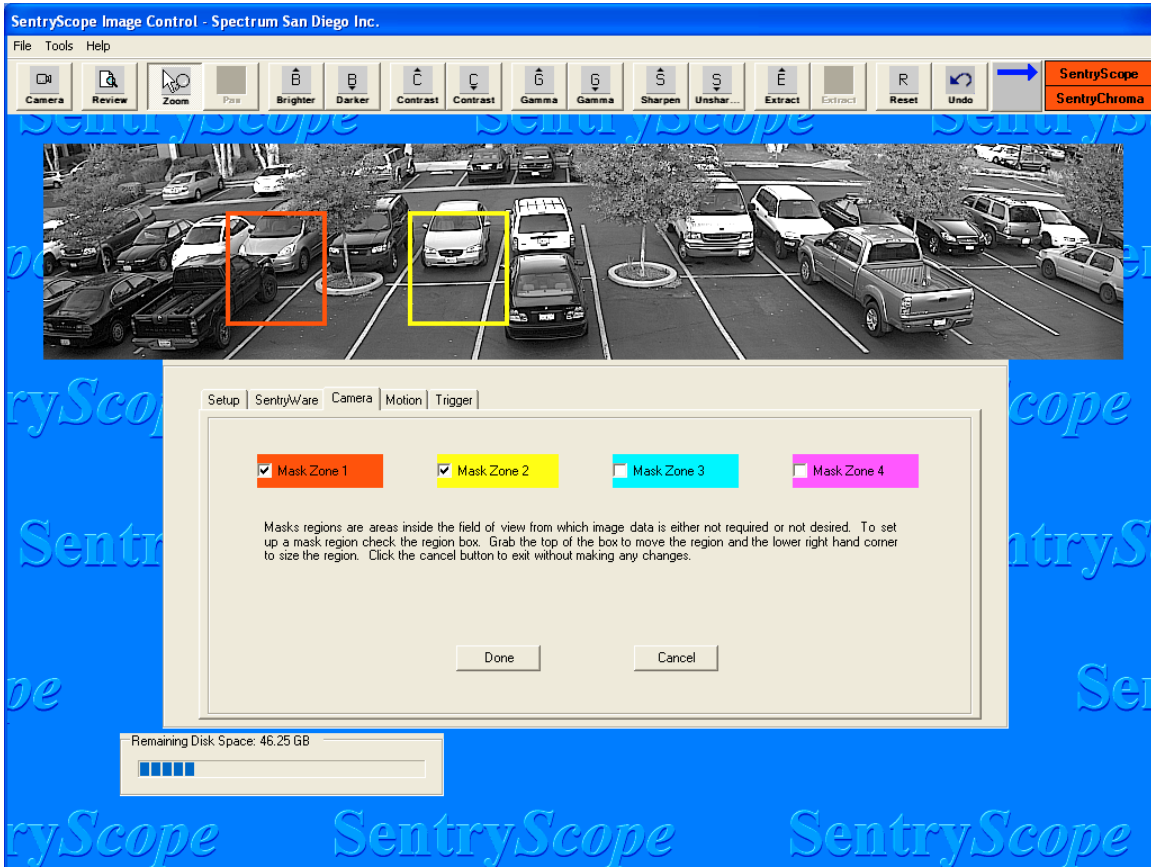

Figure 42

Boxes with red and yellow borders will be shown. Using the cursor, grab the lower right hand corner of each box and size appropriately. Then grab the top line of each box and position it in the field of view as desired. Note that the zones can be overlapped to better fit particular regions. Note also that the borders will be snapped to a grid and the area of the box will be slightly larger than drawn. To compensate, center the box in the particular region and make it slightly smaller than required. Repeat these steps for Mask Zones 3 and 4 as appropriate.

When finished, click "Done". Click the "Camera" icon again to begin acquiring images. Figure 43 below will appear, with the mask zones "grayed out":
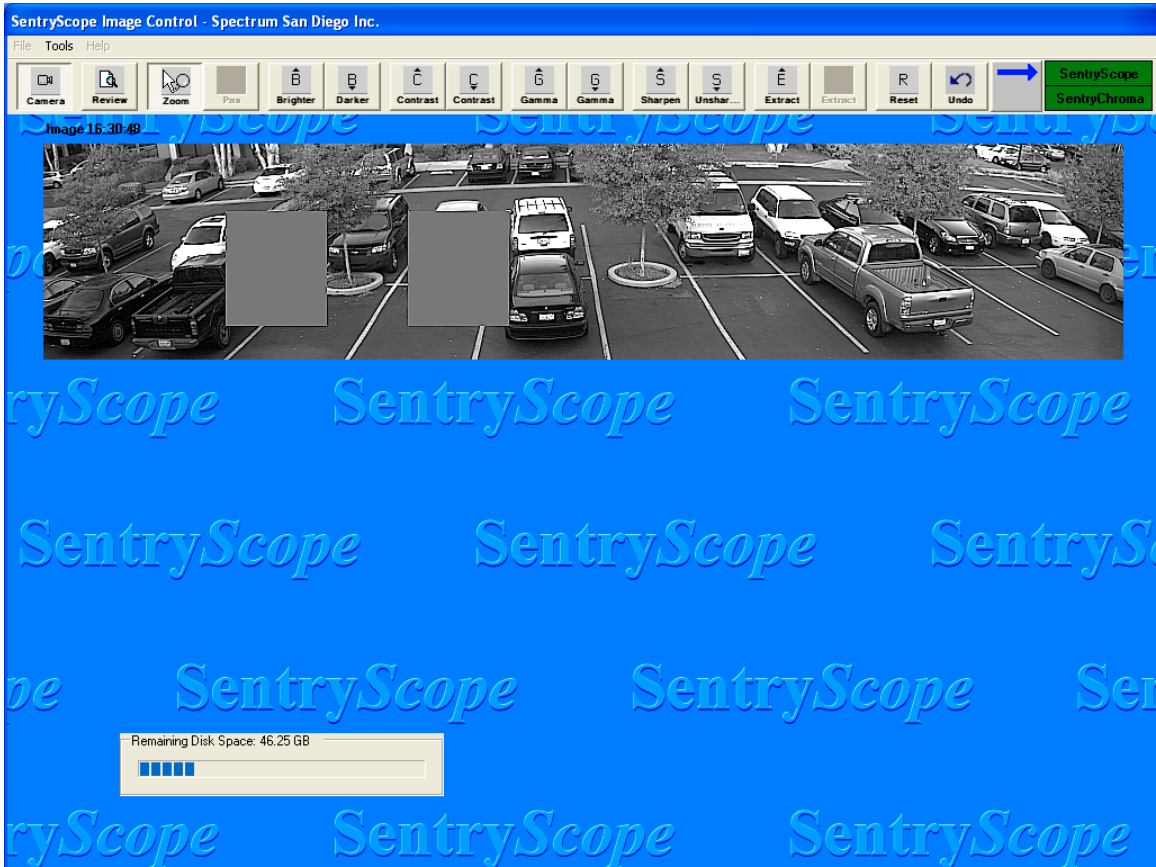

Figure 43

The masked zones will be approximated in Sentry*Chroma*. Use the blue arrow to switch images and the following screen will appear (Figure 44):
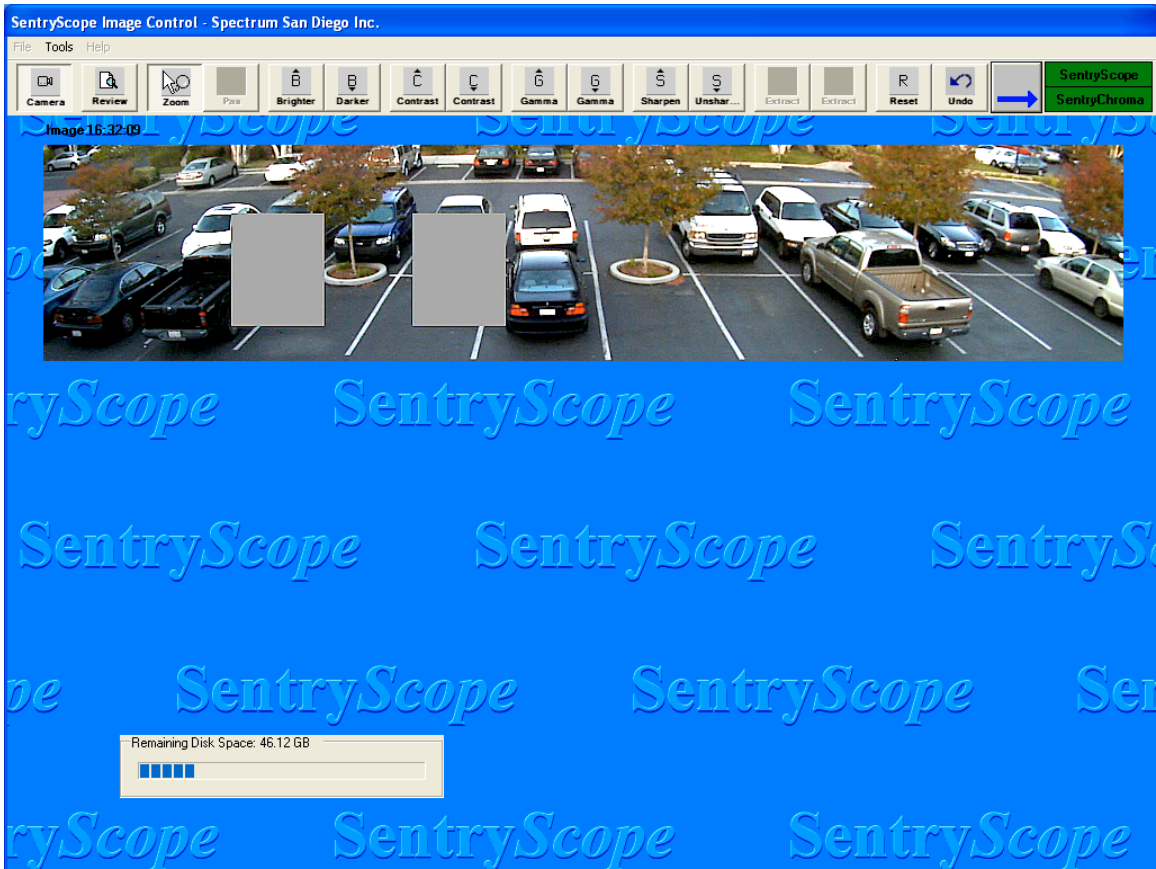
Figure 44

I) Tools Pull-Down Menu – Sentry*Manager* User(s) Logged In

Multiple remote Sentry*Manager* users may be looking at images from the same Sentry*Scope* camera. However only one user may be making configuration changes using the Camera Setup or Camera Utilities controls. If the "Tools" pull-down menu is selected and another user is already logged in and reviewing or making configuration changes, figure 45 below will appear with a "Busy" indication:
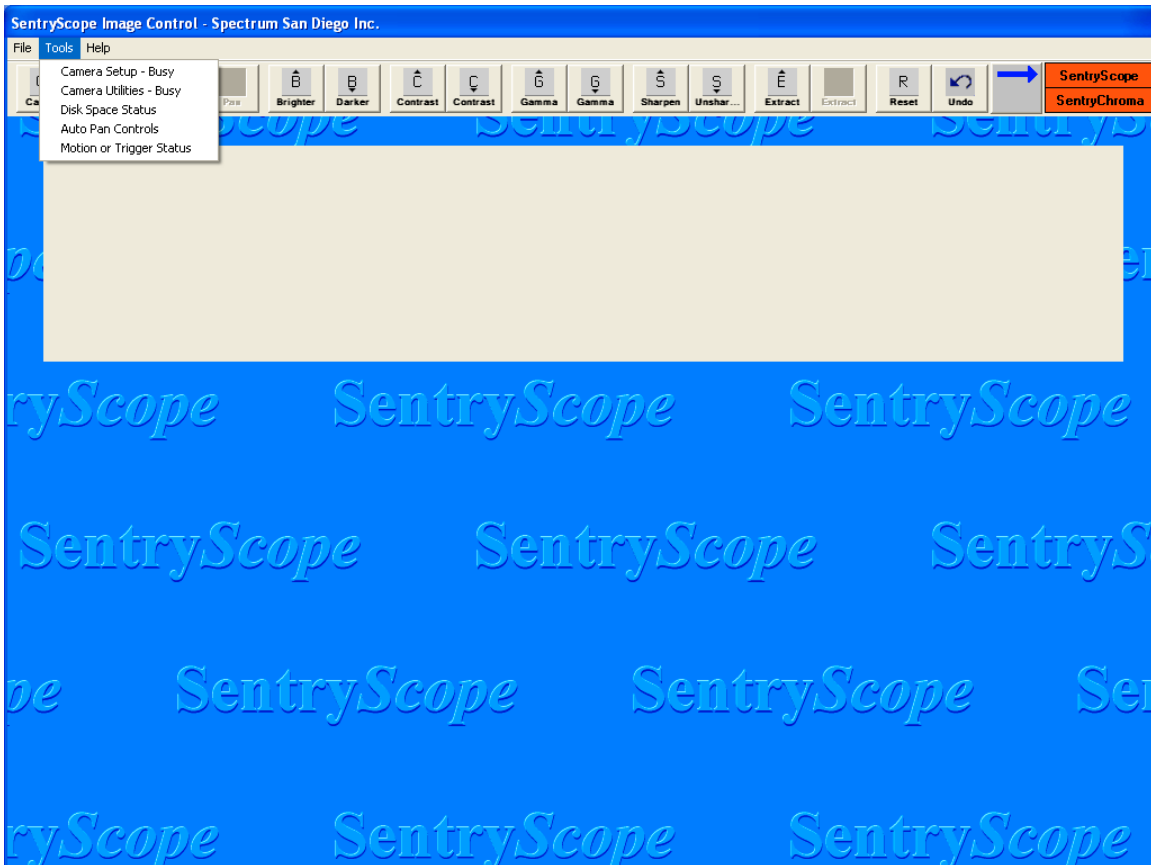

Figure 45

If "Camera Setup" or "Camera Utilities" is selected, Figure 46 below will appear showing information on the user already logged in:
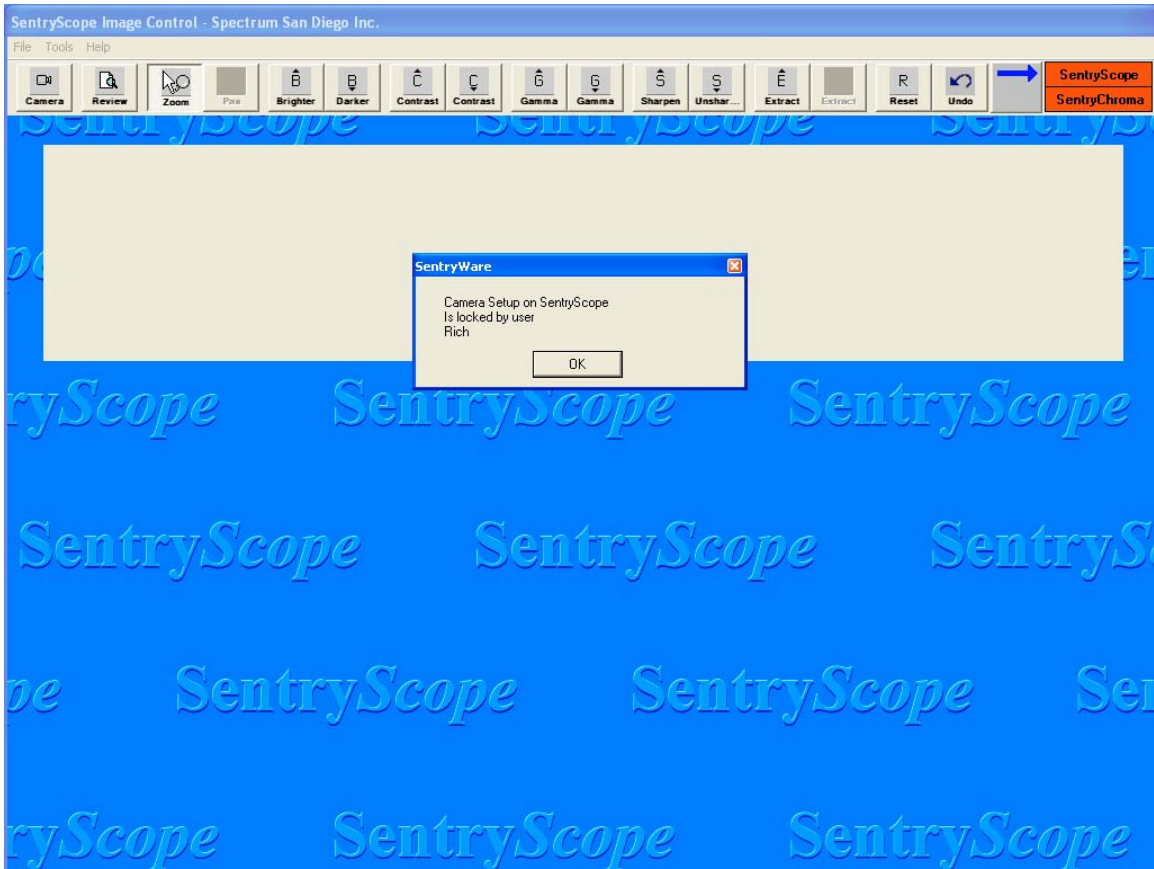
Figure 46

This condition will continue until the remote user is logged out.

m) Tools Pull-Down Menu – Auto Pan Controls

The Auto Pan feature provides tools to set up sub-regions in the field of view and zoom directly into individual or automatically tour of all the created sub-regions. This gives an operator viewing live images a method to easily view specific regions of the image on a regular basis, similar to the auto tour feature of conventional CCTV pan, tilt, and zoom systems. It is important to note that even as Sentry*Scope* is taking a tour, it is still recording the entire 90° in ultra-high resolution. Press the "Camera" button to stop taking images if necessary.

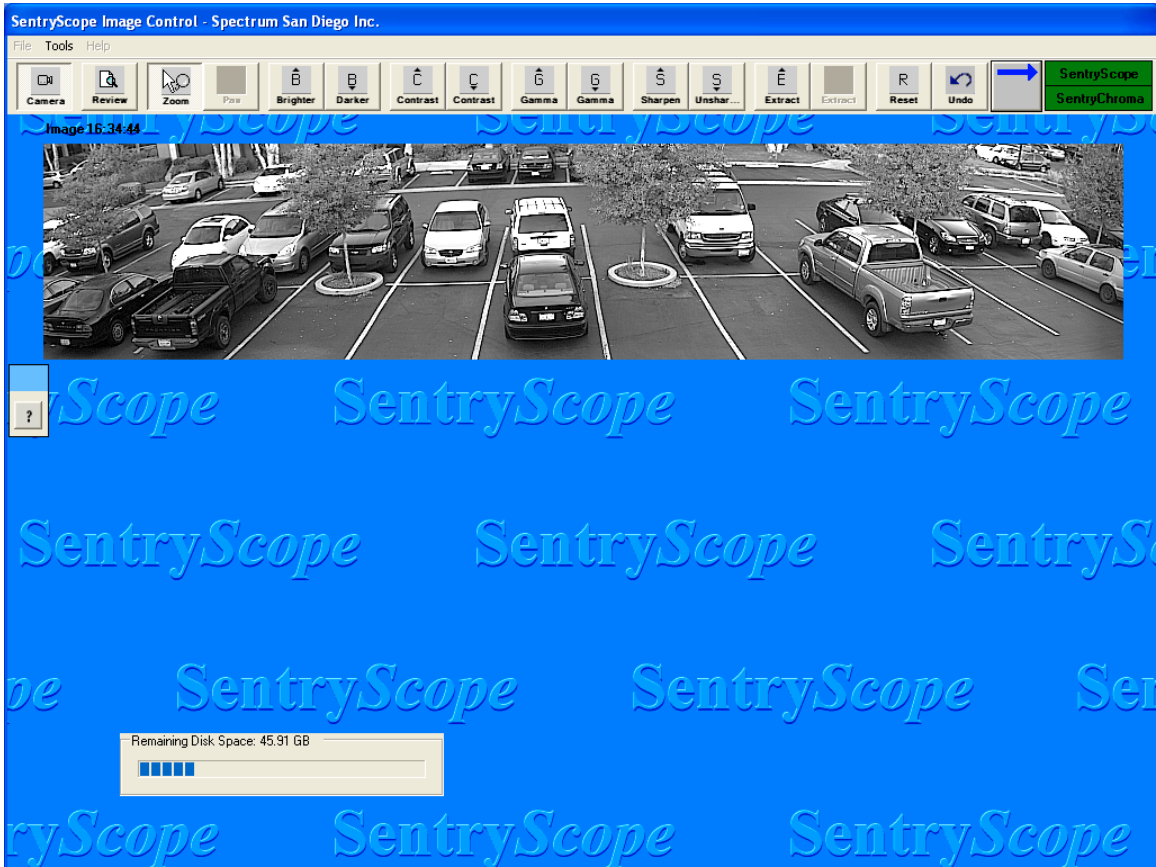Select the "Tools" pull-down menu, and the select "Auto Pan Controls". Figure 47 below will appear:

Figure 47

The auto pan tool bar appears. It may be moved by left clicking on the blue square and dragging it to the appropriate spot on the screen. The tool bar will remain in the new position until relocated.

Left click the "?" button and a help screen will appear.

Point the cursor into the desired region of the image and zoom in as far as necessary. Right click in the blue square above the question mark and Figure 48 below will appear:
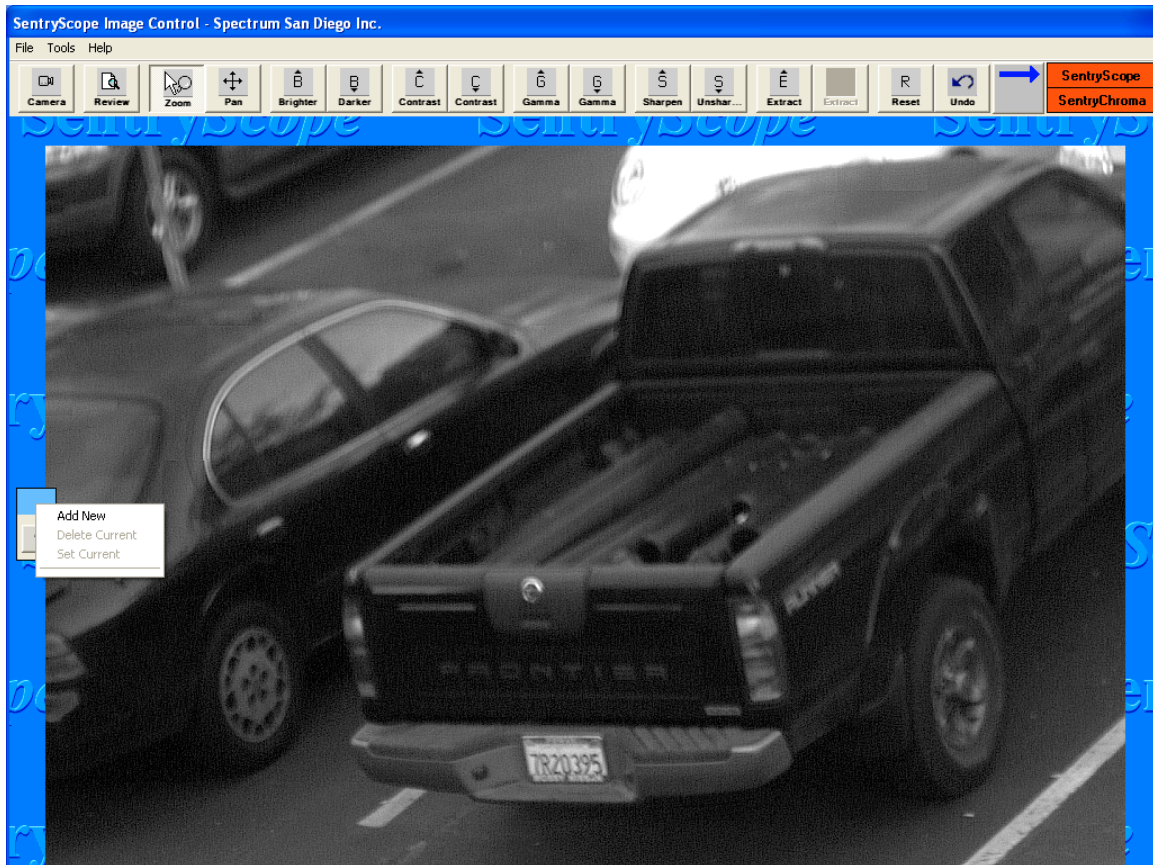

Figure 48

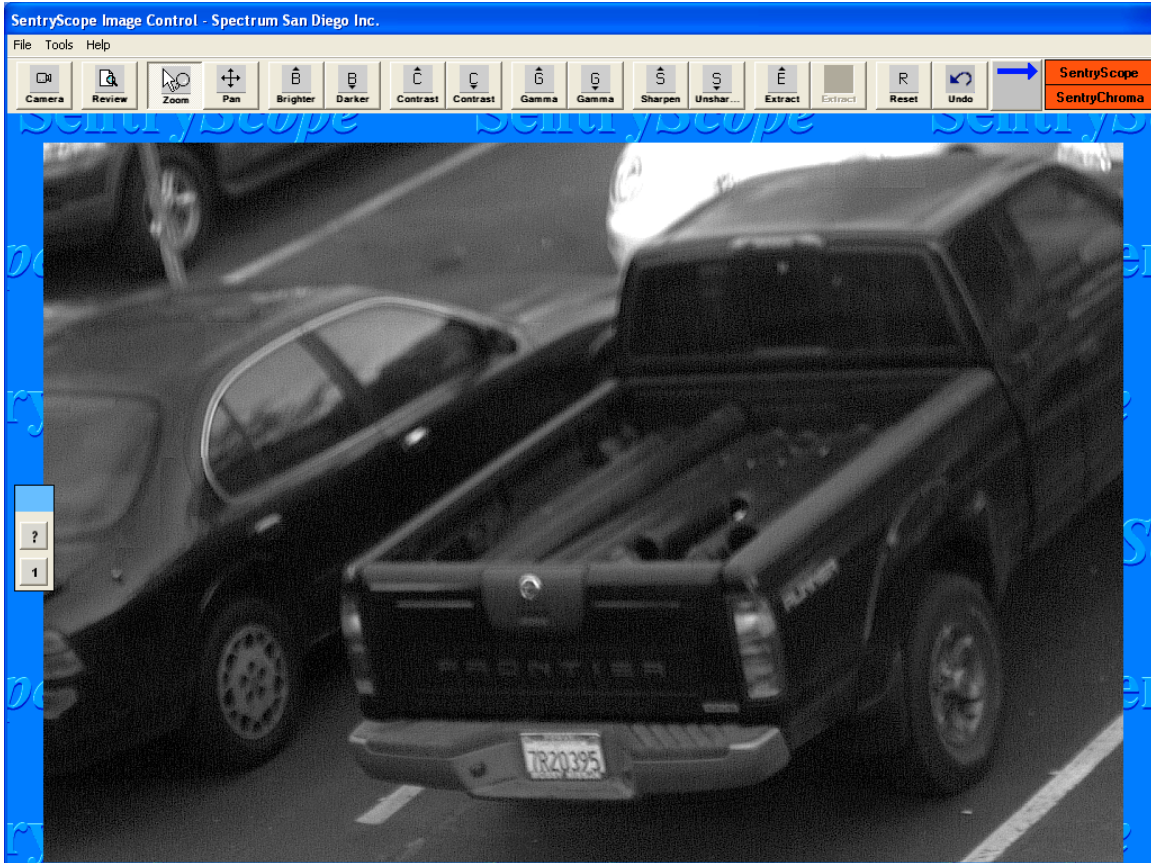Click on "Add New" and Figure 49 below will appear:

Figure 49

Repeat these steps for up to a total of 10 pre-set sub-regions. The bottom button in the tool bar is the button to press to automatically tour all of the pre-sets. Figure 50 below shows 4 pre-sets:
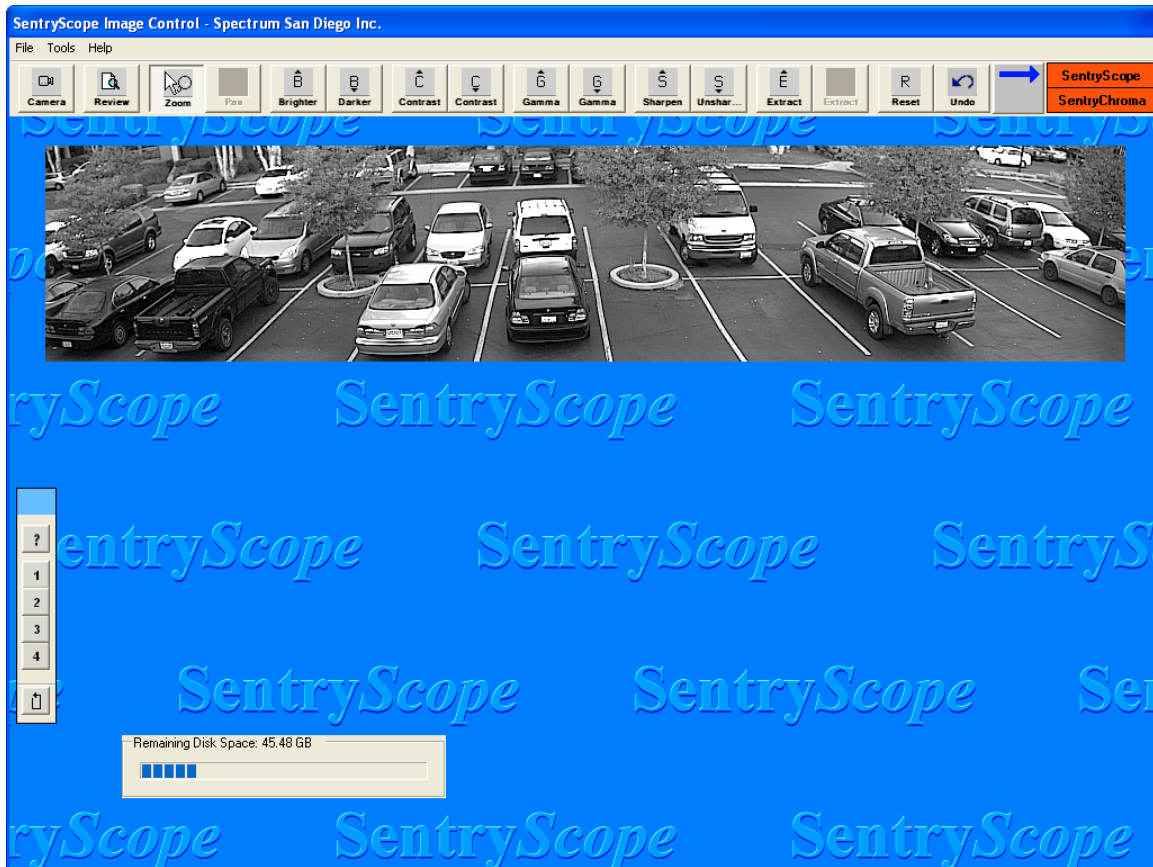

Figure 50

Right click on the bottom auto pan button and Figure 51 below will appear:
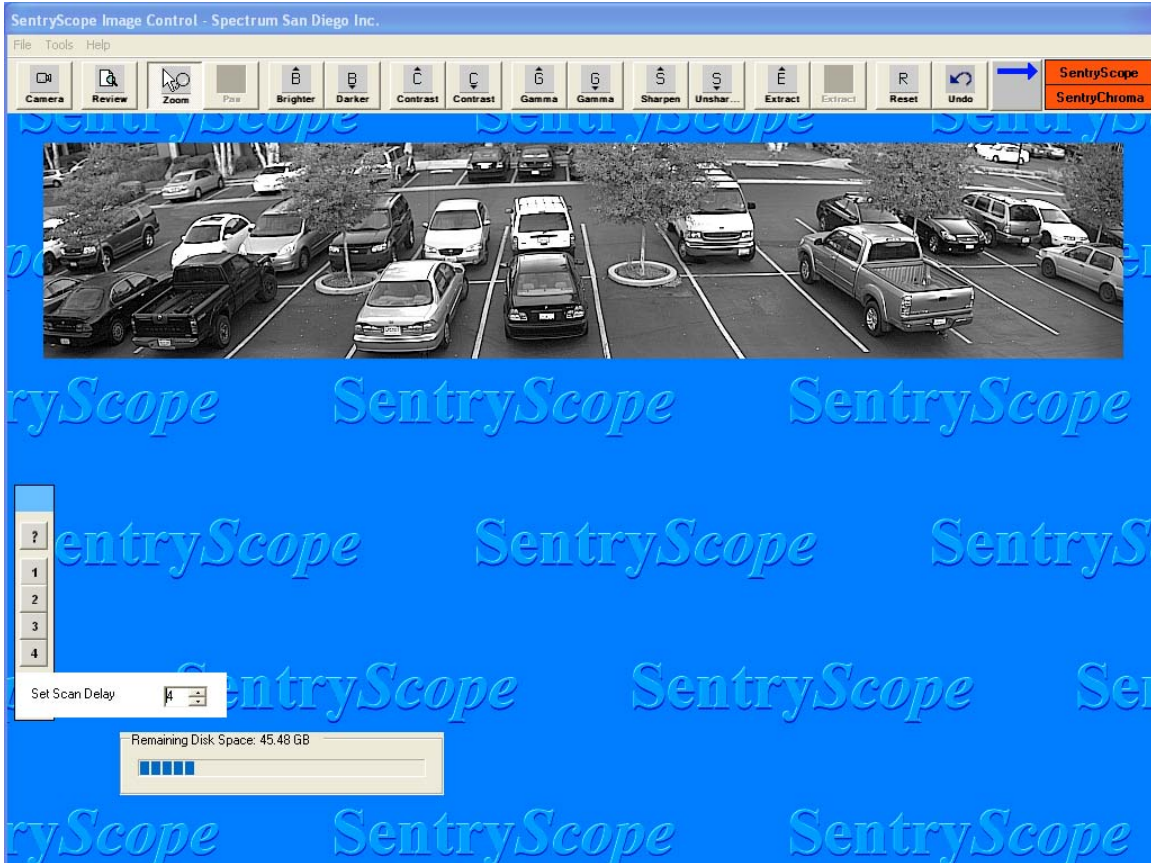
Figure 51

Set the delay in seconds (up to 59 seconds) before Sentry*Scope* displays the next pre-set. Click the "Camera" button to begin taking images. Press any of the pre-set buttons to zoom directly into the assigned sub-region. Press the bottom auto pan button to sequentially tour through all of the defined pre-sets.

To delete or change the pre-sets, click the "Camera" button to stop taking pictures. Zoom into a different portion of the image then right click the appropriate pre-set. Figure 52 below will appear:

Figure 52

Select "Set Current" to reassign the pre-set to the new zoomed area. To delete a pre-set position, right click on the appropriate button and select "Delete Current".
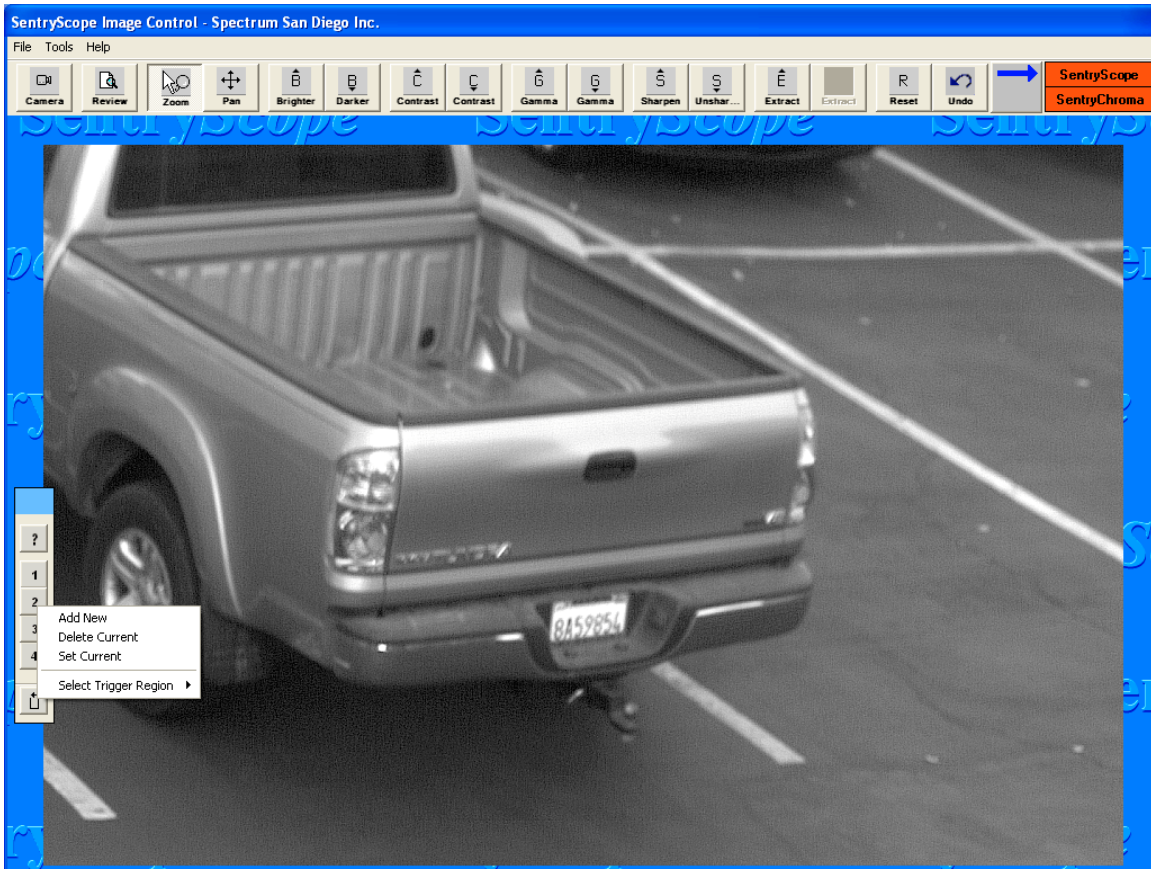
The pre-set regions can be added, changed, or deleted in either Sentry*Scope* or Sentry*Chroma* images. The sequential tour of all pre-sets can be initiated in either camera.

n) Auto Pan Controls, Internal Motion Detection and External Triggers

The Auto Pan controls can be used in conjunction with internal motion detection or external triggers to automatically zoom into a portion of the image when an event occurs. This gives an operator viewing live images immediate notification of an event that may need attention. To operate with external triggers the optional dry contact board must be installed.

Using the steps outlined in section 4d, set up one or more motion zones in Sentry*Scope*. In the following example motion regions 1 and 2 have been configured. Turn the camera off and right click on pre-set button 1 and Figure 53 below will appear:
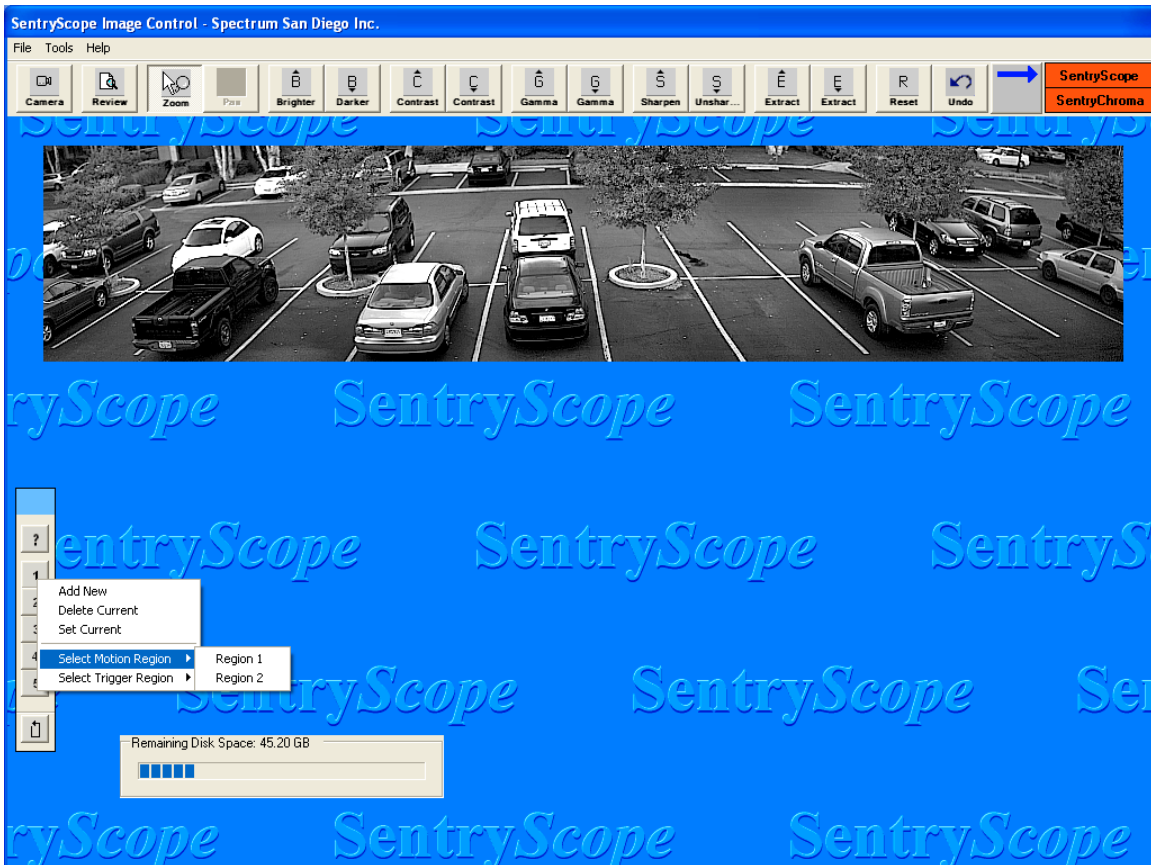

Figure 53

Select the appropriate motion region. Click the "Camera" button to begin taking images. If motion occurs in the selected region, Sentry*Scope* will automatically zoom into the assigned pre-set button, in this example pre-set button 1.

Note that for best results, the sub-region assigned to pre-set button 1 should roughly be in the same position in the overall image as the associated motion region.

Sentry*Scope* operates in a similar fashion when the camera has been set up with external triggers. Follow the steps in section 4e to enable one or more triggers. Pre-sets can be assigned to external triggers by highlighting "Select Trigger Region" in Figure 53 above and selecting the appropriate trigger. When an external trigger event occurs, Sentry*Scope* will automatically zoom into the assigned pre-set button.

Motion zones may be set in either Sentry*Scope* or Sentry*Chroma*. When a motion or trigger event occur, the automatic zoom will take place regardless of the image displayed on the screen (black and white or color).

5. Sentry*Scope* Image Analysis

Once Sentry*Scope* and Sentry*Chroma* have captured images there are multiple ways to find stored images of interest. All stored image review and enhancement capabilities are available while the camera is recording live images with the exception of the clip generation and review capabilities described in 5k.

a) Analyze Currently Displayed Image

Point the cursor anywhere on the currently displayed image. Use the zoom tool or any of the image enhancement tools to analyze the currently displayed image. When an image from Sentry*Chroma* is displayed the screen will look as follows (Figure 54):
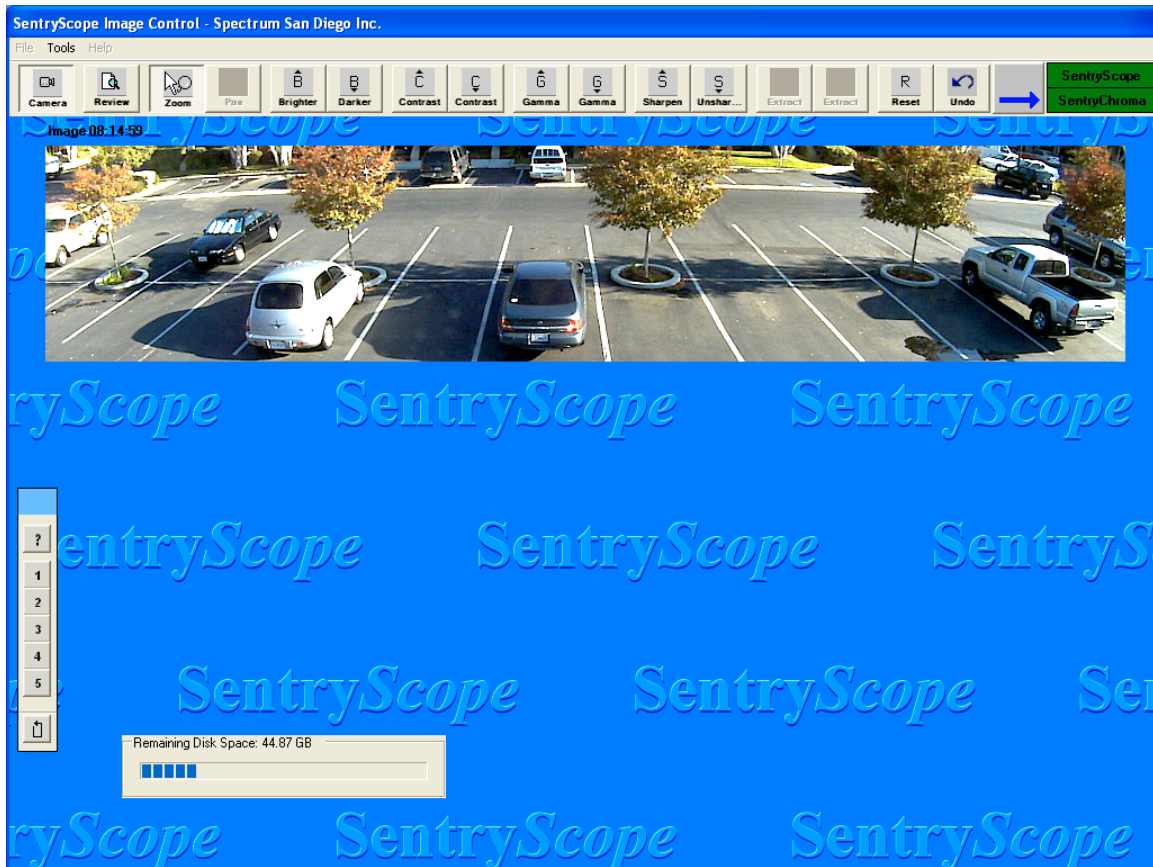

Figure 54

Note that the "Extract" buttons are grayed out and not available for Sentry*Chroma*.

b) Thumbnail Review

Click the "Review" button on the icon bar. The screen below will appear (Figure 55):
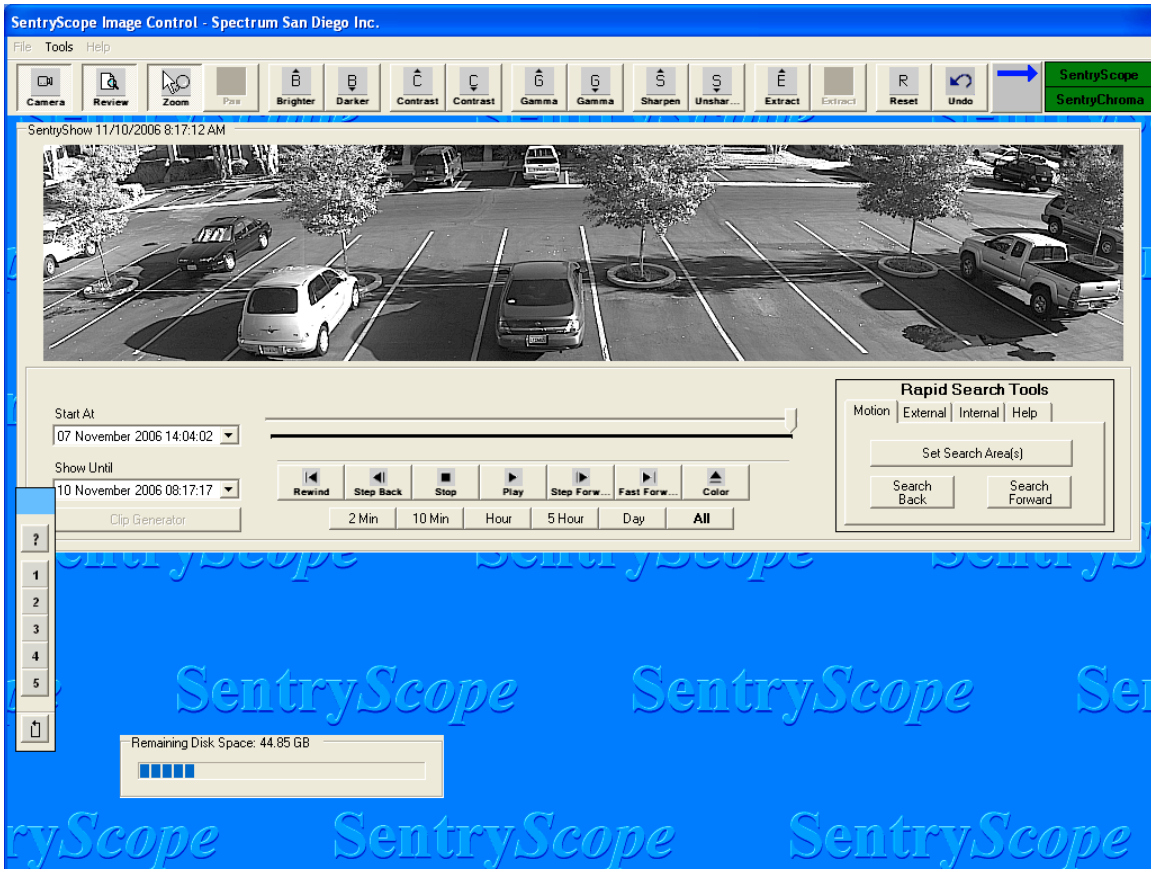
Figure 55

Each field in the "Start At" and "Show Until" boxes can be individually edited. Use these controls to expand or limit the number of images for review. Click the arrow buttons to the right of the box and a calendar will appear as follows (Figure 56):
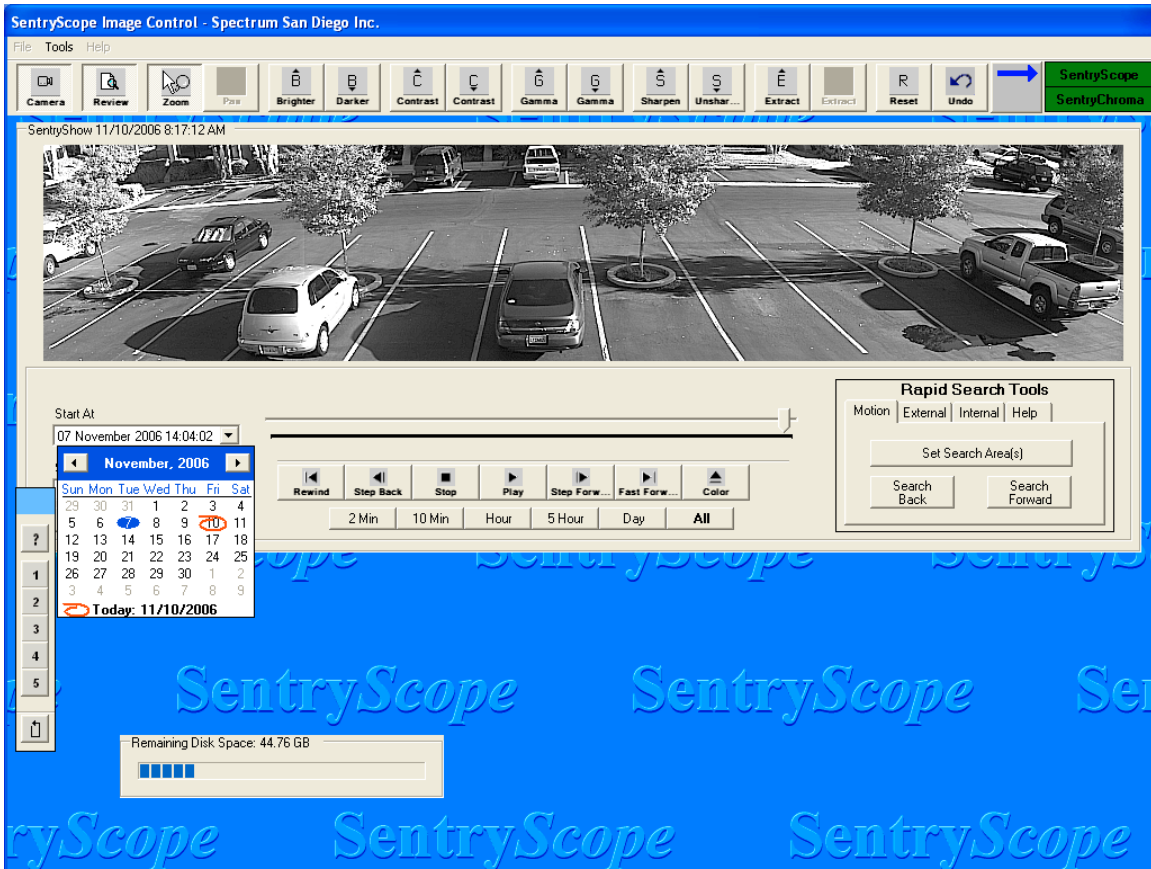
Figure 56

This will allow selection of the month by using the left or right arrows and the day by selecting the appropriate day. When finished, click anywhere outside the calendar box. In all cases thumbnail review cannot be started before the first image taken and end past the last image taken. Nor can the "Show Until" field be modified to be before the "Start At" field.

The scroll knob above the review commands can be grabbed and dragged back and forth to the appropriate time. Use the date and time stamp above and left of the displayed image to help zero in on the correct timeframe. Use the "2Min", "10Min", "Hour", "5Hour", "Day", or "All" buttons to limit the amount of images available for review when using the scroll bar. Click the "2Min" button and Figure 57 below will appear:
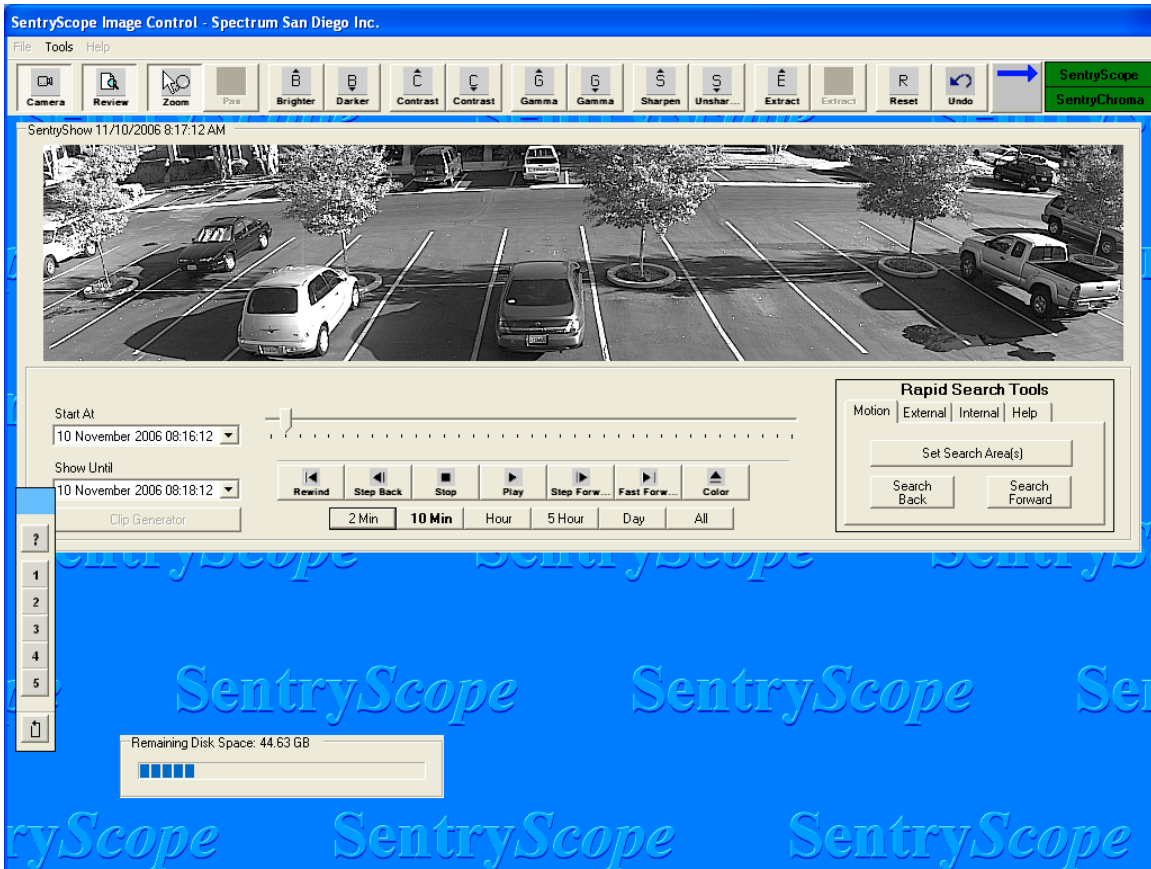
Figure 57

Notice the tickers below the scroll bar. This indicates that as you move the scroll bar, a smaller number of images will be skipped allowing for finer selection of images of interest.

The review controls can also be used to find the exact image(s) of interest. From left to right, the buttons in Figure 57 operate as follows:

Rewind -	Fast rewind (approximately 10 images per second)
Step Back -	Step back one image at a time
Stop -	Stop rewind, fast forward, or play
Play -	Display each image (approximately 1 image per second
Step Forward -	Step forward one image at a time
Fast Forward -	Fast forward (approximately 10 images per second)

Clicking the scroll knob will have the same affect has clicking the "Stop" button.

c) Thumbnail Review – Motion Search

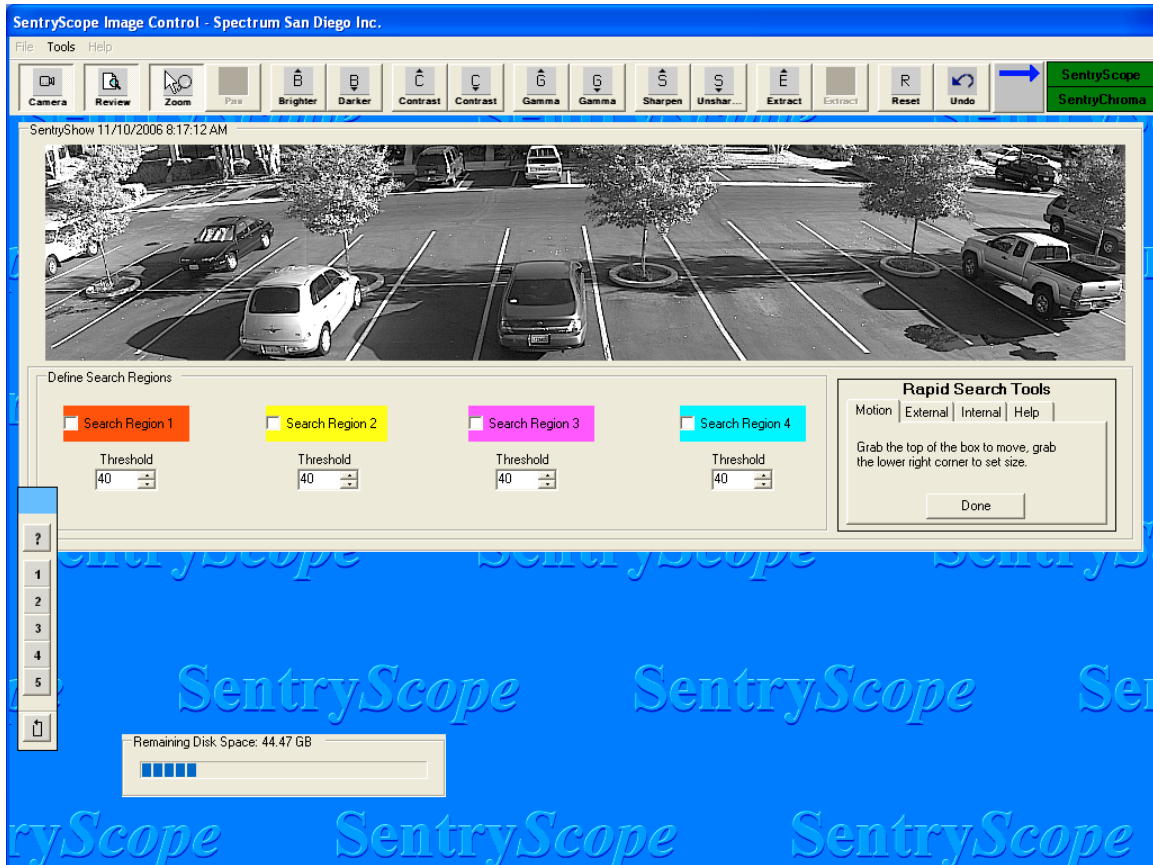Motion search is also available. In Figure 57, click the "Set Search Area(s)" button and Figure 58 will appear:

Figure 58

Up to four search regions can be defined. Check the box for Region 1, and Figure 59 will appear:
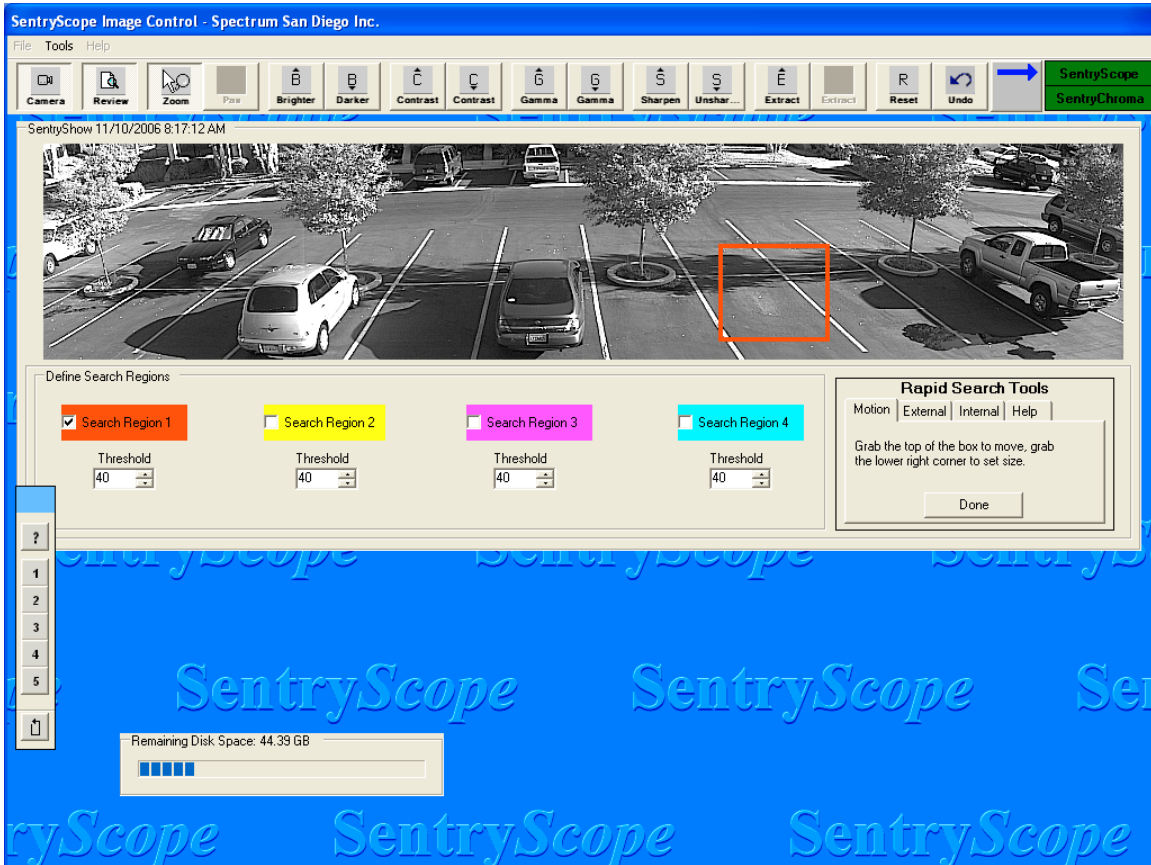

Figure 59

Grab the top line of the box and place it in the desired position. Grab the lower right hand corner of the box and size it appropriately. Set the threshold of change. As the number goes higher, more change is required in the defined area to meet the search criteria. Therefore, fewer images will be found. As the number is lowered, more images will meet the criteria. Repeat these steps for Search Regions 2, 3, and 4 as necessary. When complete click "Done".

Use the "Search" controls. "Search Forward" will search forward from the current image displayed in review mode until the search criteria are met for anyone of the search regions. "Search Back" will search backward from the current image. As each image is found, the color of the box for that region will be quickly displayed. Once a motion search image is displayed on the screen, use the motion search controls to continue searching or use the review controls to review stored images immediately before and/or after the matched image.

In review mode thumbnail images at lower resolution are being shown. Once you have an image on screen for analysis, the first click of the cursor in a region of interest will automatically load the full resolution image and zoom into that region.

d) Thumbnail Review – Search for Internal Motion Events

If there are motion zones enabled in Sentry*Scope* the number of events occurred in each motion region since the last time the "Reset" button was clicked will be shown in the status box as in Figure 60 below:
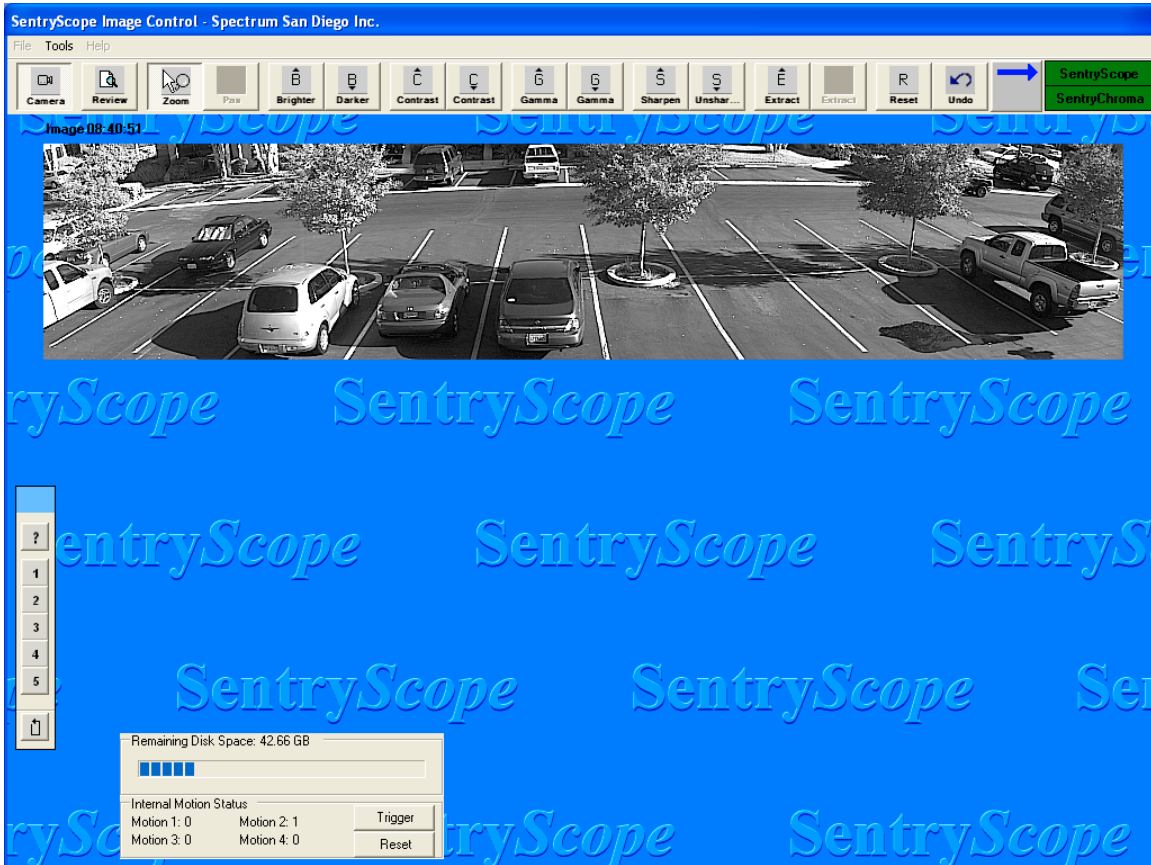

Figure 60

Click the "Review" button in the icon bar and then the "Internal" tab and the following screen will appear in Figure 61:
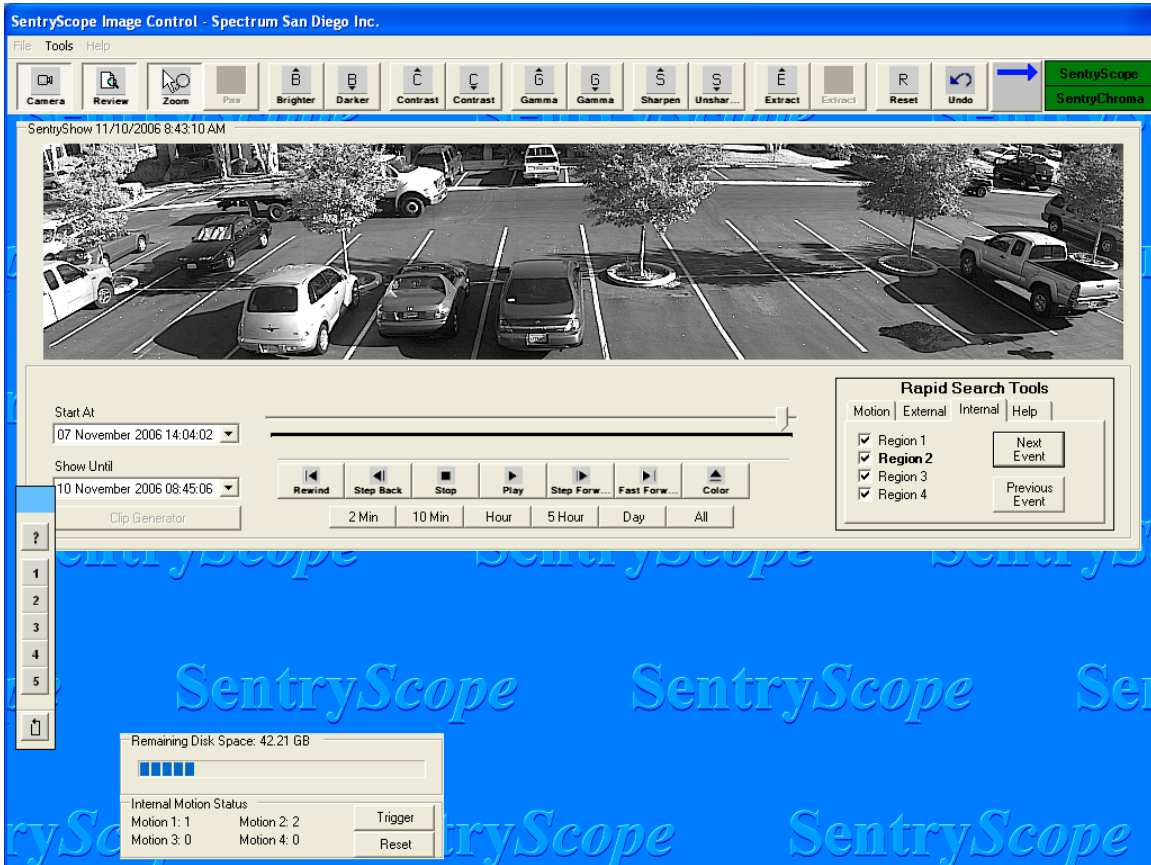

Figure 61

To search for images associated with each motion region, check the box next to the appropriate regions. Clicking the "Next Event" or "Previous Event" boxes will search for the first image in either the next or previous event for the region(s) selected. As each image is found the color of the box for that region will be quickly displayed. If multiple regions are selected, images from events are displayed in the order recorded.

The specific region(s) that caused the image to be marked as alarmed will be bolded in the display. Note that Region 2 is in bold font in Figure 61.

Once an internal motion detection image is displayed on the screen, use the event search controls to look for another event or use the review controls to review stored images immediately before and/or after the alarmed image.

e) Thumbnail Review – Search for External Trigger Events

In Figure 61 above, click on the "Trigger" button. If there are external triggers enabled in Sentry*Scope* the number of events occurred for each trigger since the last time the "Reset" button was clicked will be shown in the status box as in Figure 62 below:
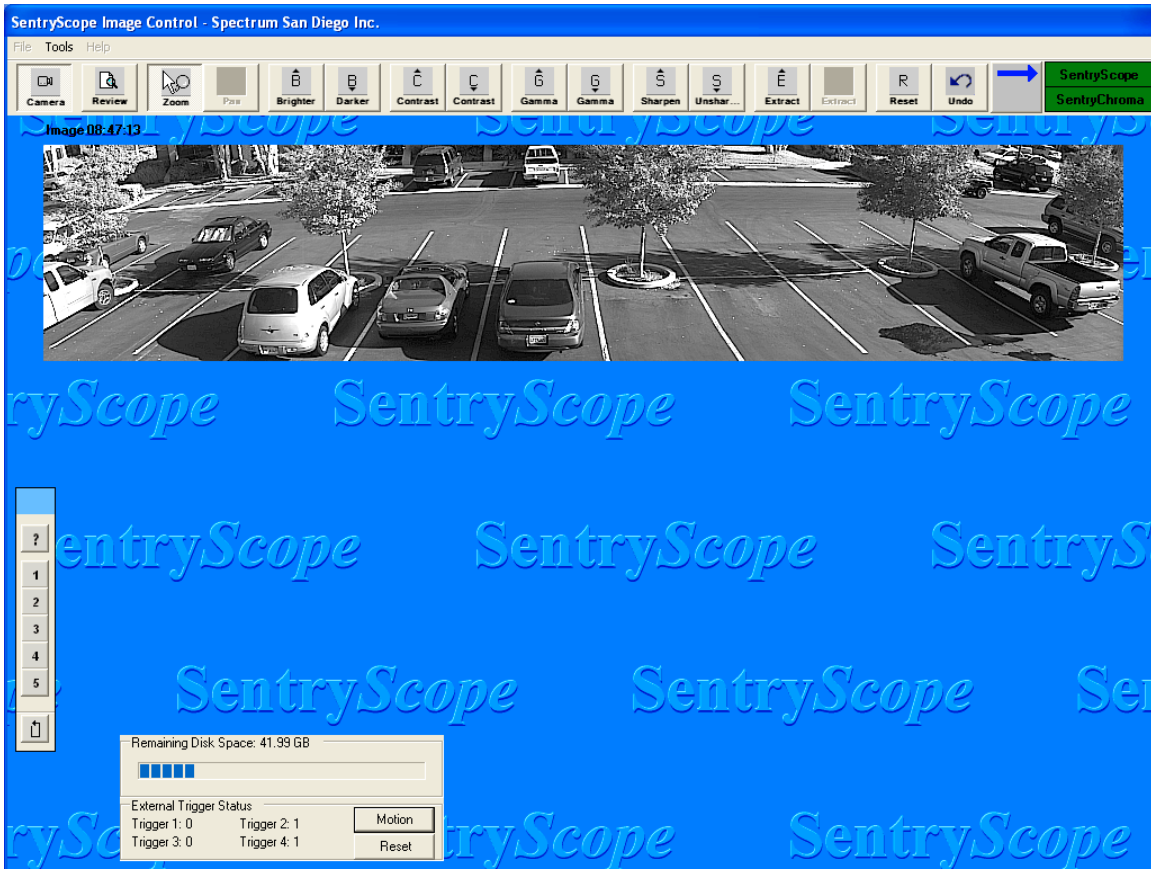

Figure 62

Click the "Review" button in the icon bar and then the "External" tab and the following screen will appear in Figure 63:
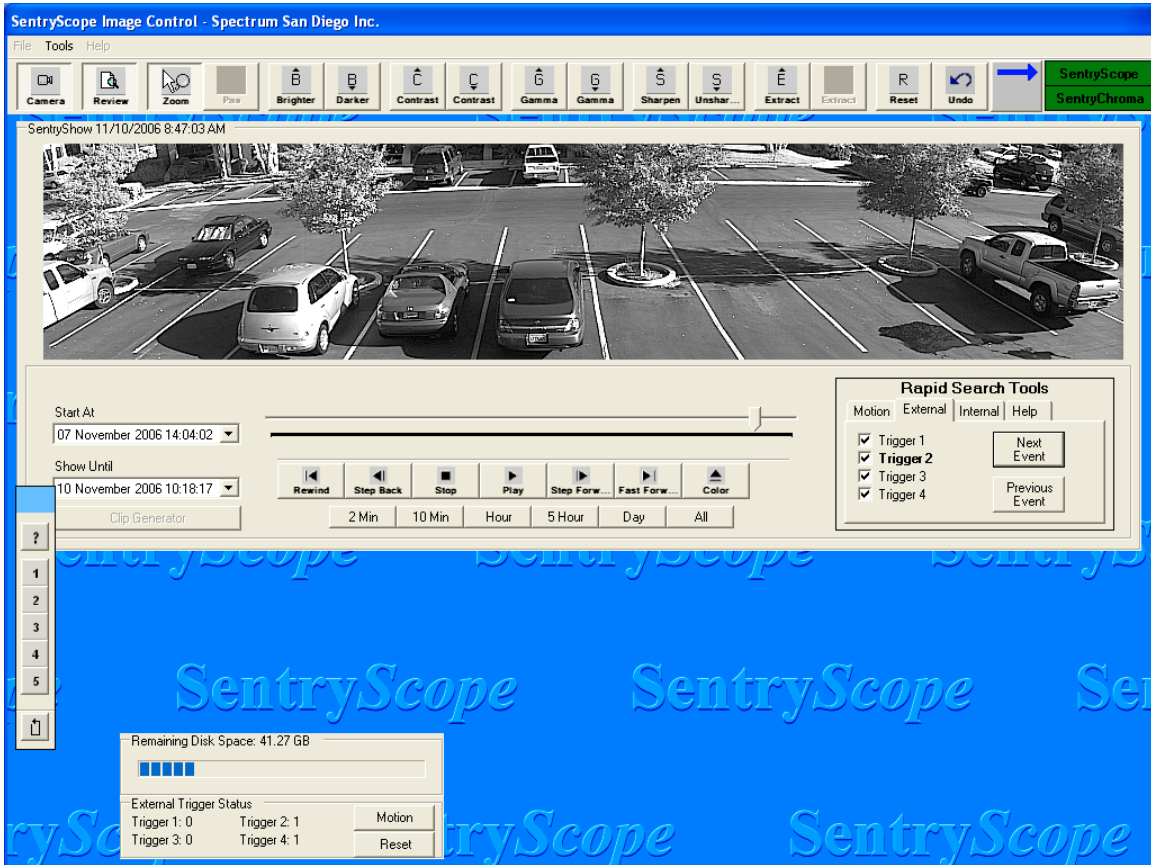

Figure 63

To search for images associated with each trigger, check the box next to the appropriate triggers. Clicking the "Next Event" or "Previous Event" boxes will search for the first image in either the next or previous event for the trigger(s) selected. If multiple triggers are selected, images from events are displayed in the order recorded.

The specific trigger(s) that caused the image to be marked alarmed will be bolded in the display. Note that Trigger 2 is in bold font. Once an external trigger image is displayed on the screen, use the event search controls to look for another event or use the review controls to review stored images immediately before and/or after the triggered image.

f) Image Analysis and Enhancement

Once the correct image has been loaded use any of the following enhancement tools in Figure 63 to identify suspicious activity:

1) If not already pushed, click the "Zoom" button in the icon bar and then point the cursor at the area of interest. Each left click of the mouse is equal to 2X zoom.

2) Click the "Pan" button to look at a different area of the image while zoomed in. Move the cursor to the new area of interest and left or right click the mouse. This will realign the screen around the cursor. Note that the "Pan" button is only useable when zoomed into an image. If the full image is displayed, the "Pan" button will be grayed out.

   If "Pan" is enabled, "Zoom" is accessed by pushing the "Zoom" button or pushing the "Pan" button again. If "Zoom" is enabled, "Pan" is accessed by pushing either the "Pan" button or pushing the "Zoom" button again.

3) Use the "Brighter" or "Darker" buttons to adjust the brightness. This adjusts the value of each pixel.

4) Use the "Contrast Up" or "Contrast Down" buttons to adjust the contrast. This increases or decreases the difference between pixel values.

5) Use the "Gamma Up" or "Gamma Down" buttons to adjust the gamma. This allows more control over specific areas of interest. For instance gamma can increase the contrast in darker areas of an image with little or no affect in the brighter regions.

6) Use the "Extract Up" button to bring out objects in dark, light or glary backgrounds. This is an advanced image analysis tool which operates in specific sub-regions of the image where there is not a great deal of difference between pixel values. Information in darker, lighter, or glary areas is often unusable. Extract displays images based upon the relative brightness of the image sub-region while attempting to maximize the amount of usable information to the viewer (only available for Sentry*Scope*).

7) Use the "Extract Down" button to move objects back into the background (only available for Sentry*Scope*).

8) The "Reset" button will take the image back to its original settings. This is useful when the image has been enhanced past the point of knowing the starting point.

9) The "Undo" button will flip-flop image enhancement steps. Press the "Undo" button once. The last image enhancement step will be reversed. Press it again and the last image enhancement step will be reapplied. This is useful to watch the affects of a single enhancement step.

g) Zoom

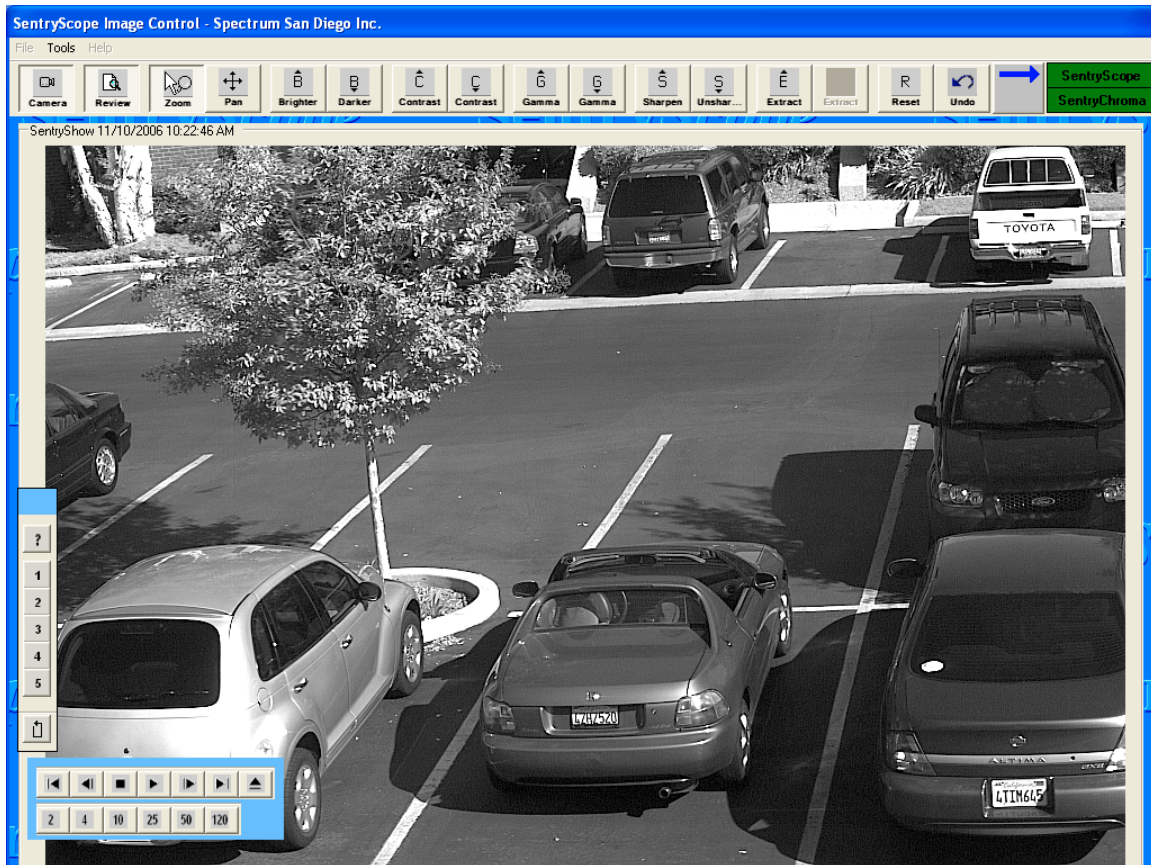Figure 64 below shows the result of zooming one level into an image.

Figure 64

A subset of the review controls are still visible and can be used to review forward and back at the current zoom level. If the controls are blocking a sub-region of interest, the bar can be dragged to another spot on the screen. Zoom back out to the originally displayed image to see the entire set of review controls. The boxes containing numbers below the review controls are used in image averaging described in the next section.

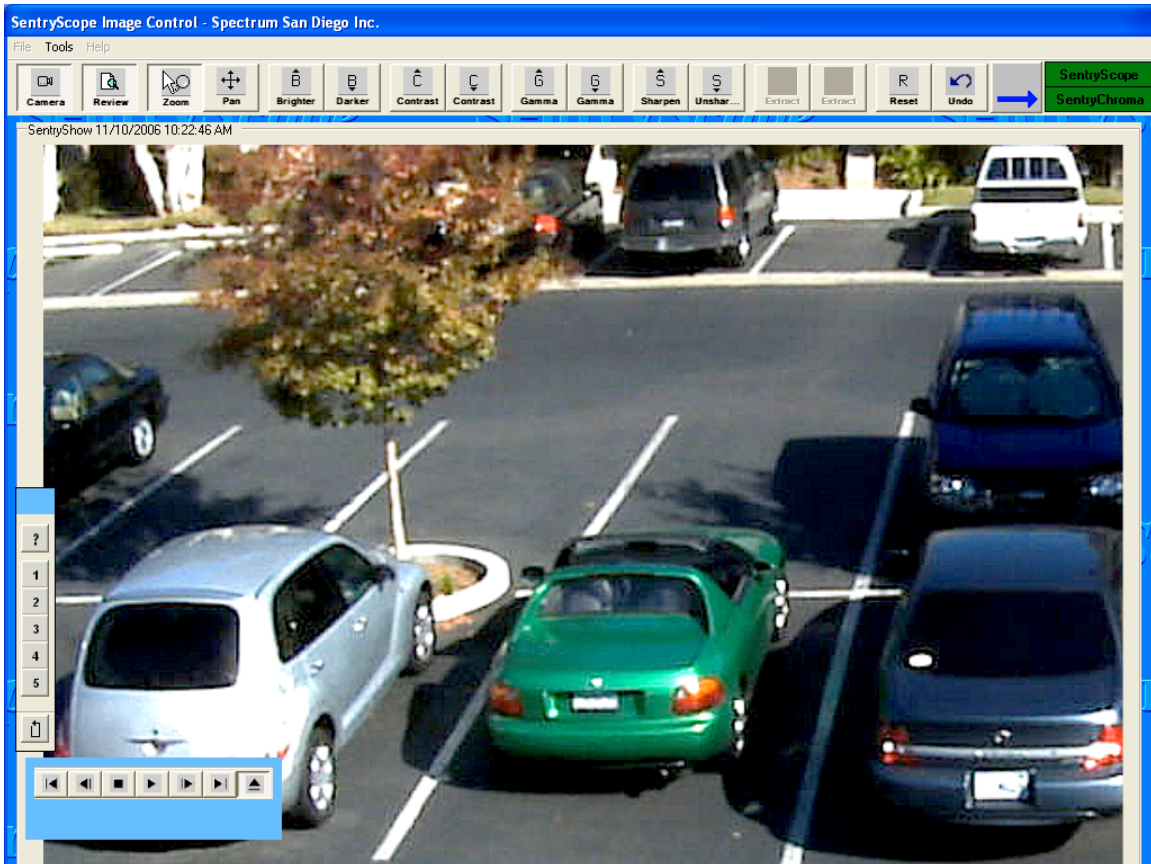Click the up arrow to switch to color images and Figure 65 below will appear:

Figure 65

Note that image averaging is not available. Click the up arrow button again to switch back to Sentry*Scope*.

h) Image Averaging

Image averaging is available for all Sentry*Scope* images. It is generally useful in low light conditions where random noise is present in the image.

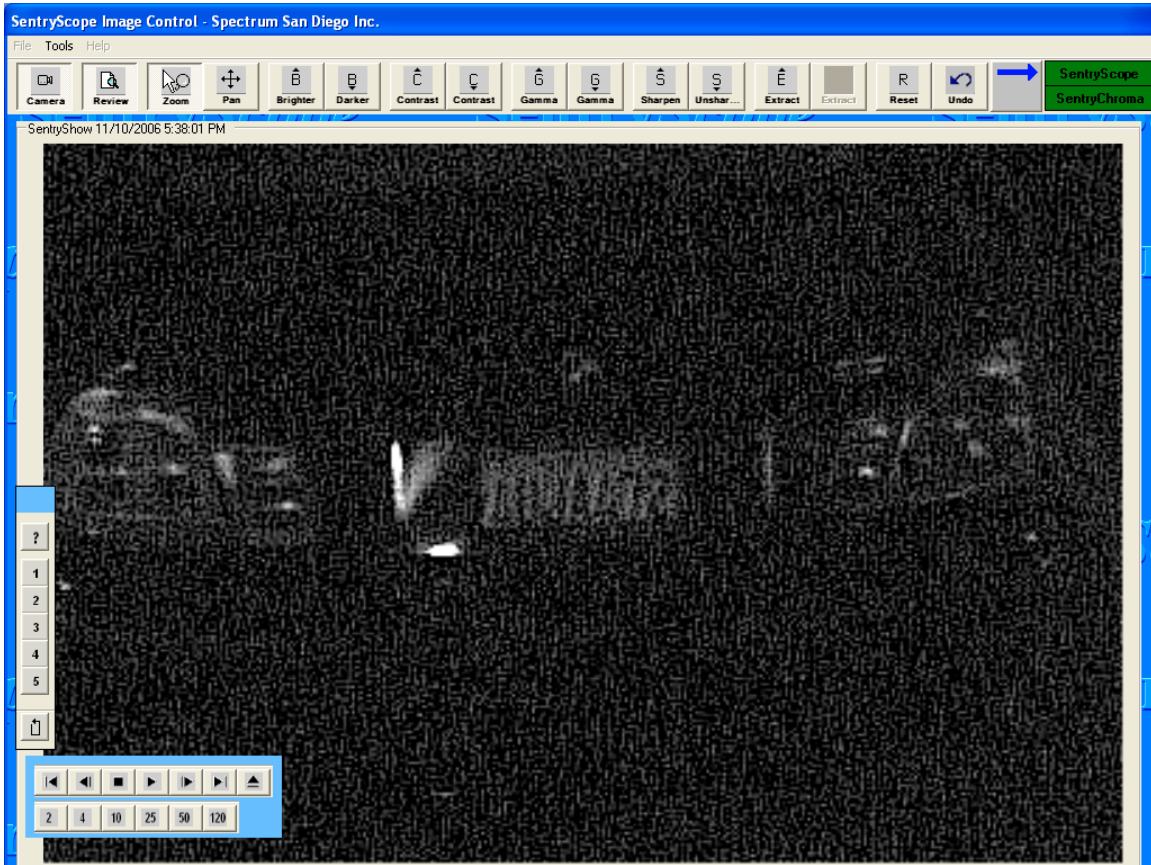Using the review controls find an image after dark. Zoom into the image and Figure 66 below will appear:

Figure 66

There are a series of numbers below the review controls (2,4,10,25,50,120). These represent the number of images to average with the image currently on the screen. By using image averaging, the noise in the image is cancelled out leaving only a clear view of the object.

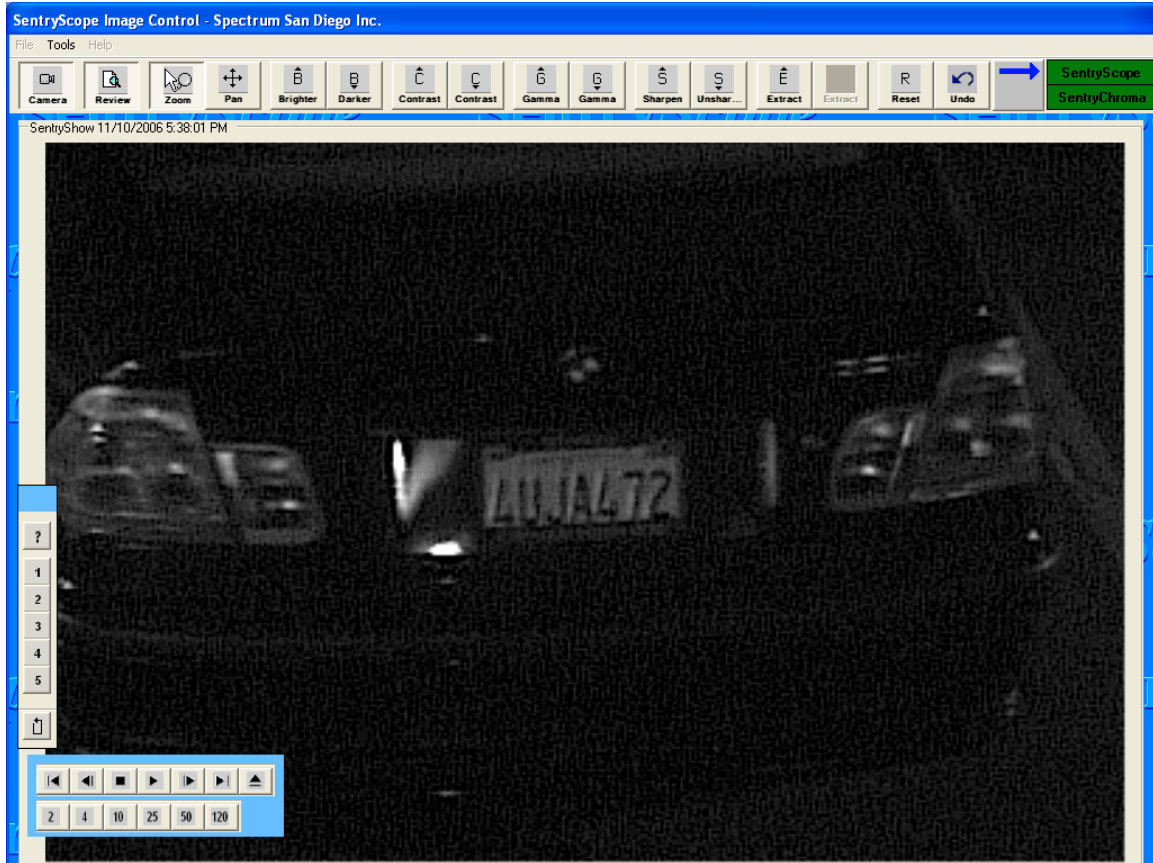Click "120" in Figure 66 and Figure 67 below will appear:

Figure 67

Note that an image should be selected with very little motion or changes in the images preceding or subsequent to the image of interest. This will prevent "ghosts" from appearing as a result of averaging. Note also that this capability only works with stationary objects. Moving objects will be "averaged" out of the final result.

i) Reviewing Sentry*Chroma* Images

Using the blue arrow, switch to Sentry*Chroma* and the following screen will appear (Figure 68):
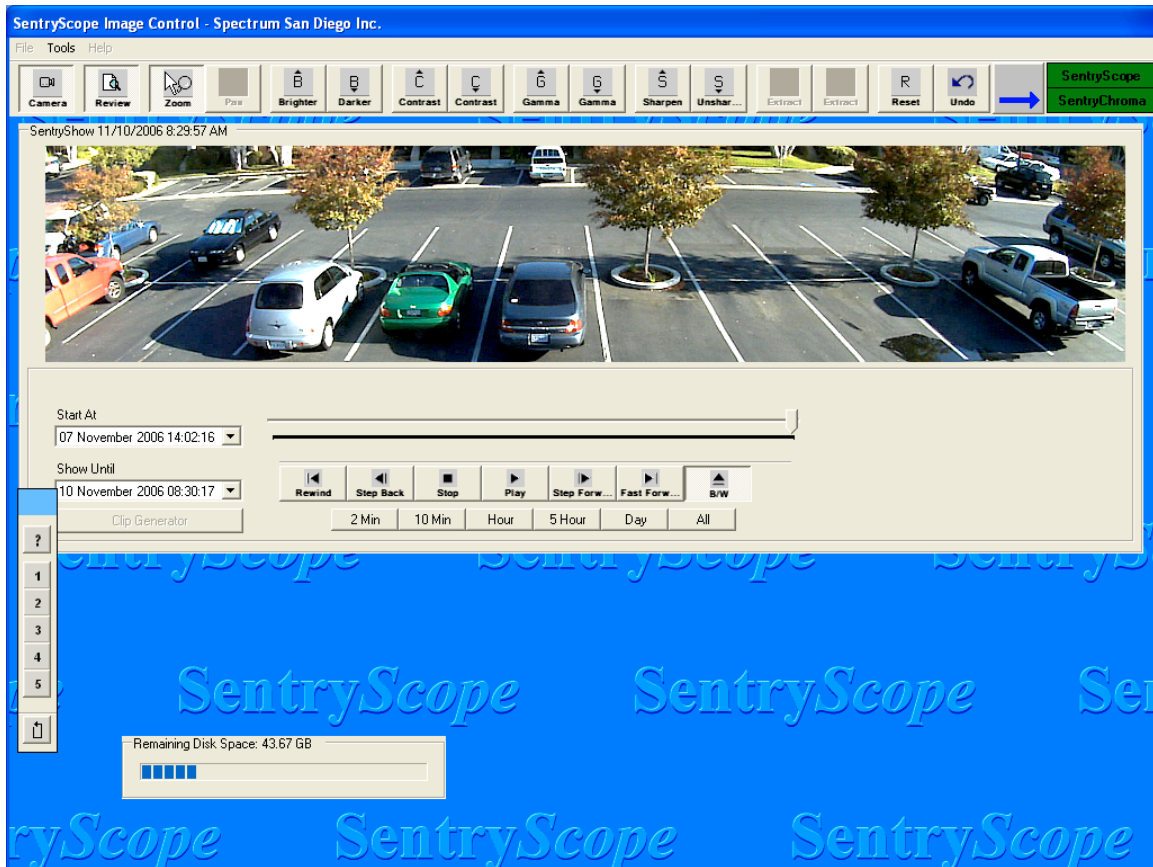

Figure 68

As previously mentioned the "Extract" buttons are grayed out and not available. Note that the "Rapid Search Tools" are not available. All searching must be done using images from Sentry*Scope*. Notice also that the "Clip Generator" button is grayed out. Clips must be generated from Sentry*Scope* images. See section k below for more detail on clip generation.

Image averaging is also not available on Sentry*Chroma* images.

All other search and image enhancement features operate in the same fashion as Sentry*Scope*.

j) Saving Images for Other Uses

Often images are required to be saved and used in other applications or for use in criminal trials. If necessary, click the "Camera" button to turn the camera off. Select the "File" pull-down menu and the following screen will appear (Figure 69):
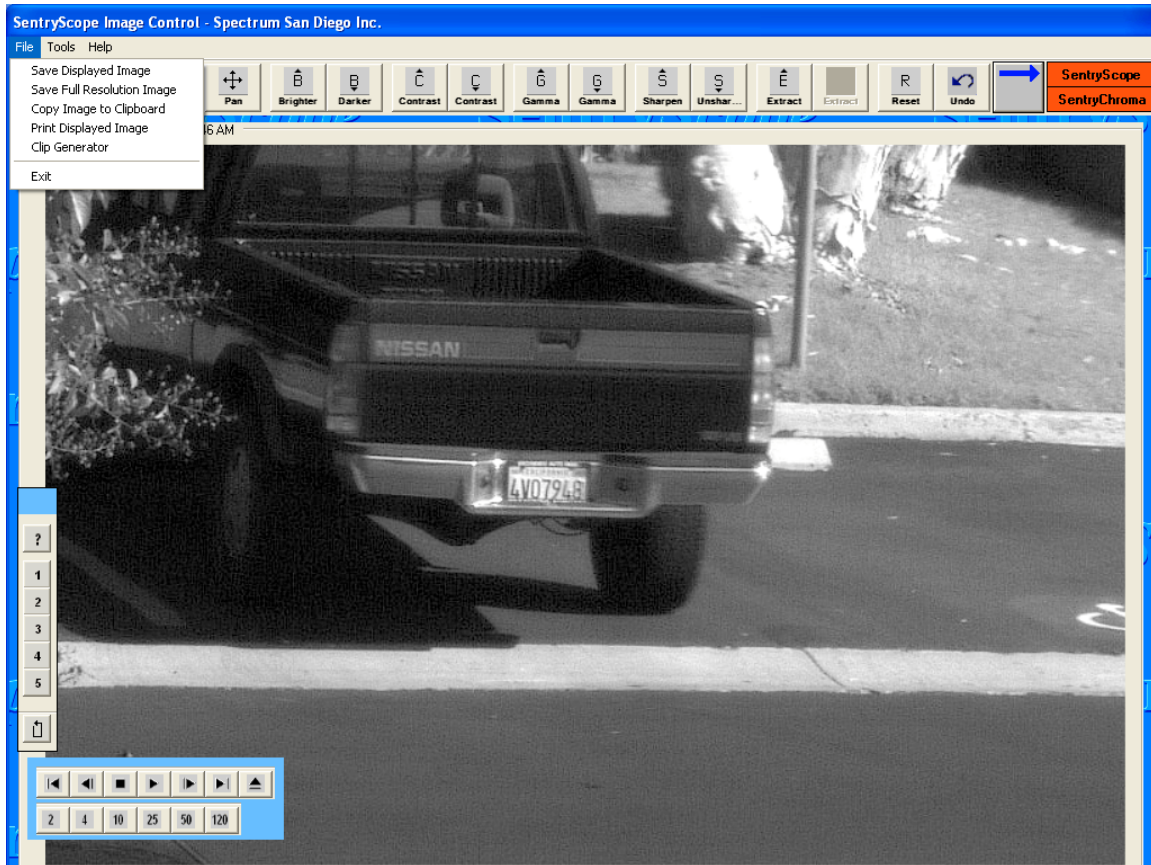

Figure 69

"Save Displayed Image" will save the portion of the image on the screen (full or zoomed). "Save Full Resolution Images" will save the entire image as taken by the camera and could be as large as 21 million bytes. "Copy Image to Clipboard" will copy the displayed portion of the image to the Windows® clipboard. "Print Displayed Image" will print the displayed image to the selected printer along with a time and date stamp.

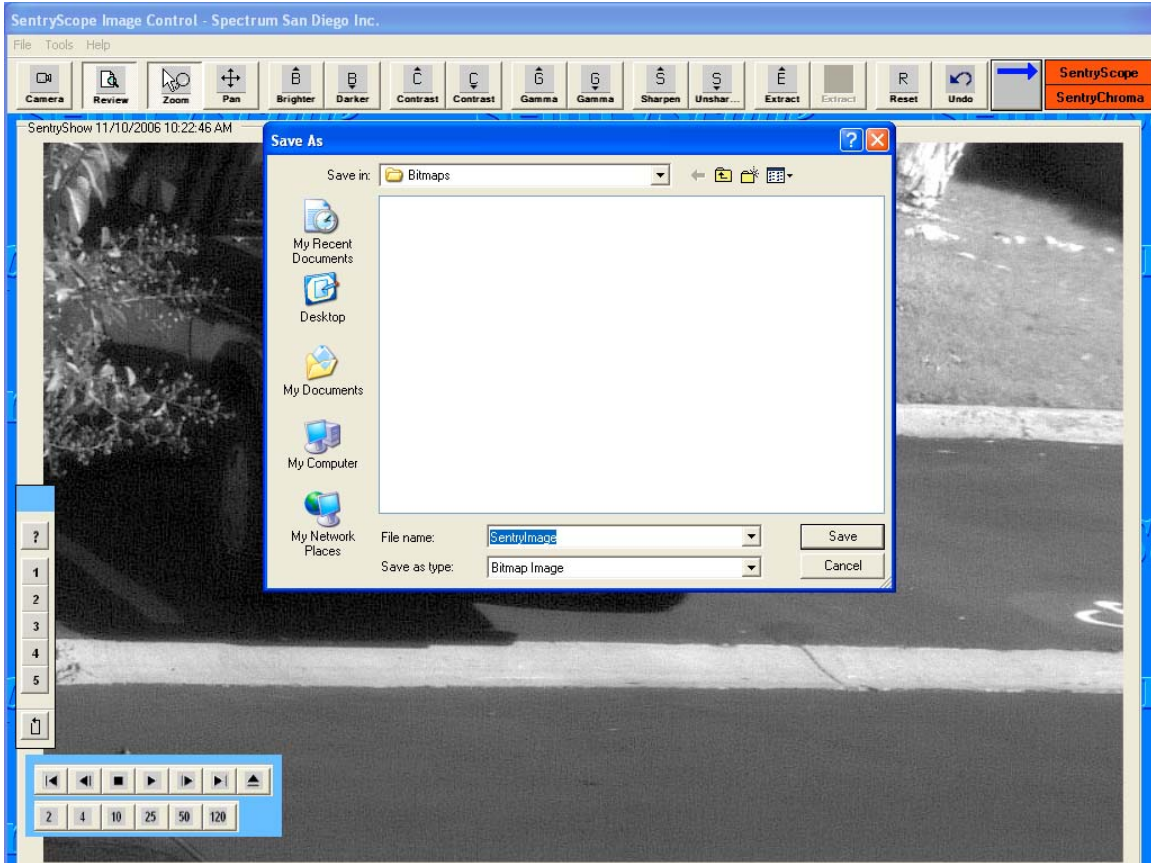If either "Save" function is selected, Figure 70 below will appear:

Figure 70

The default directory from "Camera Setup" is shown. Enter the file name. The default directory where the image will be saved can be overridden by clicking on the down arrow key in the "Save in:" box above and selecting a different directory. Click "Save" to save the image currently on the screen. The image will be saved in an uncompressed bitmap format that is compatible with most PCs and Windows operating systems.

This file can now be inserted into other applications, e-mailed to another party, printed, or other actions as necessary.

Selecting "Copy Image to Clipboard" will copy the displayed image to the Windows® clipboard. To copy only a certain area of the displayed image, use the "Zoom" button to zoom into the area of interest before clicking the "Copy" button. This allows images to be copied from the clipboard into other Windows applications by using the "Edit" and "Paste" functions.

k) Creating Video Clips

Sentry*Ware* provides a way to easily create one or more video clips and copy them to a user definable destination (typically a removable media such as CD or USB drive) along with viewer software to review and analyze the images. This makes it easy to transport a series of images to where ever they need to be analyzed. Use the "Rapid Search Tools" to find an image of interest, typically the first image of the clip. If necessary click the "Camera" button to turn the camera off. Under the "File" pull-down menu, select "Clip Generator" or click the "Clip Generator" button under the "Show Until" dialog box and Figure 71 below will appear:
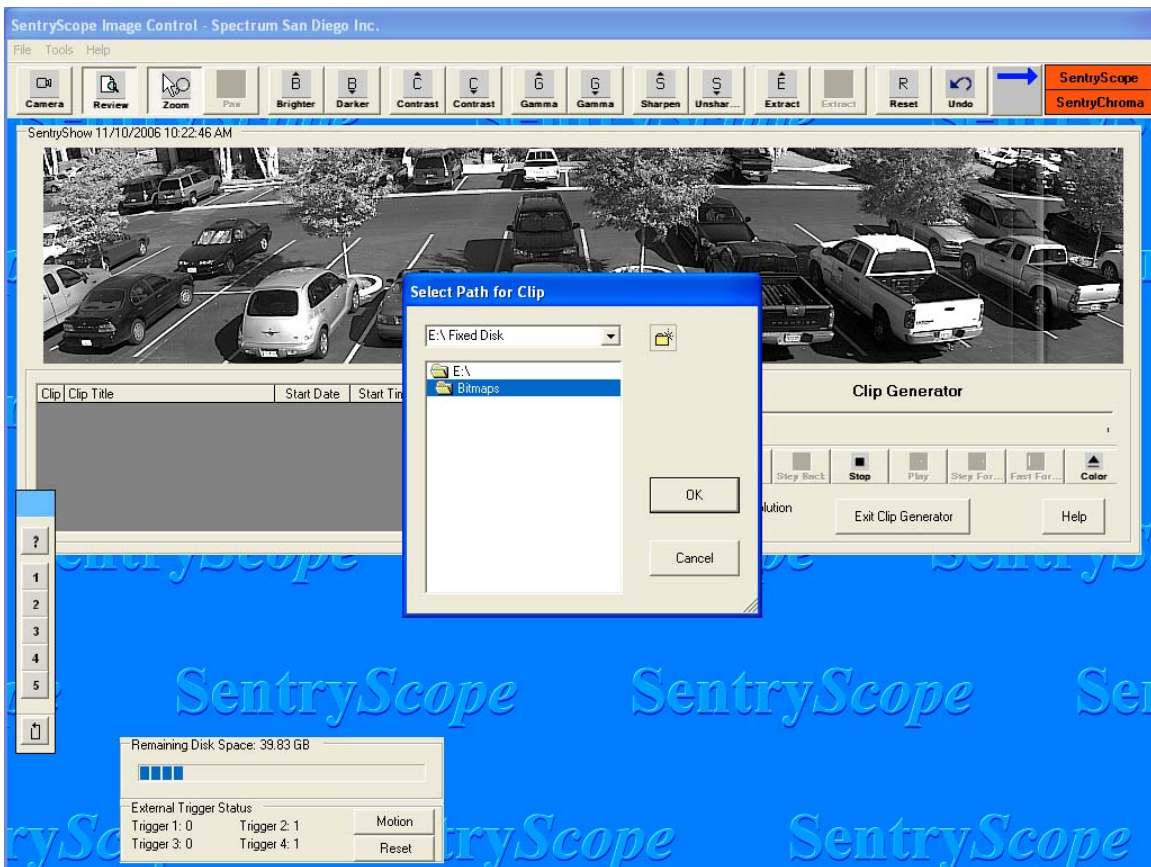

Figure 71

Click on the down arrow to navigate to the desired destination. Click "OK" and Figure 72 below will appear:
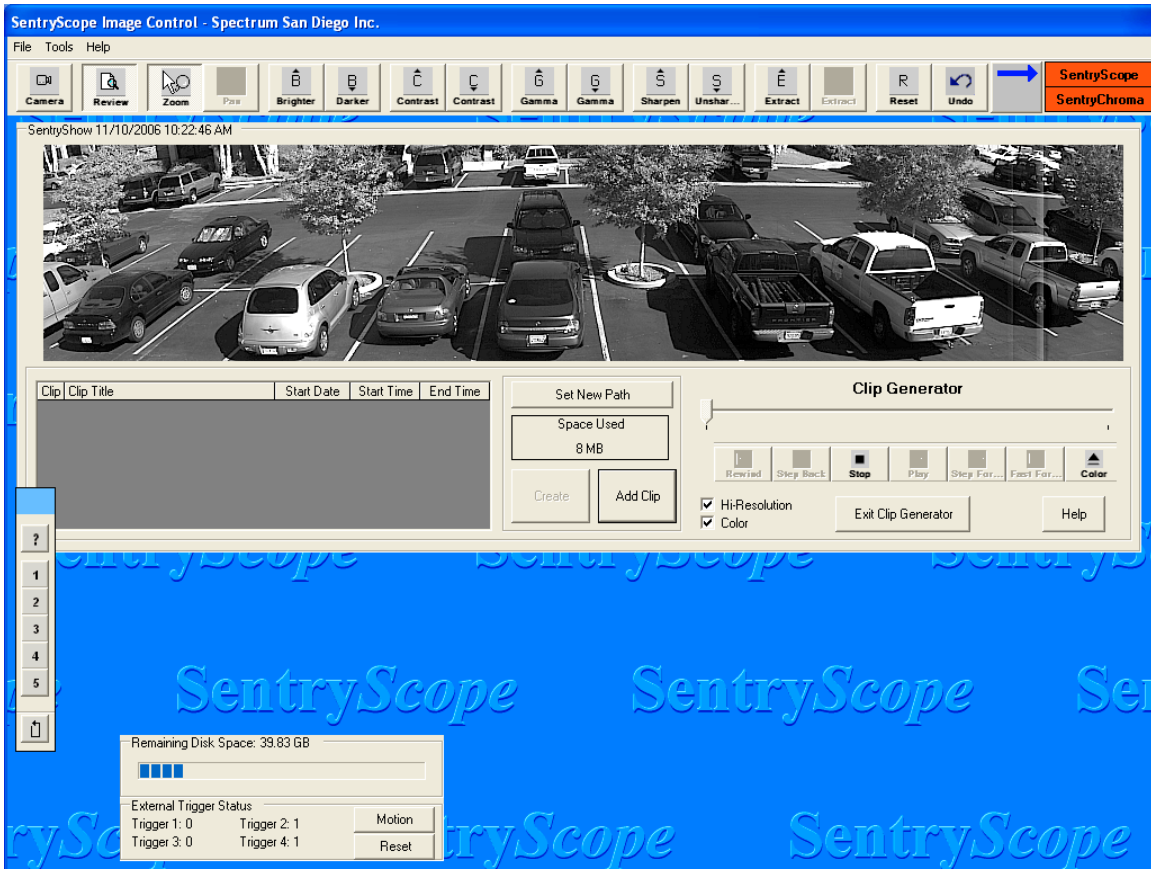
Figure 72

Click the "Set New Path" button to change the destination. The size of the clip is displayed. Check the appropriate boxes to have both Sentry*Scope* and Sentry*Chroma* images or one or the other on the clip. Click the "Help" button to get instructions on the use of the clip generator tools.

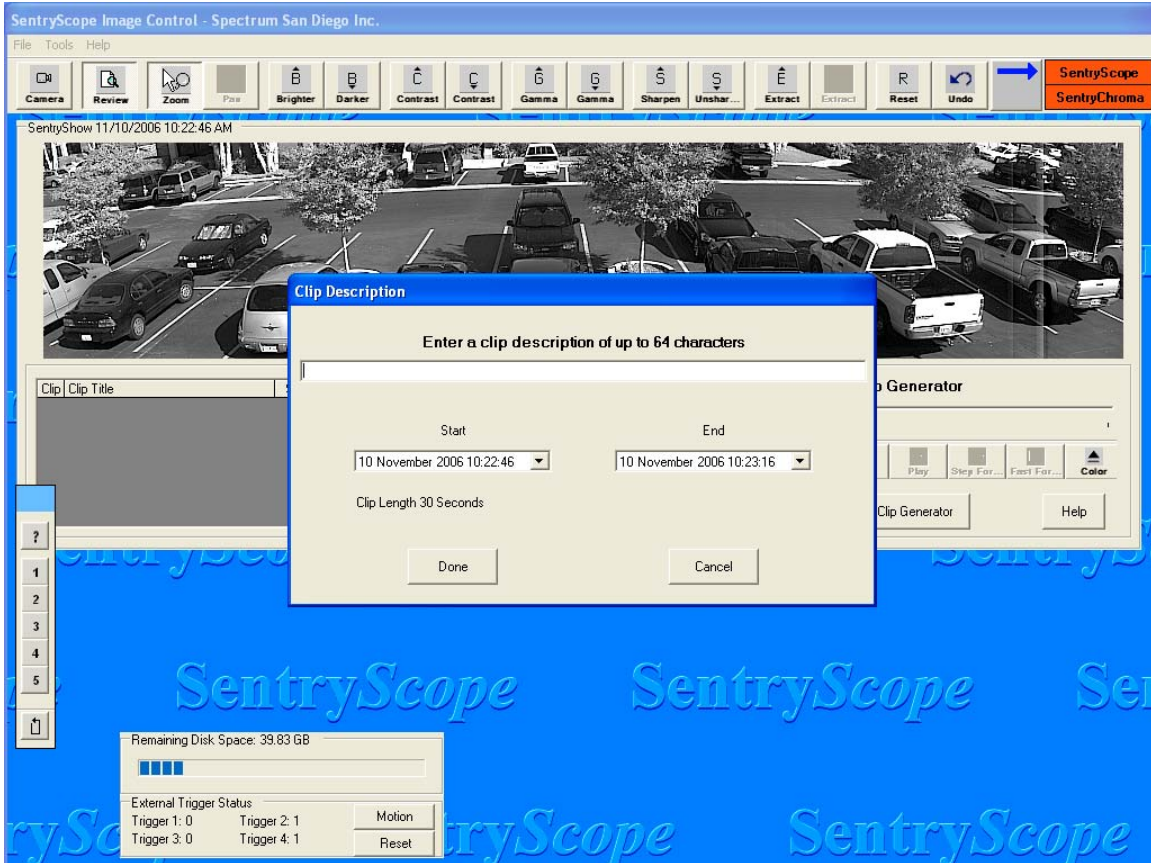Click "Add Clip" and Figure 73 below will appear:

Figure 73

Enter a description of the video clip.

Use the dialog boxes under "Start" and "Stop" to define the length of the clip. Click "Done" to add the clip to the CD image or "Cancel" to start over. After clicking "Done", a status box saying "Please Wait While SentryWare Adds the Clip" will be displayed followed by Figure 74 below:
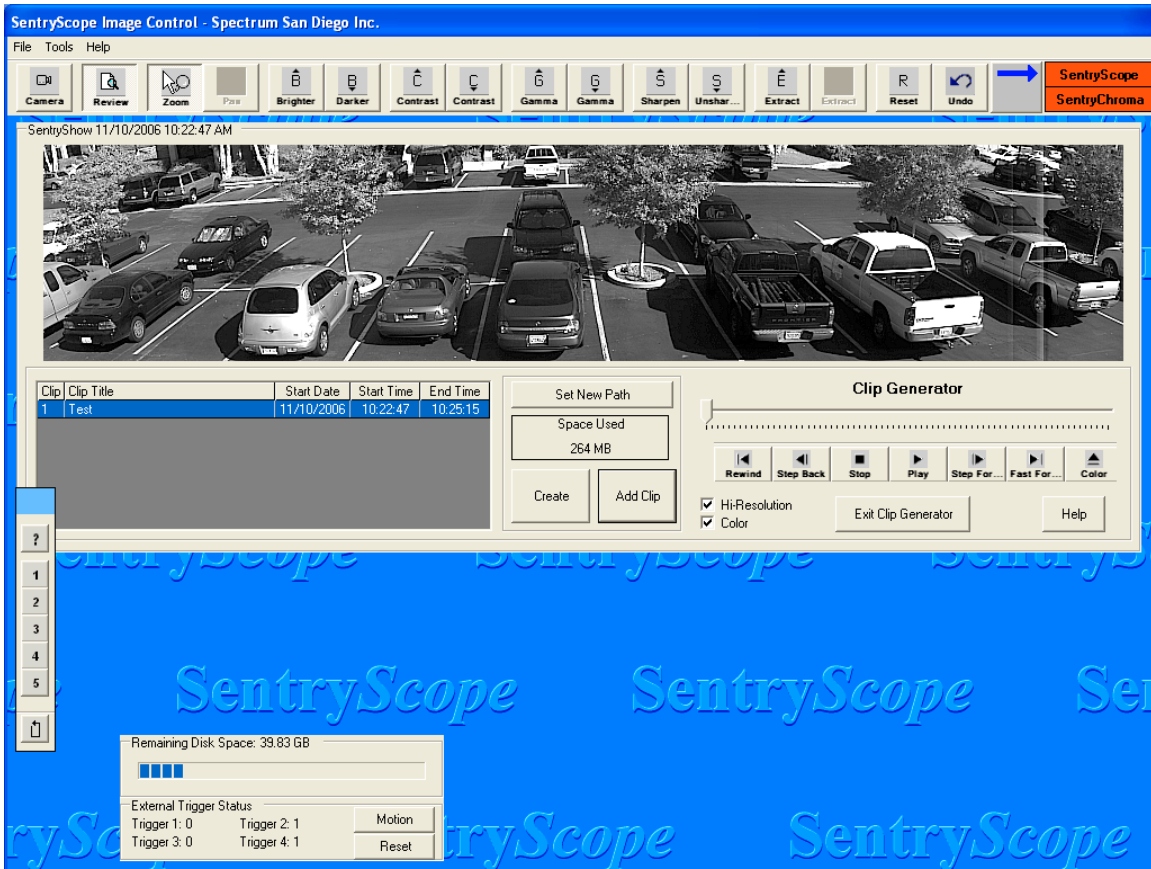
Figure 74

The title of the clip will be in the gray clip status box. The amount of space used will be displayed. The review tools are now activated to allow review of the selected images if necessary.

If the clip is not desirable, highlight the clip in the status box and hit "Delete" on the keyboard. Figure 75 will appear:
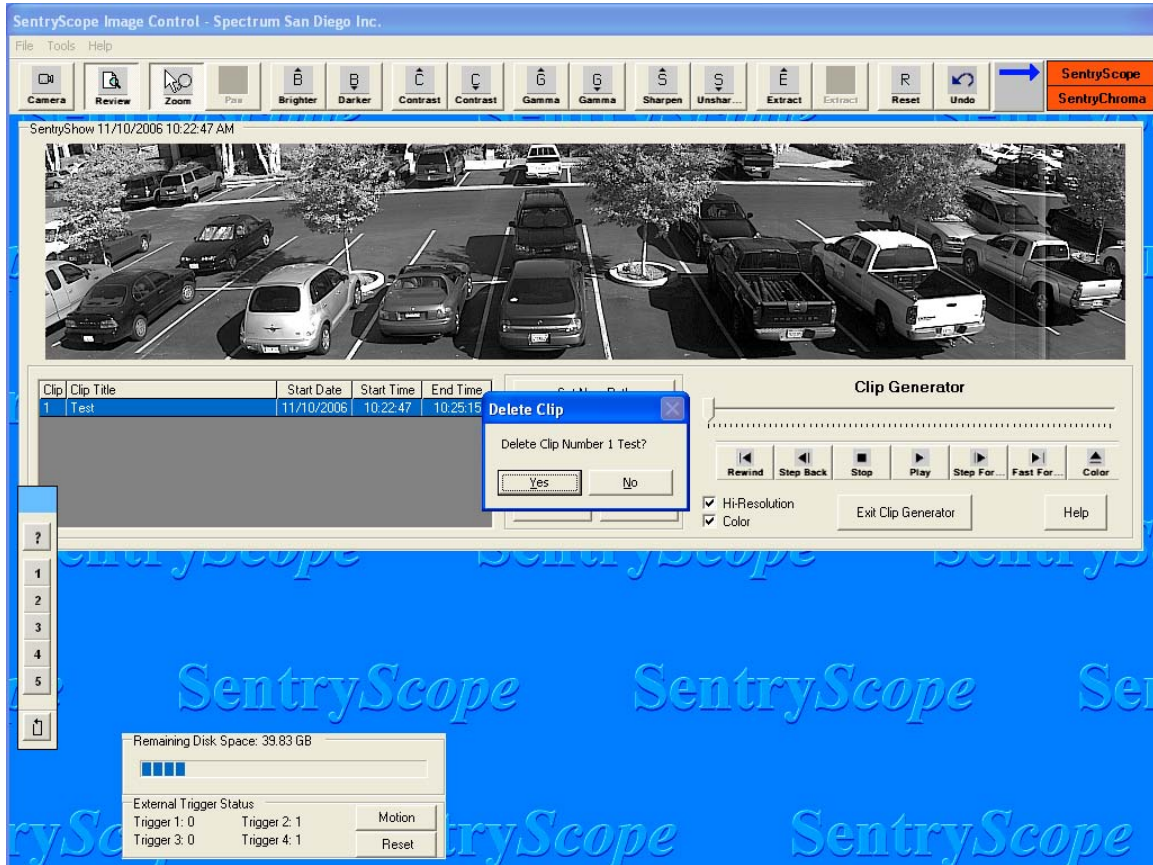

Figure 75

Click "Yes" to start over or "No" as appropriate.

Multiple clips can be written to the desired location. Click the "Add Clip" button and repeat the steps from Figure 73. As each clip is added, the name of the clip will appear in the gray status box and the total space used will be updated.

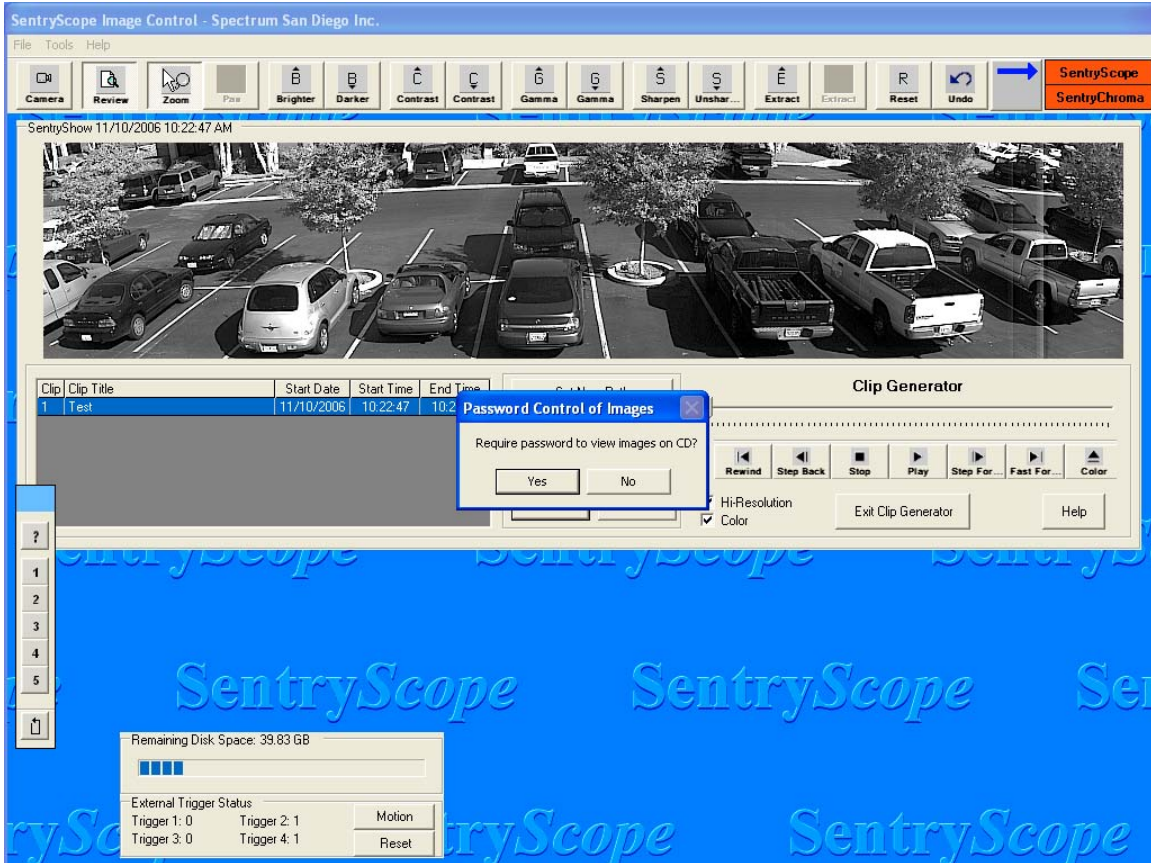When the clip(s) are ready, click "Create" and Figure 76 below will appear.

Figure 76

A dialog box will appear asking if password protection of the video clip is necessary. Click "Yes" if the clip(s) can only be viewed under password control. If password protection is desired, dialog boxes will appear asking for the password and confirmation.

When the clip(s) are ready click "Create" and Figure 77 below will appear while Sentry*Ware* prepares the clip image:
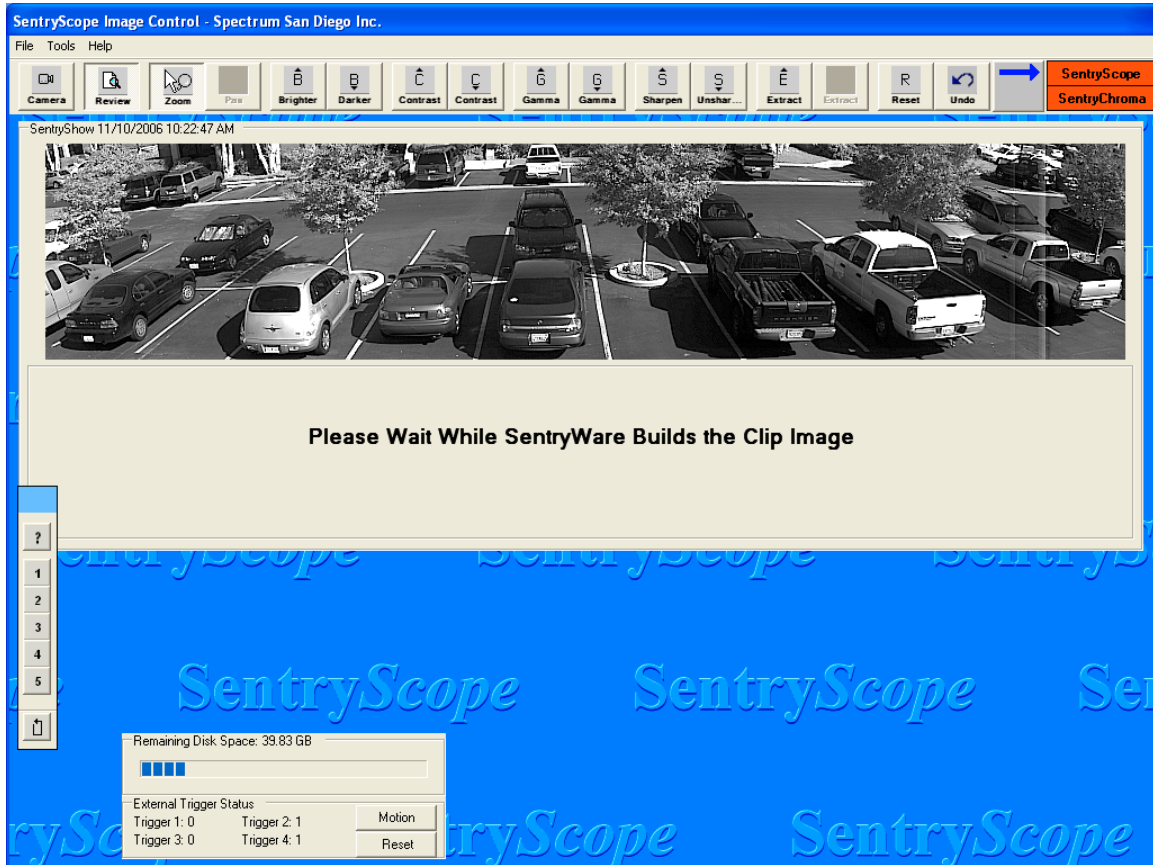

Figure 77

In this example a CD is the destination. Once the clip image is prepared, Sentry*Ware* will call the Windows CD writing tool and Figure 78 below will appear:
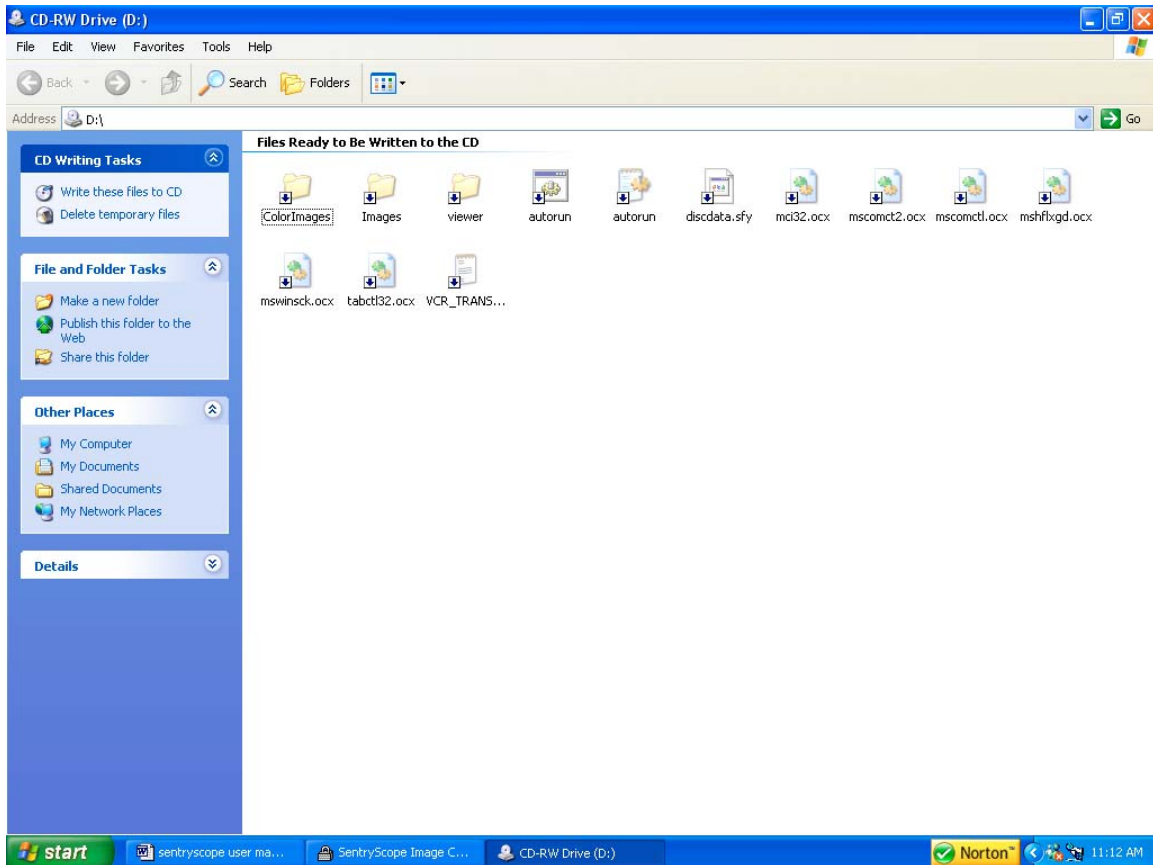

Figure 78

Place a writeable CD in the drive and select "Write these files to CD", the top selection in the left side bar. Follow the instructions in the dialog boxes. When complete the disk will eject and control will return to Sentry*Ware*. The CD will contain viewer software along with the images and can now be played in the vast majority of PCs running Windows 95 and up. The clip should auto-start. If not, use Windows Explorer to display the CD contents and double-click on the "autorun" MS-DOS batch file.

If the destination is not a CD (optical drive), but a network, removable, or hard drive there will no interim steps. The images and viewing software will be written as soon as Sentry*Ware* completes building the clip image. Double-click on the "autorun" MS-DOS batch file to run the clip.