

Blastware®

Operator Manual



Certified to the ISO 9001 Quality Standard

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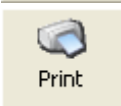
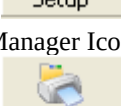
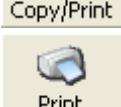
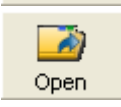
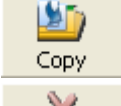
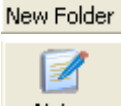
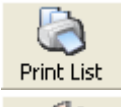
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Thank You . . .

Thank you for purchasing Instantel's Blastware software program. Blastware combines the ease-of-use of the Microsoft® Windows® operating system with the power and control of Blastware's two software modules: Compliance and Advanced. The Compliance module copies, views, prints reports, and deletes Events. It also sets up and programs the Series II or Series III monitor. The Advanced module, available separately, performs advanced functions, and has customizable setups.

Complete and Return Your Registration Card

Instantel offers the most comprehensive Product Support Program available. You receive a one year warranty on the Blastware software and free software upgrades for the first year. All you have to do is complete the registration card included with your software and return it to Instantel by mail or facsimile within thirty (30) days of purchasing your new software, or by completing the online registration form at the website, www.instantel.com.

What You Need to Run Blastware

Blastware software can run on any IBM-compatible PC with the Windows® 2000 or XP operating system, with the following system requirements:

- CD-ROM drive
- Mouse
- SVGA or higher screen resolution
- RS232 Serial Port or a USB port for communication with the unit
- A free USB port for the Advanced Software hardware dongle
- Printer (optional)
- Modem (optional) – U.S. Robotics® 56k External Modem recommended.

Do You Know How to Use Microsoft Windows?

This manual assumes that you are familiar with Microsoft Windows. You should know how to use its menus, dialog boxes, command buttons, text boxes, list boxes, drop-down menus, option buttons, checkboxes, and command dialog boxes. If you would like to learn about these and other Windows features, try the on-line tutorial provided with Windows or the associated user manual. You can also refer to several of the books published about the use of Windows software.



Hardware Key Connection (Advanced Module Only)

The Hardware Key, supplied with the Advanced Module software, plugs into your computer's USB port. Do not plug in the Hardware Key until after you have installed the Blastware software. The Hardware Key accesses the Blastware advanced features in the advanced module. The Hardware Key can be used on any computer with a USB port and can be changed from one computer to another.

After you have connected the Hardware Key, start the Blastware program. The Event Manager appears and displays the Analysis icon indicating you have access to the Blastware Advanced Module software.

Note

Users of Windows 2000 or XP must be logged on with Administrator privileges in order to install the drivers required by the Hardware Key. Please see *Installing Blastware on Your Computer* below for details.

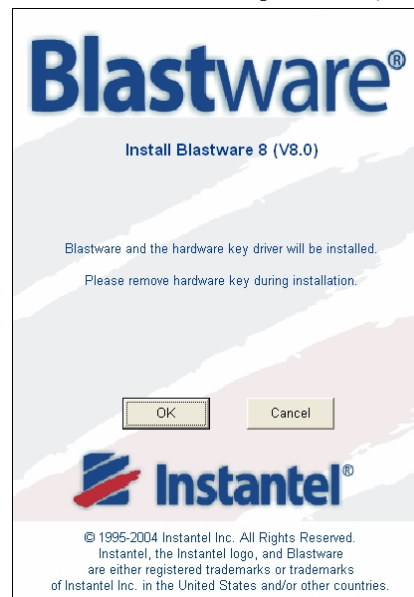
Blastware software version 8.0 will not run using hardlock devices from previous versions.

Installing Blastware on Your Computer

Blastware installs onto your hard disk creating its own directory and copying all the necessary Blastware program files into the directory. If you are installing the Advanced Module, do not plug in the Hardware Key until after you have installed the Blastware software.

To install the Blastware Software Program:

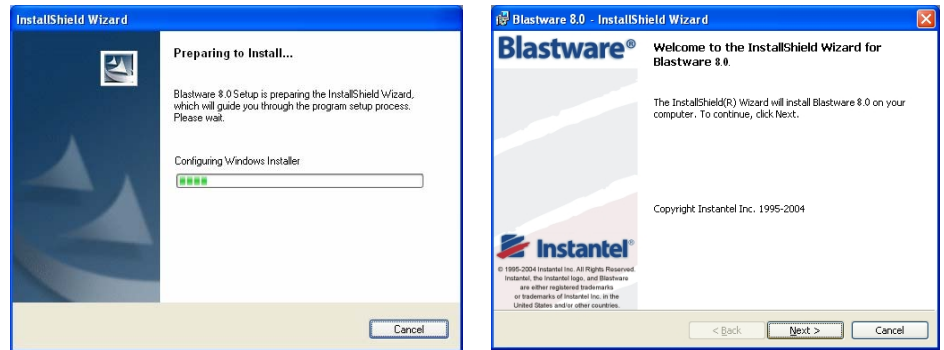
1. Insert the Blastware CD-ROM into the CD/DVD-ROM drive. The Blastware welcome screen appears. (If auto run is disabled on your computer, the screen will not appear. Open the Blastware CD-ROM and double click on the startup.exe icon.)



a) **Install Blastware**

Start the installation process for the Hardware Device Driver and Blastware by clicking on the **OK** button. The Hardware Device Driver must be installed to enable access to the Blastware Advanced Module. Windows 2000 and XP must be logged on with Administrator privileges in order to install these drivers. See step 3 below.

An InstallShield Wizard preparation screen appears, which results in the Blastware 8.0 Install Shield Wizard.



Click **Next** to continue the installation process.

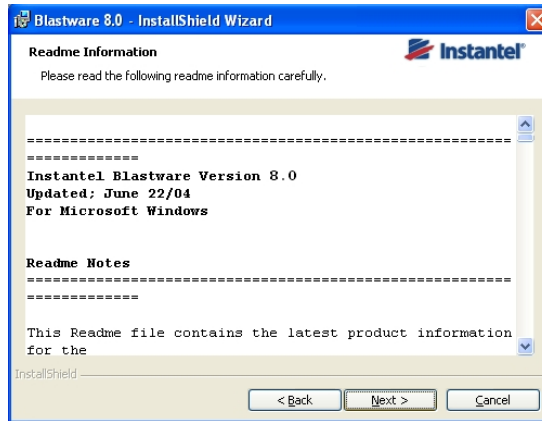
b) View the Instantel License Agreement

To proceed with the installation of **Blastware**, review the Instantel License Agreement and click on the radio button beside **I accept the terms in the license agreement**. Select **Next** to continue with the installation.



c) View the README File

The next window provides you with the opportunity to read about the latest changes and enhancements to the Blastware software and unit firmware. Select **Next** to continue with the installation.



d) **Destination Folder**

Accept the default directory destination for the software installation, C:\Blastware 8\, by clicking **Next**, or use the **Change** button to create a new location.



e) **Confirmation**

The next window provides you with the opportunity to proceed with the **Install**, **Cancel**, or use the **Back** button to make any changes to the destination folder of the software installation. Select **Install** to proceed with the installation.



f) The **Blastware** installation begins, displaying a status bar of the progress. When this process has been completed, select **Next** to continue with the installation.



g) Finish

Select **Finish** to complete the installation.



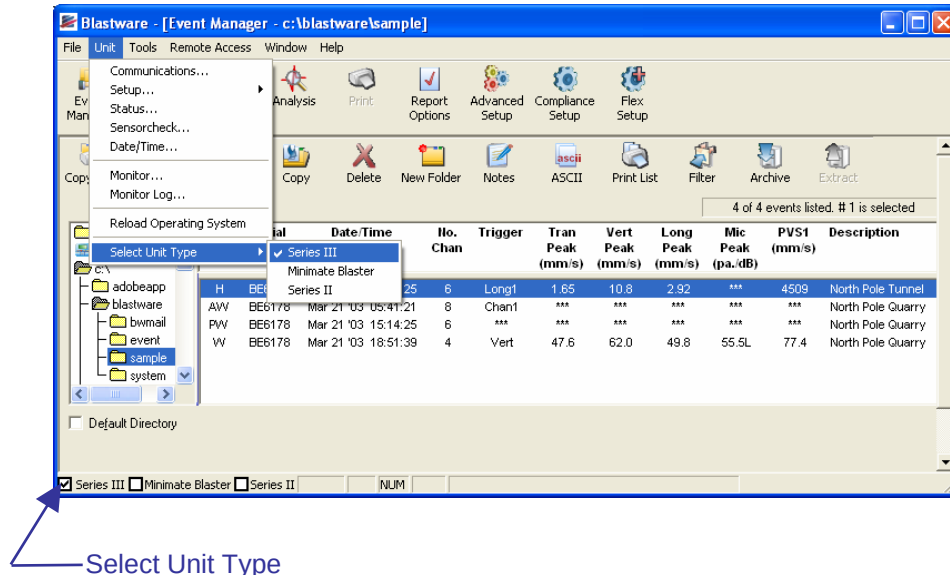
After clicking on **Finish**, you will be prompted to restart your computer. Your computer must be restarted to implement the configuration changes made by the Blastware installation process. Ensure that all open programs have been closed, and that you have saved all documents. Select **Yes** to restart your computer.



2. You are now ready to begin using Blastware. A series of icons related to the Blastware program was added to your Windows, Start, Program list, and a Blastware icon was added to your Desktop. Start Blastware by selecting the icon at either location.



Note: Series III users installing an update of Blastware must download a new version of the operating system to the monitor once installation is complete. Ensure that you have selected the proper unit type prior to trying to communicate with unit using the **Reload Operating System** option. Refer to Section 2 of this manual for direction on how to attach the monitor to your PC. See below:



Select **Reload Operating System** from the Unit Menu.

Series II users are also strongly recommended to download the latest version of the Series II operating system to the monitor to take advantage of the latest enhancements. Note, however, that once you have downloaded the OS from Blastware, you will no longer be able to download the OS from the Series II DS-467 or DS-567 software. You will still be able to access your events with previous versions of Blastware software based on the DOS operating system.

Starting Blastware

If you have the USB Hardware Key for the Advanced Module, insert it into your USB port. To start Blastware, place the mouse pointer on the Blastware program icon, located on your Windows Desktop or within your Windows, Programs listing. A welcome screen appears followed by the Blastware Event Manager.

Conventions Used throughout this Manual

The following typographical conventions appear throughout this manual.

- Bold type** Press the indicated key.
- Italic type* Information that you enter. For example, *filename* asks you to enter a filename of your choice.



1. INTRODUCTION

The Blastware program combines the ease-of-use of a Microsoft Windows based program with the power and control of a user-friendly menu structure. Using the program, you can view and print Event waveforms and program, control, and customize the operation of your Minimate Blaster, Series II or Series III monitor.

1.1 Blastware Software Modules

The Blastware software program has two modules. The first is the **Compliance Module** and comes standard with each Blastmate III, Minimate Plus, Blastmate II, Minimate or Minimate Blaster. This module includes all the commands to control your monitors basic compliance features. You can also use it to transfer your recorded Events to a personal computer where you can view them and format user-definable Event and FFT Reports that can be produced by your printer.

The second module, the **Advanced Module**, provides advanced features to analyze recorded Events. You can edit National Frequency Standards, perform FFT and timeline analysis. You can also integrate, differentiate, invert, add, linear superposition, filter, and truncate waveforms. Blastmate III and Minimate Plus users can customize the monitor LCD windows to match particular applications or display another language. Using this module, you can also change sample rates, and program the Blastmate III or Minimate Plus to use additional sensors.

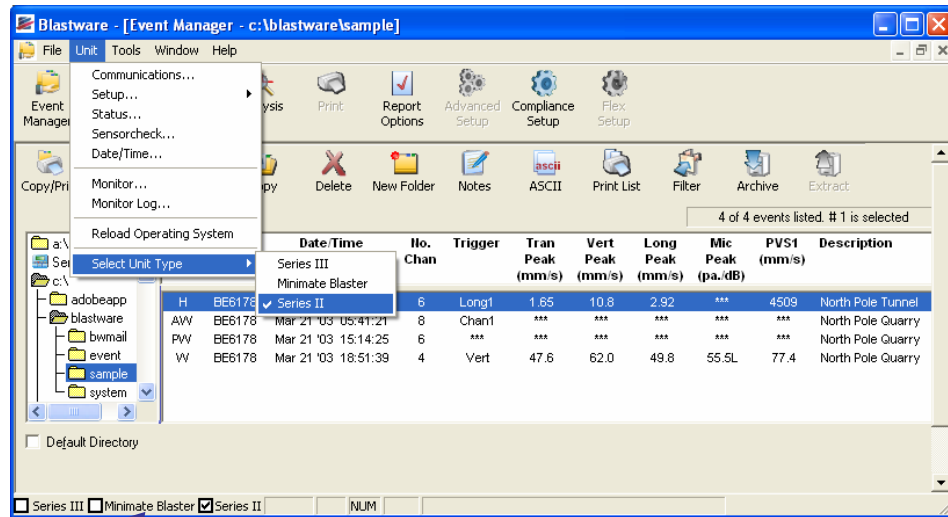
The Advanced Module will only operate on a computer equipped with a Hardware Key.

1.2 How to Obtain the Advanced Software Module

You can order the Advanced Software module from any authorized Instantel Dealer. The module includes an installation CD, a Hardware Key to access the programs, and an operator manual.

1.3 Using Blastware with Series II Monitors

Blastware is fully compatible with Series II and Minimate Blaster monitors, and replaces all Series II software packages. All the commands you need to setup and configure your monitor are easily accessed by simply selecting the Series II or Minimate Blaster unit, dependent on which monitor you have connected to your personal computer; the menus will automatically be updated – see below:



Select Unit Type

You can change all setups on your unit, use Sensorcheck to test your sensors, download the unit operating system, produce customized FFT and Event Reports, and copy Events from your unit using the Series II Event Manager.

You also have access to all the powerful analysis features of Blastware. Once you have copied your Events to your PC, you can open them in the main Blastware Event Manager, accessed from the File Menu. Here you can view and manipulate your Event data in a variety of ways. Blastware does not alter your original Series II Event file. Instead, it creates a backup copy and stores it on your computer with your other Events under the directory:

DRIVE:\BLASTWARE\BW_SERIES2_BACKUP\"Unit Serial Number\".

The Blastware program uses the Series III copy that was created from the Series II file.

Some sections of this manual apply to Series III users only. Below are topics of interest to Series II users, and where to find the information you need. If you would like to learn immediately how to change setups and download Events from your monitor, please see Chapter 3.

1.4 Blastware Features and Benefits

The following table provides a sample of the Blastware features and benefits. The Compliance Module is supplied at no cost with every monitor. The Advanced Module is available separately.

Functions and Features	Module	
	Compliance	Advanced
Program monitor	•	•
Upload Events, store on disk, display Events, and print via RS-232	•	•
Modem communications	•	•
Post Event Notes to multiple events	•	•
Sample rates programmable (1 kHz to 4 kHz)	•	•
Single batch command for copy and print	•	•
Change units of measurement	•	•
Read Blastmate II files – convert to Blastmate III	•	•
Select national frequency analysis	•	•
ASCII output for third party analysis packages	•	•
Series II Blastmate and Minimate Support	•	•
Scaled distance analysis	•	•



Histogram mode for standard sensors	•	•
Customized Event Reports	•	•
Customized FFT Reports	•	•
Fast Fourier Transform (FFT) analysis		•
Time line display		•
Change sample rates (512 Hz to 16 kHz*)		•
Program monitor for custom sensors		•
8 Channel support for custom sensors		•
Integrate, differentiate, i.e. get displacement or acceleration from velocity		•
Truncate waveform		•
Add waveforms		•
Shift waveform		•
Filter to eliminate unwanted frequencies		•
Compliance Graph Editor		•
User defined printout and LCD headings		•
Blast Simulation using Linear Superposition Analysis Function		•
Language Editor to change existing language or translate to another language		•
Interval Analysis		•
Synthetic Waveform		•
Remove offsets when using custom sensors		•
Transfer Function		•
Human Exposure		•

* Sample rates up to 65 kHz available on eight channel monitors. Four channel monitors manufactured before 1998 require modifications to minimize noise. If only one channel is used, then the sample rate is 65536. Contact InstanTel for more information.



Notes:



2. BASIC TUTORIAL

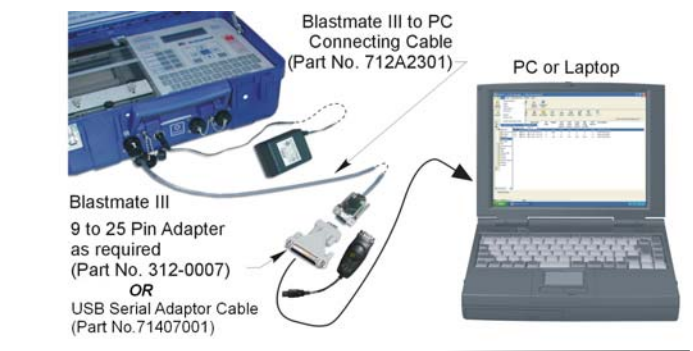
In this tutorial, we set up your computer and the Blastware program to work together. We then transfer Event files from your Blastmate III or Minimate Plus to the computer. Once we have completed this, we view and print each Events Event Summary Report.

Step 1: Connect the Monitor to Your Computer

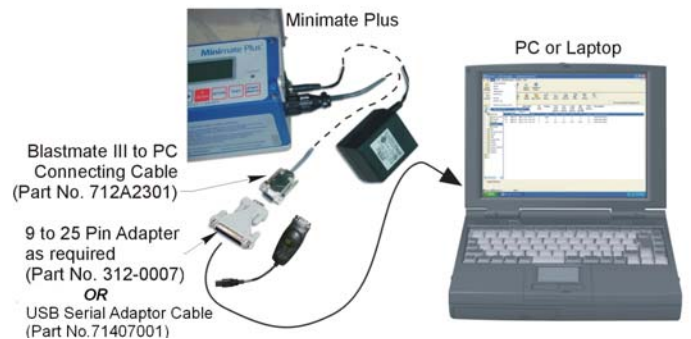
Connect the Blastmate III or Minimate Plus to your computer using the Blastmate III PC connecting cable provided (part number 712A2301). Turn the power Off on the Blastmate III or the Minimate Plus. Attach the Blastmate III PC connecting cable to a serial port on your computer. Use 9 pin to 25 Pin Adapter (part number 312-0007) if required (use the manufacturer's instructions for installing this USB to Serial connector). Connect the other end of the cable to the AUX connector (or cable, if you are using the USB cable) located on the front of the Blastmate III or on the side of the Minimate Plus. Do not force the connectors, possible damage may result.

WARNING: For connecting, use only the Blastmate III PC connecting cable (part number 712A2301).

**Connecting the
Blastmate III to a PC or
Laptop**



**Connecting the Minimate
Plus to a PC or Laptop**



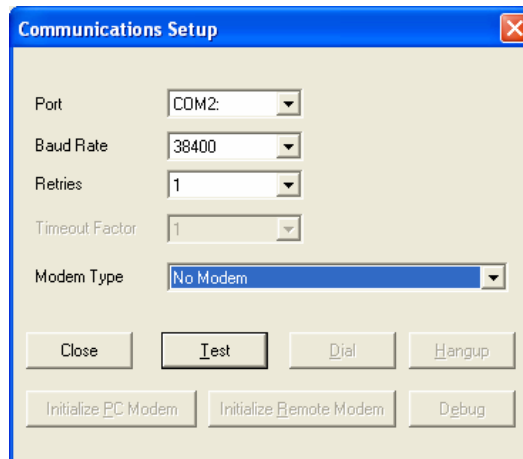
Step 2: Start the Blastware Program

Turn on your computer. Click on the Windows Start button in the lower left of the screen, select Programs, and then Blastware. Click on the Blastware icon to start the Blastware program.



Step 3: Setup Communications

Communication with a Blastmate III or the Minimate Plus and your computer is configured using the Communications Setup dialog box located under the Unit Menu. Open the **Unit** Menu and choose **Communications**. The Communications Setup dialog box appears.

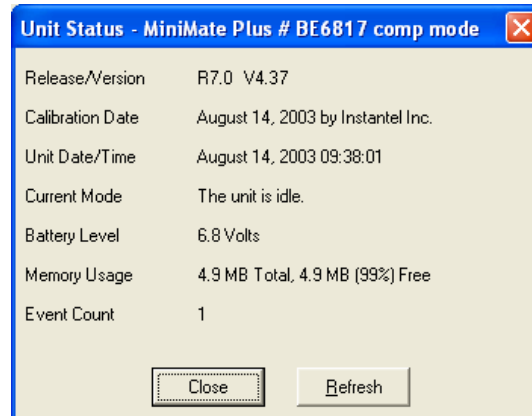


For the tutorial, we will adjust the Port drop-down menu only. The other menus; **Baud Rate**, **Retries**, and **Modem Type** should have the same settings as the dialog box pictured above.

Port refers to your computers serial port where you plugged in the Blastmate III PC connecting cable. The serial port allows the Blastmate III or the Minimate Plus to communicate with your computer. We set the Port drop-down menu to match the number of the serial port. You have a choice between Ports 1 to 20. Identify the serial port on your computer and choose the same number in the Port box. See your computers manual for information on how to identify serial ports. To test your selection, press the **Test** button – if the communication link is not successful, systematically select the next Communications Port from the drop down menu, and use the **Test** function until you have made a successful connection to the monitor. Blastware will communicate with the unit, and indicate if your selection is correct. Click on the **Close** button to save your setting and exit the Communications Setup dialog box. The remaining buttons including **Dial**, **Hang up**, **Initialize PC Modem**, and **Initialize Remote Modem** control modem communications. See Chapter 6 for further information.

Step 4: Check the Blastmate III or the Minimate Plus Status

To check the status of the Blastmate III or the Minimate Plus from your computer, position the mouse pointer on the **Unit** Menu and click the mouse button. Click on the **Status** command to display Status dialog box.

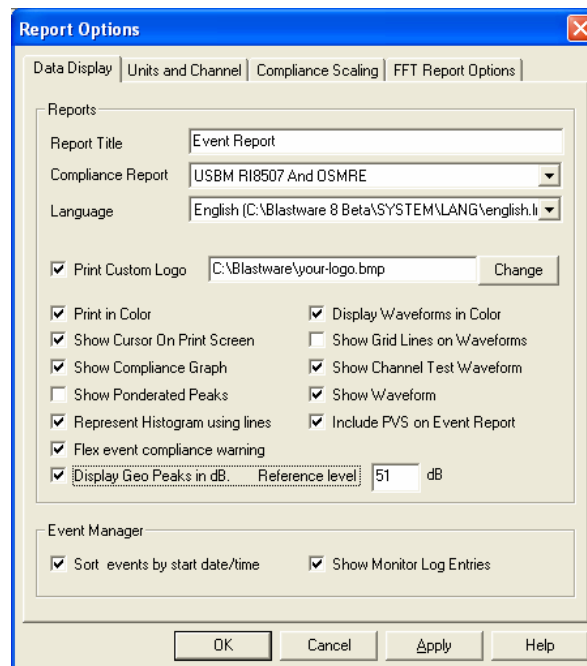


This dialog box informs you of important information about the monitor including its operating software version, when it was calibrated and by who, the currently set date and time, the current mode the monitor is in, its battery level and the amount of total memory installed in the monitor and the amount the memory available. Press the **Refresh** button to update the information.

Step 5: Define the Contents of the PC Event Summary Report

Blastware creates an Event Summary Report for each recorded Event. Blastware offers you a wide degree of flexibility to define the contents of these reports. In this step, we enter a new report title, choose a Compliance Report, and choose the reports measurement units.

1. Open the **Report Options** Menu by clicking on the icon, or access it from the **File** Menu.



2. Change the Report Title.

You can change the Report Title to a title of your choice. Position the mouse pointer in the Report Title text box. Press the **Backspace** key to delete the existing title. Enter a new title up to a maximum of forty nine characters.

3. Choose a Compliance Report.



Blastware supports numerous Compliance Reports. To choose a Compliance Report, position the mouse pointer over the **Compliance Report** drop-down menu and click the left mouse button. A list of supported Compliance Reports appears. Scroll through the list and choose a report by clicking the left mouse button.

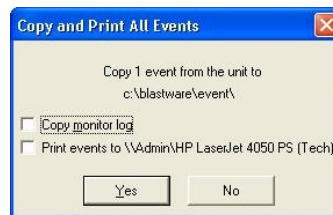
4. Press the **OK** button to close the dialog box and save your changes.

Step 6: Open the Event Manager

The Event Manager organizes the Event files stored on your computer similar to the Windows File Manager. The Event Manager allows you to copy, delete, print, and view Events by simply selecting an Event and pressing the appropriate command button. If the Event Manager is not open, click the mouse pointer on the File Menu then click on the **Event Manager** command. The Event Manager dialog box appears.

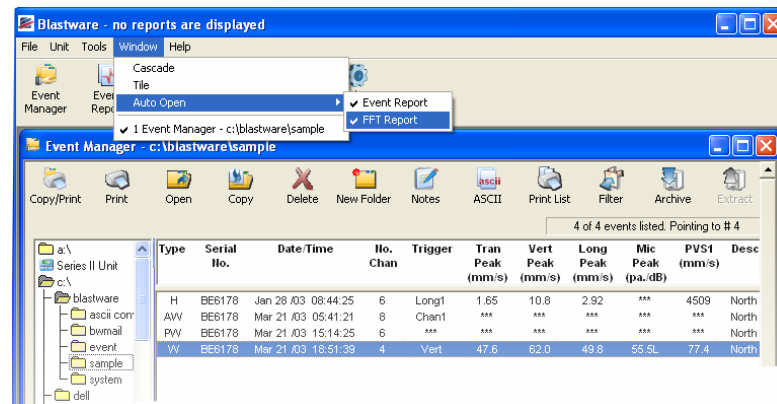
Step 7: Copy All the Events to Your Computer

To copy Events from the Blastmate III or the Minimate Plus to your computer, press the **Copy/Print** icon. The **Copy and Print All Events** dialog box appears. Press the **Yes** button to copy all the Events on the unit, and display them in the Events List Box. Click on the Print checkbox to print the Events on your computers default printer at the same time.



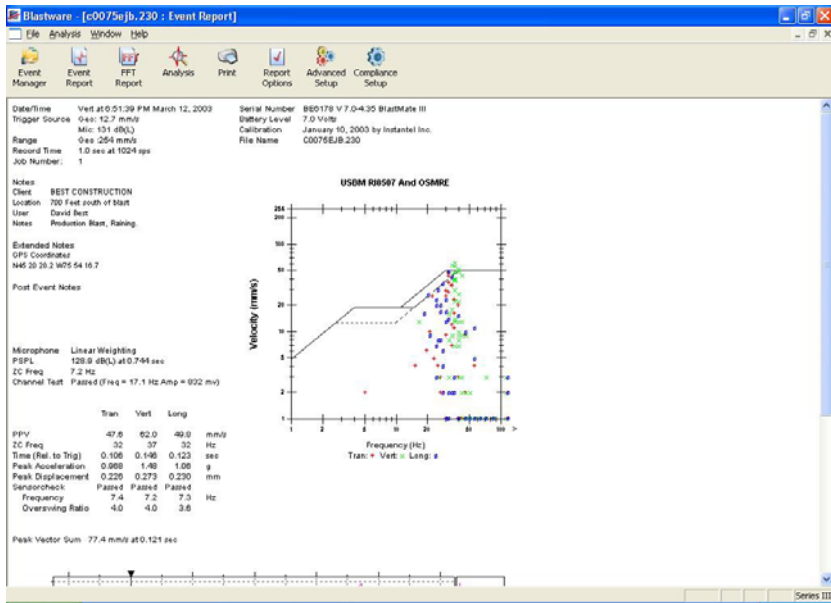
Step 8: View an Event Report

You can view an Event or FFT Report by selecting the event and clicking on the **Event Report** or **FFT Report** icons provided in the toolbar. These reports can also be accessed by pre-selecting them under the **Window** menu, then **Auto Open** – select the reports you would like to view automatically by highlighting them with a check mark. The default is both reports. To automatically view reports using the Auto Open selections, double click your left mouse button on the desired event, and the reports will be created in a new window based on the settings you have defined within the File menu, Report Options dialog.





Note: The settings of your PC monitor (i.e. 800 x 600) will determine the extent of the Event Summary Report you will be able to view without scrolling.



- 1. Scroll through the Event.**

Click on the **scroll bars (Arrows)** to scroll through the Event.

- 2. View the Entire Event.**

Click on the **File Menu** and choose the **Print Preview** command. The entire Event report appears on your display.

- 3. Add Post Event Notes.**

Click on the **Tools Menu** and click on the **Post Event Notes** command. Enter your comments and press the **Apply to Event** button.

- 4. Print the Event.**

To print an Event, click on **File Menu** and click on the **Print** command, or use the **Print** icon available in the toolbar. If required, adjust the settings in the Printer dialog box and press **OK** or **Yes**.

Congratulations, you are now a Blastware Compliance Module User.



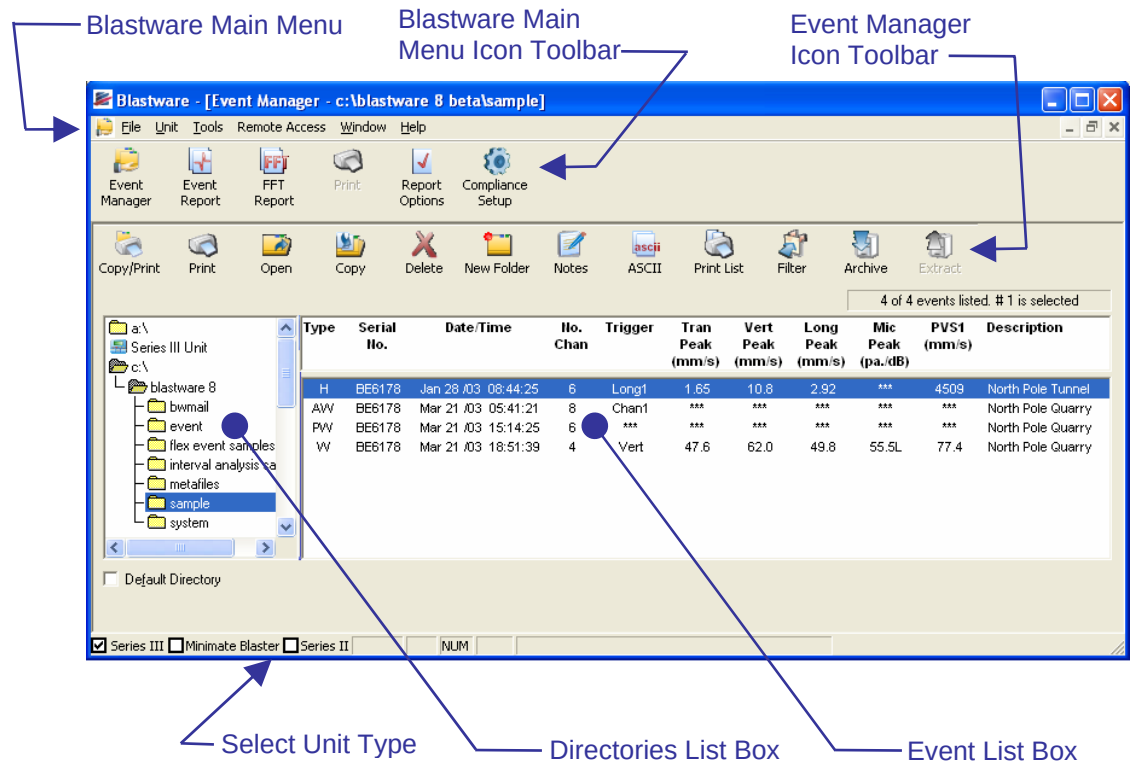
Notes:



3. BLASTWARE COMPLIANCE MODULE

This chapter provides instructions to use the Blastware Compliance Module. It provides instructions to transfer, list, copy, delete, print, and view Events. It also includes procedures to set up your Blastmate III, Minimate Plus, or Minimate Blaster and customize the Event Summary Report. Information in this section will focus on Series III Operators.

The Main Window contains the Blastware Main Menu, an Icon Toolbar, and other standard Windows controls. You access all Blastware commands from the main window.



The Blastware Main Menu contains several commands to program the Blastmate III or Minimate Plus. After you have changed the setups, Blastware transfers the changes to the monitor. In order for Blastware to complete this successfully, a Blastmate III or Minimate Plus must be connected to the computer using the Blastmate III PC connecting cable. Before you enter this menu and attempt to change the setups, connect a monitor to your computer. See Chapter 2 for information on how to connect a monitor to a computer.

3.1 File Menu

File Menu contains several commands; **Event Manager**, **Report Options**, **Close**, **Print**, **Print Preview**, **Print Setup**, and **Exit**. The Close, Print, Print Preview, and Print Setup commands are only available if you have either an Event or FFT Report open.

3.1.1 Event Manager – Compliance Module

If you have an Event or FFT Report open, you can access the Event Manager by clicking on the **Event Manager** command in the File Menu. This will bring the Event Manager to the forefront.



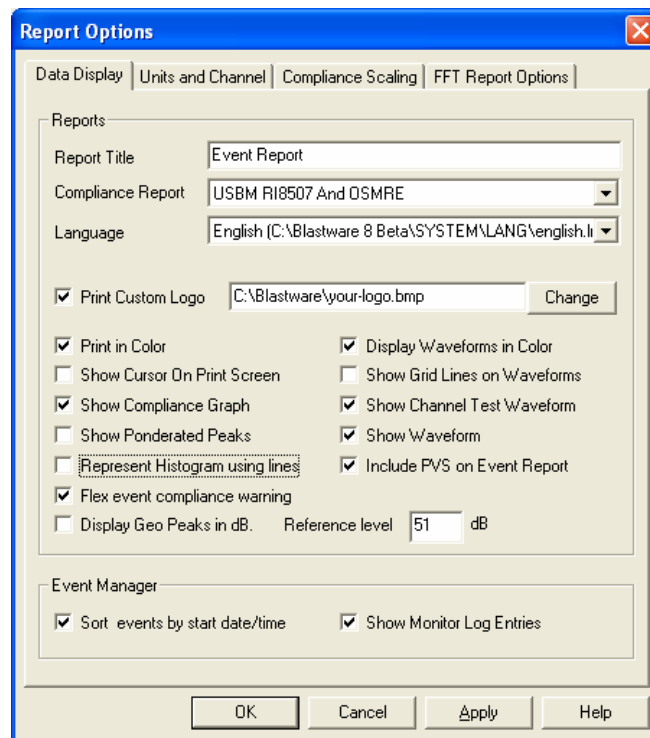
Or, if you have closed the Event Manager, clicking on this menu selection will reopen the Event Manager window.

3.1.2 Report Options

The Report Options command defines the contents of the Event Report created by Blastware which can then be printed using your computers printer. This report is not the same report as the one printed by the Blastmate III printer or the Minimate Plus using a printer. The setups of this report can be different from the monitor report. You can define which Event information to include or exclude in the report.

To change these settings, select the **File Menu** and choose **Report Options**. The Report Options dialog box appears. This dialog has several tabs, with each tab containing options that control the printed results of the Event Report – these tabs are Data Display, Units and Channel, Compliance Scaling, and FFT Report Options.

To accept any changes that you make within Report Options, click on **Apply**. Any changes that you have made will be automatically updated and the Report Options dialog will remain open. If you make changes, but decide not to accept them, click on **Cancel**. Clicking on **OK** will apply the changes and exit from the Report Options dialog.



a. Data Display

(1) Report Title

The Report Title may be changed to a title of your choice. To change the title, click on the **Report Title** text box. Press the **Backspace** key to delete the existing title and then enter your new title.

(2) Compliance Report

Blastware supports numerous Compliance Reports.

To choose a report, click on the **Compliance Report** drop-down menu and scroll through the standards. Click on the required standard.



(3) Language

This drop-down menu selects the language used by the Blastware program. Click on the arrow to display the available languages.

Note: Language files must be created using the Language Editor available in the Blastware Advanced Module software (optional).

(4) Print Custom Logo

Blastware also enables you to print a logo of your choice, which appears in the top right-hand corner of your Event Summary Report. Any bitmap file (indicated by the extension .bmp) may be used, provided that it has dimensions in the ratio of 277 wide by 55 high. Blastware attempts to fit the graphic into an area of 277 by 55 pixels. If it cannot, a warning message appears when you print the report. You may wish to edit your logo in Microsoft Paint or another graphics program before you import it into Blastware.

To add a custom logo to your reports, move the mouse pointer to the checkbox and click to display a checkmark. Then click on **Change** to navigate through your directories and find the bitmap file you wish to use. When you have selected the file, it will appear in the text box to the left of the Change button.

Print a test report to ensure that the logo appears as expected.

(5) Print in color

This setting controls the printing of the Event summary report in either black and white or color. For black and white printing, leave the Print in color checkbox blank. For color printing, enter a checkmark in the checkbox. Color printing requires a color printer connected to your computer.

(6) Display Waveforms in Color

This setting toggles the display of the waveforms in the Event Report from black and white to color. To display the waveforms in color, click on the checkbox to display a checkmark.

(7) Show Cursor on Print Screen

This feature controls the printing of the cursor, and the associated cursor data, in the waveform graph. To include the cursor and cursor data, click on the checkbox to display a checkmark.

(8) Show Grid Lines on Waveform

This feature controls the printing of grid lines in the waveform graph.

To include grid lines, move the mouse pointer to the checkbox and click to display a checkmark. If you do not require the grid lines, click on the checkbox to remove the checkmark.

(9) Show Compliance Graph

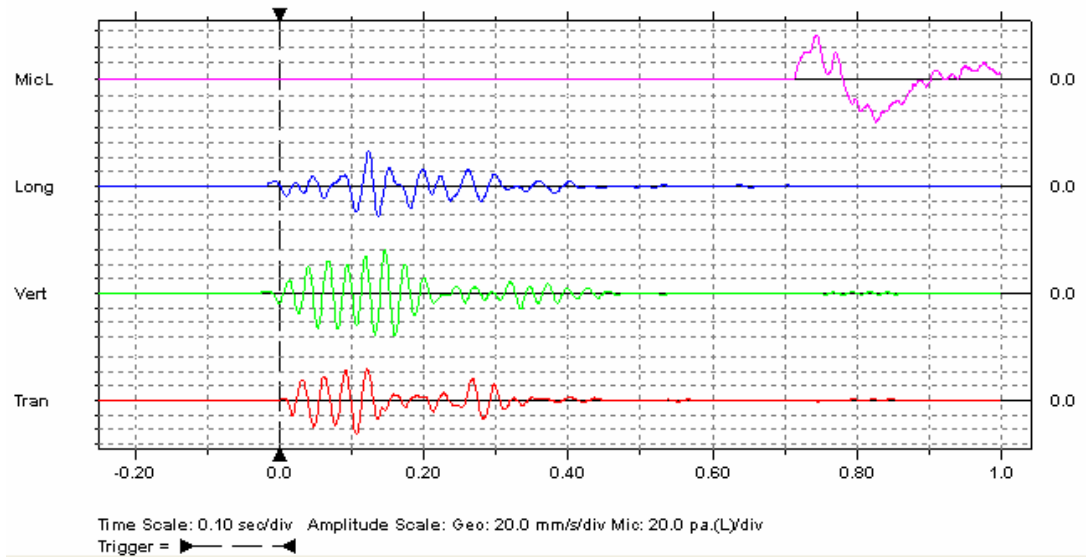
To include the compliance report, click on the checkbox to display a checkmark. If you do not require the compliance report, click on the checkbox to remove the checkmark.

(10) Show Channel Test Waveform

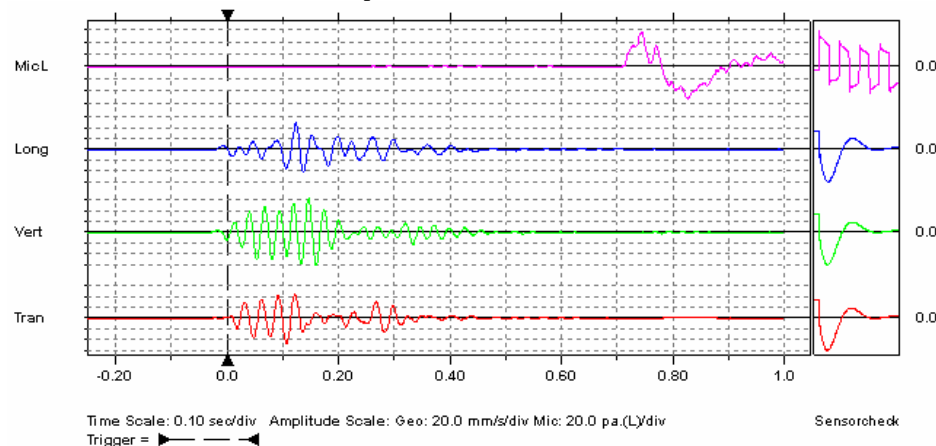
To include the Sensorcheck at the end of the waveform, and the frequency and overswing ratio in the Geophone Summary, click on the checkbox to display a checkmark.



Waveform on Event Report with show **Channel Test Form** not selected:



Waveform on Event Report with show **Channel Test Form** selected:



(11) Show Ponderated Peaks

Ponderation is a weighting of waveform frequencies, as defined in the French national compliance standard.

To print ponderated peaks in the Event Summary Report, move the mouse pointer to the checkbox and click to display a checkmark. If you do not require ponderated peaks, click on the checkbox to remove the checkmark.

(12) Show Waveform

This setting controls the printing of the Event waveforms. The waveforms are graphical representations of the activity recorded on each of the recording channels.

To print the waveforms, click on the checkbox to display a checkmark. If you do not require the waveforms, click on the checkbox to remove the checkmark.



(13) Represent Histogram using lines

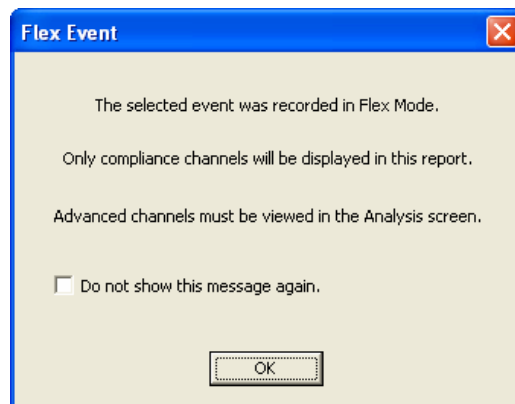
To display histogram results as lines, instead of bars, move the mouse pointer to the checkbox and click to display a checkmark. If you do not require this function, click on the checkbox to remove the checkmark.

(14) Include PVS on Event Report

To display the PVS on an Event Report, move the mouse pointer to the checkbox and click to display a checkmark. If you do not require this function, click on the checkbox to remove the checkmark.

(15) Flex event compliance warning

If an Event has been recorded using the Flex mode, and this checkbox has been selected, the following dialog box will appear. Flex Events will only display compliance channels – advanced channels must be viewed within the Analysis screen. If you do not require this function, click on the checkbox to remove the checkmark. An option is provided to remove this dialog prompt.



(16) Display Geo Peaks in dB

To have geo peaks expressed in decibels (dB) on your Event Summary Report, move the mouse pointer to the checkbox and click to display a checkmark. If you do not require this function, click on the checkbox to remove the checkmark.

i Reference to Value dB

Input the dB reference level in accordance with your local regulations. If the local regulations express this reference value in PPV, then complete the following equation to obtain the value in dB:

$$\text{Reference dB} = 20 \times \text{LOG} \left(\frac{1}{\text{Reference PPV}} \right)$$

*** WARNING ***

When performing this calculation, the Reference PPV units must be the same unit type (i.e. mm/s or inches/s) as that with which you are recording.



(17) Event Manager Options

These settings sort the Event List and choose whether to include Monitor Log entries within the list.

i Sort events by start date/time

This option displays the Event Lists Events sorted by date. The earliest recorded Event appears first within the list. If you do not choose this option, Events appear in the list in the order in which they were copied from a monitor.

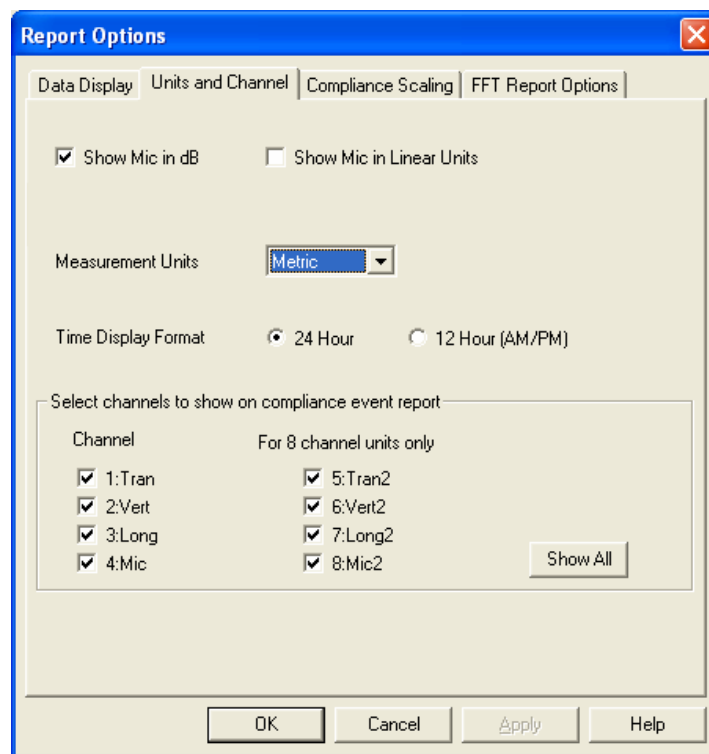
To enable this option, click on the checkbox to display a checkmark.

ii Show Monitor Log Entries

This option displays monitor log entries within the Event List. Monitor Log files must be copied from a monitor to the Event List directory on your computer before they can appear within the list. To ensure that monitor log entries and Events display in sequence, enable the Sort by date option explained in the previous section.

To enable this option, click on the checkbox to display a checkmark.

b. Units and Channel



(1) Show Mic in dB

The microphone units are either Metric, Pa (Pascal), or Imperial, pounds per square inch (psi).

To choose dB units, click on the **Show Mic in dB** checkbox to display a checkmark. To disable dB units, click on the checkbox again to remove the checkmark.

(2) Show Mic in Linear Units

The microphone units are Metric, Pa (Pascal), or Imperial, pounds per square inch (psi).



To choose Linear units, click on the **Show Mic in Linear Units** checkbox to display a checkmark. To disable Linear units, click on the checkbox again to remove the checkmark.

(3) Measurement Units

You can print an Events Event Summary Report using either Imperial or Metric measurement units.

To select the measurement unit for the Event Report, click on the **Measurement Units** drop-down menu and click on either **Imperial** or **Metric**.

(4) Time Display Format

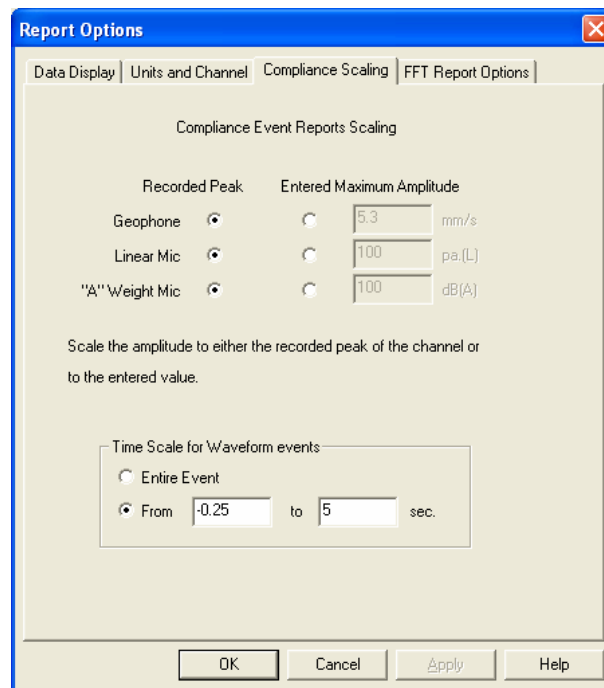
You have the choice between 24 and 12 hour time displays.

To choose the 24 hour time display, click on the **24 Hour** button. To use the 12 hour display, click on the **12 Hour (AM/PM)** button.

(5) Select channels to show on compliance Event report

With this command, you can choose which channels to display on an Event report. You must choose at least one channel per report. Note that some analysis results cannot be calculated if the required channel is not chosen. For example, a Peak Vector Sum calculation cannot occur if either channel 1, 2, or 3 was not chosen to appear within the Event report. To show all channels, click **Show All**.

c. Compliance Scaling



(1) Waveform Compliance Event Reports Scaling

You can either use the default selection for viewing the amplitude of the **Recorded Peak** of the Geophone, Linear Mic, or "A" Weight Mic channel, or define the Maximum Amplitude by clicking on the radio button underneath the heading **Entered Maximum Amplitude**, and enter a value for each channel.



(2) Time Scale

View the complete Time Scale of the Event by selecting **Entire Event**, or view a portion of the Event by entering a specific Time Scale in seconds. The default Time Scale is -0.25 second to 1 second – this negative number accounts for the pre-trigger set for compliance monitoring. If **Entire Event** has not been selected, then it is noted on the Event Report.

d. FFT Report Options

The screenshot shows the 'Report Options' dialog box with the 'FFT Report Options' tab selected. The dialog has four tabs: 'Data Display', 'Units and Channel', 'Compliance Scaling', and 'FFT Report Options'. The 'FFT Report Options' tab contains the following controls:

- Two radio buttons for scaling: 'Scale each channel to peak of the three triaxial geo channels' (unselected) and 'Scale each geo channel to its own peak' (selected).
- A label 'Display Frequency Band in Hz.' followed by 'From' and 'To' text boxes. The 'From' box contains '2' and the 'To' box contains '250'.
- A checked checkbox labeled 'Display Mic Channel'.
- A text box labeled 'FFT Report Title' containing the text 'FFT Report'.
- Four buttons at the bottom: 'OK', 'Cancel', 'Apply', and 'Help'.

(1) Scale the Geo Channel

Determine if you would like to view the geo channel scaled to its own peak, or scaled to the maximum peak of the three triaxial geo channels. To scale the channel to the peak of the three triaxial geo channels, select the first option, **Scale each channel to peak of the three triaxial geo channels**, by clicking on the radio button. Or, select **Scale each geo channel to its own peak**.

(2) Display Frequency Band in Hz

Determine the Frequency band that you would like to view on the FFT Report by inputting *values* in the **From** and **To** fields. The allowable frequency range is 0 – 250 Hz.

(3) Display Mic Channel

To view the Mic Channel, click on the **Display Mic Channel** checkbox to display a checkmark. To disable Display Mic Channel, click on the checkbox again to remove the checkmark.

3.1.3 Close

This command is only available when you have either an Event or FFT Report open. Each time you select **Close**, the current, active Report window will exit. Until you have exited all open Reports, the Close command will be available.



3.1.4 Print

This command is only available when you have either an Event or FFT Report open. Select the **Print** command from the File Menu to print the currently opened and active window of a Report.

3.1.5 Print Preview

This command is only available when you have either an Event or FFT Report open. Select **Print Preview** to see how your report will look once it is printed. There are several selections under the Print Preview command to help navigate and view the Report.

a. Print

Selecting the **Print** icon will access the Windows printer dialog setup for the default printer selected within the Windows operating system.

b. Zoom In

Select the **Zoom In** icon to increase the visible size and clarity of the Report – you are able to magnify the report by two hundred percent.

c. Zoom Out

Select the **Zoom Out** icon to reduce the visible size of the Report – you are able to reduce the visible size until the entire page appears in the Print Preview dialog.

d. Close

Select **Close** to exit the Report Print Preview without printing and return to the current active window.

3.1.6 Print Setup

This command is only available when you have either an Event or FFT Report open. Select **Print Setup** from the file menu to modify your default printer options, or to select another printer that is connected to your computer.

3.1.7 Copy Report to Clipboard

This command is only available when you have an Event, FFT, or Analysis FFT Report open. From the file menu, select **Copy Report to Clipboard**. A bitmap image of the open report is copied to your computers temporary memory. Open another Windows program that supports graphics and use the paste command, or simultaneously press **CTRL-V**, to place the bitmap image into the file.

3.1.8 Exit

Select **Exit** to close the Blastware program. A dialog will appear to confirm whether or not you would like to exit the program. Click on **Yes** to exit to Windows, or **No** to remain within the Blastware program.

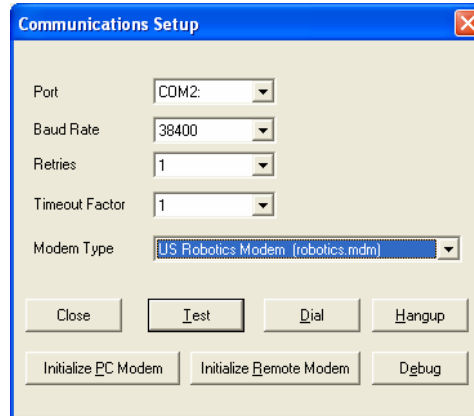
3.2 Unit Menu

The Unit Menu contains several commands to program the Blastmate III, Minimate Plus or Minimate Blaster. After you have changed the setups, Blastware transfers the changes to the monitor. In order for Blastware to complete this successfully, a Blastmate III or Minimate Plus monitor must be connected to the computer using the Blastmate III PC connecting cable. Before you enter this menu and attempt to change the setups, connect a monitor to your computer. See Chapter 2 for information on how to connect a monitor to a computer.



3.2.1 Communications Setup

The Communications Setup command establishes serial communication parameters to allow a computer to talk to the monitor. Open the **Unit Menu** and choose **Communications**. The Communications Setup dialog box appears.



a. Port

Port refers to your computers serial port where you plugged in the Blastmate III PC connecting cable. The serial port allows the monitor to communicate with your computer. Set the Port drop-down menu to match the number of the serial port. You have a choice between Ports 1 to 20. Identify the serial port on your computer and choose the same number in the Port box. See your computers manual for information on how to identify serial ports. Click on the **Port** drop-down menu and select a com port.

To test your selection, press the **Test** button. Blastware will indicate if your selection is correct – if the communication link is not successful, systematically select the next Communications Port from the **Port** drop down menu, and use the **Test** function until you have made a successful connection to the monitor. Click on the **Close** button to save your setting and exit the Communications Setup dialog box.

b. Baud Rate

Set to 38400 bps for communications between the computer and the monitor using the Blastmate III PC connecting cable. Be sure that the monitor and your PC are set to the same baud rate.

Click on the **Baud Rate** drop-down menu and select a setting.

c. Retries

Set the number of retries the computer will attempt when connecting to the monitor. Retries range from zero to ten. A typical setting is two.

Click on the **Retries** drop-down menu and select a setting.

d. Timeout Factor

Set the amount of time that you want the modem to automatically stop communicating with the unit if it is idle, or has stalled while communicating with the unit. A typical setting is two.

Click on the **Timeout Factor** drop-down menu and select the time factor.

e. Modem Type

Direct communications can occur if a modem is selected. For direct communications between the computer and the monitor, set this to No Modem.

Click on the **Modem Type** drop-down menu and select No Modem.



f. Close

Leave the Communications Setup dialog box and return to the Main Menu.

g. Test

This checks the communications between the computer and the monitor. After you have completed all connections and setups, press the **Test** button. The response “Communications OK” indicates proper communication between the computer and the monitor.

h. Dial

For modem communications only. See Chapter 6.

i. Hang Up

For modem communications only. See Chapter 6.

j. Initialize PC Modem

For modem communications only. See Chapter 6.

k. Initialize Remote Modem

For modem communications only. See Chapter 6.

l. Debug

For modem communications only. See Chapter 6.

3.2.2 Compliance Setup

To display the Compliance Setup preferences window select the **Unit** menu item and choose **Setup**, then **Compliance Setup**. The Compliance Setup dialog which appears has several tabbed dialogs; Recording Setup, Notes, Special Setups, Printer Setup, and Library Files. In the lower, right hand corner of this window, there is a message that either states “PC is not attached to a unit.” or a comparison of the operating system version. Example: “Operating system version 4.33 on unit, 8.0 on disk.” For the best results while using the Compliance Setup window, ensure that the two versions match. To update the unit operating system, refer to the Reload Operating System section in this manual.

After making changes within any given tabbed Setup dialog, you have the choice to either reject the changes by clicking on **Cancel**, which exits the Compliance Setup, or accept any changes by clicking on **Send To Unit**, which will update the settings on the attached unit.

a. Recording Setup

To display the Recording Setup dialog box, open the **Unit, Setup, Compliance Setup** menu and select the **Recording Setup** tab. The Recording Setup dialog box appears.

The Recording Setup dialog box programs the Recording Mode, Sample Rate, Storage Mode, Record Stop Mode, and Record Time or the Auto Window for your Blastmate III or Minimate Plus. After you have entered your settings in each dialog box, choose **Send to Unit** to transfer your settings to the monitor.



(1) Recording Mode

The record mode sets how the monitor records Events. To choose a recording mode, click on the **Recording Mode** drop-down menu and select a record mode. Choose one of the following recording modes.

i Single Shot Record Mode

Use single shot record mode to record one Event automatically. The monitor records the Event, displays the results, and stops. No further recording occurs. Recording begins automatically when an Events vibration or overpressure channel exceeds the preset trigger level.

ii Continuous Record Mode

Use continuous record mode to record multiple Events automatically with no dead time between Events. The monitor records an Event, displays the results, and continues to monitor, ready to record following Events. The monitor records all Events whose activity exceeds the preset trigger level.

iii Manual Record Mode

Use manual record mode if automatic triggering is unreliable, due to excessive wind or nearby vehicle activity, or to record the background noise level in the vicinity of a site. Recording can be initiated from the Unit Monitor Status dialog.

iv Histogram (Strip chart) Record Mode (Blastmate II and Series III only)

Use the histogram record mode for long-term recording periods such as monitoring of pile driving operations. Histogram record mode operates with both four and eight channel monitors. Four channel histogram Events can be printed on the Blastmate III printer, eight channel Events cannot. Print eight channel Events using the Blastware software program.

In histogram mode, the monitor stores summary information in intervals. The monitor continues to sample data continuously at the chosen sample rate but only stores the relevant peaks for the



interval. This reduces the data recorded and greatly increases the monitors storage capacity. For each interval, the monitor calculates the maximum peaks, the frequency of the largest peak, and the peak vector sum. For each channel, the maximum peak and its frequency are calculated. Also the largest peak vector sum is calculated over the entire Event. Events may be printed in histogram or tabular mode using the Blastmate III. Histogram mode displays the peak of each interval in a bar chart, while tabular format represents the peaks as numbers.

v Histogram Combo Mode (Blastmate III and Minimate Plus only)

This mode creates a waveform during histogram recording if the signal exceeds the waveform trigger level. The waveform Event is saved as a separate file while the histogram Event file remains continuous. A maximum of 13, 1-second waveform Events can be recorded. The auxiliary trigger and printing are automatically disabled during histogram combo mode.

The maximum sample rates in this mode are as follows:

- a. 4 channels or less: 2048 samples per second
- b. more than 4 channels: 1024 samples per second

(2) Recording Stop Mode

The Recording Stop Mode sets how the monitor stops recording after being triggered. Choose a record stop mode if you are using the single shot or continuous record modes. You can choose between a **Fixed Record Time** setting or an **Auto Record** setting. Fixed Record Time sets the record time to a specified length. Once the record time has elapsed, the monitor stops recording. In Auto Record, unlike the Fixed Record Time, the monitor continues to record Event activity as long as that activity remains above the trigger level. (sufficient memory and battery power must be available). Recording stops a specified period of time after the Event activity falls below the trigger level. The specified period of time, called the **Auto Window**, can be adjusted. Use the Auto Record mode if you are unsure of the actual Event duration.

To choose a Recording Stop Mode, position the mouse pointer on the **Recording Stop Mode** drop-down menu and click the mouse button. Choose Fixed Record or Auto.

(3) Sample Rate

The monitor has three sample rates; standard (1024 samples per second), fast (2048 samples per second), and faster (4096 samples per second on channels 1 to 4 only). The choice of a sample rate depends on the type of monitoring you are conducting. Increasing the sample rate increases the accuracy of the waveform recording. For this reason, set the sample rate according to the location of the standard transducer or the Minimate Plus. For close-in or near field monitoring, set the sample rate to 4096 samples per second. For far-field monitoring, set the sample rate to 1024 samples per second. Increasing the sample rate also increases the amount of memory required to store Events and reduces the number of Events that can be stored on the monitor. It also reduces the battery life.

To choose a recording rate, click on the **Sample Rate** drop-down menu. Click the mouse pointer on the required sample rate.

(4) Record Time/Auto Window

This setting changes between record time and auto window depending on the record stop mode chosen above. If you chose **Fixed Record Time**, enter a time in seconds in the Record Time box. If you chose **Auto**, enter a value for the Auto Window ranging from one to nine seconds.

(5) Histogram Interval

Set the Histogram Interval if histogram or histogram combo record mode was chosen. The histogram interval is the period of time the monitor records Event information before applying the data analysis techniques. For each interval, the monitor calculates the maximum negative peaks, the frequency of the largest peak, and up to two peak vector sums (one for 4 channel monitors, two for 8 channel monitors). For each channel the maximum peak and its frequency are



calculated. The peak vector sum is calculated over the entire Event. See the Blastmate III or the Minimate Plus manual for approximate histogram recording times.

(6) Storage Mode

The storage mode setting allows you to set the amount of data stored with each Event. In the Full Data setting, the monitor stores all Event data. When **Save Summary Only** is selected, only the peaks are stored in the Event – the individual sample rates are not stored.

To select a storage mode, click on the **Storage Mode** drop-down menu. Click the mouse pointer on either **Save All Data** or **Save Summary Only**.

(7) Geophone Type

Select the type of geophone that you are using.

(8) Geophone Channels

The Geophone channels record ground vibrations. In this section of the dialog box, you enable the Geophone channels, select the channels as a trigger source, set a trigger level and choose a range.

i Enable all geophones

Click on this checkbox to turn the Geophone channels on when monitoring. Click on the box again to clear the checkmark to turn the channels off and not record ground vibrations. Note that the other checkboxes in the section fade indicating they cannot be selected. On eight channel monitors, enabling all Geophones turns on all the Geophone channels, one to three and five to seven.

ii Trigger Source

Click on this checkbox to use the Geophone channels as a trigger source. The Trigger Level box brightens indicating it can be set. For eight channel monitors, choosing a trigger source applies to both sensor groups. For example, choosing Geo as a trigger source designates both Geophone transducers as trigger sources. Triggering occurs and Event recording begins on all channels when Event activity exceeds the trigger level of either Geophone transducer.

iii Trigger Level

The trigger level sets a threshold that must be exceeded by an Events activity before the monitor begins recording. Use your judgment when setting a trigger level. You must set the level high enough so the unit does not trigger on unwanted Events such as nearby vehicle traffic. At the same time, you have to set the trigger level low enough so that an Events activity exceeds the trigger level and starts the unit recording.

On eight channel monitors, set the trigger levels for the first standard transducer in the first text box then set the trigger level for the second standard transducer in the second text box.

To set a trigger level, double click on the **Trigger Level** box. Enter the new level.

Note: In certain situations, the actual trigger level may be lower than the trigger level that you entered. This is because the monitor converts the analog signal it receives from the Geophone into digital data, which consists of a series of discrete values. If the trigger level that you entered does not match one of these values, Blastware automatically sets the trigger level to the nearest lower value.

iv Maximum Range

The Maximum Range specifies the measurement limits of the standard transducers Geophones. Two ranges are available; Normal 10.0 in/s (254 mm/s) and Sensitive 1.25 in/s (31.7 mm/s). Choosing a geo range depends on the proximity of the transducer to the Event and the expected particle velocities. On eight channel monitors, set the maximum range for the first standard transducer in the first text box. Set the maximum range for the second standard transducer in the second text box.



To choose a maximum range, click on the **Maximum Range** drop-down menu. Choose a range.

(9) Microphone Channel

The microphone channel records air over pressure. In this section of the Recording Setup dialog box, you enable the microphone channel, select the channel as a trigger source, and set a trigger level.

i Enable all microphones

Click on this checkbox to turn the microphone channel on when monitoring. Click on the box again to clear the checkmark to turn the channel off and not record sound pressure during monitoring. Note the other checkboxes in the section fade indicating they cannot be selected. On eight channel monitors, enabling all microphones turns on the microphone channels four and eight.

ii Trigger Source

Click on this checkbox to use the microphone channel as a trigger source. The Trigger Level checkbox brightens indicating it can be set.

Note: You can set both the Geophone and Microphone Channels as trigger sources. An Events activity has to exceed only one of the trigger levels to start recording Event activity on all channels.

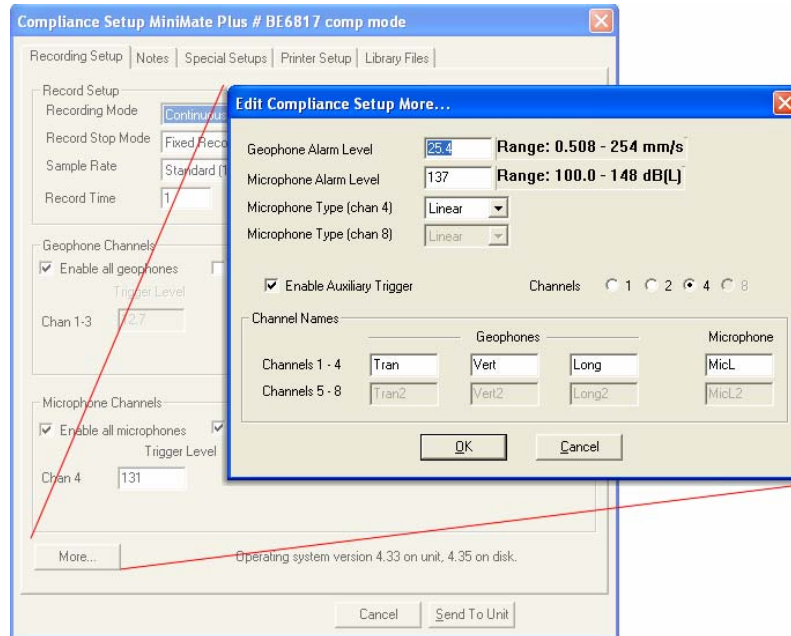
iii Trigger Level

Set a trigger level for the microphone. On eight channel monitors, set the trigger level for the first microphone in the first text box then set the trigger level for the second microphone in the second text box.

To set a trigger level, click on the **Trigger Level** text box. Enter the new level.

Note: In certain situations, the actual trigger level may be lower than the trigger level that you entered. This is because the monitor converts the analog signal it receives from the microphone into digital data, which consists of a series of discrete values. If the trigger level that you entered does not match one of these values, Blastware automatically sets the trigger level to the nearest lower value.

*The following settings are available by clicking on the **More** button at the lower, left hand side of the Recording Setup dialog tab. Refer to the illustration below:*



(10) Edit Compliance Setup More

i Geophone Alarm Level

The alarm level controls the triggering of an optional Remote Alarm (p/n 711A1401).

The remote alarm can sound two alarms: warning and alarm. The warning alarm sounds when Event activity exceeds the Trigger Level for the Geophone. The alarm level can be set to a different level that is higher than the trigger level of the Geophone. This allows for the triggering of a second alarm at the higher level.

For example, in pile driving operations the remote alarm triggers a warning when activity exceeds the trigger level for the Geophone, notifying the operator that the pile driving activity has exceeded that set level. The second alarm triggers when activity exceeds the alarm level, set to a higher level, notifying the operator to re-evaluate the piling operation.

To set an alarm level, double click on the **Alarm Level** box. Enter the new level that is within the stated range (Range: 0.508 – 254 mm/s).

ii Microphone Alarm Level

For a description of the optional remote alarm, see the Geophone channel in the previous section.

To set an alarm level, click on the **Microphone Alarm Level** box. Enter the new level that is within the stated range (Range: 100.0 – 148 dB(L)).

iii Microphone Type (Chan 4 or Chan 8)

Select the microphone type being used; either Linear “L” or “A” Weight. Click on the **Type** drop-down menu and select the Linear or “A” Weight. On eight channel monitors, set the microphone type for the second microphone in the second text box.

iv Enable Auxiliary Trigger

This command turns on the Auxiliary Trigger feature and allows the monitor to be triggered by an external trigger. InstanTel offers a variety of external triggers including the DS–20 Wire Break Trigger package (Part Number 677A9601).

To enable the **Auxiliary Trigger**, click on the checkbox to display checkmark.



v Channels

Select the number of **Channels** you would like to record data on by clicking on their associated radio button.

vi Channel Names

The channel names can be changed. These names appear throughout the software including in printed Event reports. The default names describe the compliance sensors connected to the monitor. The new names can be alphanumeric up to five characters in length. To change the **Channel Names**, double click on the existing name and enter the new name.

(11) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

i Cancel

Exit the dialog box and return to the previous Recording Setup dialog without accepting the changes.

ii OK

Approve the changes in this dialog box.

b. Notes

To display the Notes dialog box, open the **Unit, Setup, Compliance Setup** menu and select the **Notes** tab. The Edit Notes dialog box appears.

The Notes dialog box lets you enter notes about an Event. These notes are then saved with the Event when it is recorded. The notes become part of the permanent record and cannot be changed after an Event has been recorded. The notes are very flexible, offering you the ability to change their titles and content.

To enter notes, click on a space and delete the existing note by pressing and holding the **Backspace** key. Enter the new notes for each User Notes field box.



(1) Enable User Notes

When you enable user notes, the information contained in the User Notes dialog box is recorded with every Event. If you do not require this information, disable user notes by clicking on the **Enable User Notes** checkbox to clear the checkmark.

(2) User Notes

Enter the notes you wish to include with the recorded Events. You can include user note headings like the ones in the figure above. You can use these headings or delete them and enter your own. You can also delete them entirely and use no headings. Headings can range up to 20 characters in length. In the right hand column, enter your user notes. User notes can range up to a maximum of 40 characters in length.

(3) Extended Notes

Use this area to enter additional notes as required up to a maximum of 640 characters.

(4) Enable Extended Notes

When you enable extended notes, the information contained in the Extended Notes dialog box is recorded with every Event. If you do not require this information, disable extended notes by clicking on the **Enable Extended Notes** checkbox to clear the checkmark.

(5) Extended Notes Title

Enter a name for the extended notes section up to 20 characters in length.

(6) Enable Job Number

You may include a job number to identify a series of recorded Events. This helps you keep track of Events in the monitor and on your computer. To enable the Job Number, click the mouse pointer on the **Enable Job Number** checkbox to enter a checkmark.

(7) Job Number

Enter a job number. Job numbers range from 1 to 9999. Double click on the **Job Number** box and enter a new job number.

(8) Enable Scaled Distance

Check this box to enable the recording of scaled distance information with each Event. Enter the Distance from blast and the Charge Weight. Blastware automatically calculates and displays the Scaled Distance value. The value appears both within this dialog box and on Event Summary Reports.

(9) Distance from blast

Enter the distance from the monitor to the blast in feet or meters.

(10) Charge Weight

Enter the charge weight of the blast in pounds or kilograms.

(11) Scaled Distance

The Scaled Distance result appears within this dialog box and on Event Summary Reports.

(12) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

i Cancel

Exit the dialog box and return to the Blastware Main Menu.



ii Send To Unit

Transfer your settings to the monitor.

c. Special Setups

To display the Special Setups dialog box, open the **Unit, Setup, Compliance Setup** menu and select the **Special Setups** tab.

The Special Setup dialog box includes setting the timer, self check mode and time, when Sensorcheck operates, measurement units, microphone units, time format, Backlight on Time, Power Saving Timeout, and the Monitoring LCD Cycle. After you have entered your settings in each dialog box, choose **Send** to transfer your settings to the monitor.

The screenshot shows the 'Compliance Setup Minimate Blaster # BE9216-Compliance' dialog box with the 'Special Setups' tab selected. The dialog box contains the following settings:

- Unit Timer:**
 - Timer Mode: Monitor Once Only (dropdown)
 - Start Date: April 1, 2004
 - Start Time: 12:00
 - Stop Date: May 2, 2004
 - Stop Time: 23:59
- Self Check:**
 - Mode: Off (dropdown)
 - Time: 23:59
- Sensorcheck:** Before monitoring (dropdown)
- Measurement Units:** Imperial (dropdown)
- Show Mic units in dB:** ☐
- Time Format:** 24 Hour (radio button selected), 12 Hour (AM/PM) (radio button)
- Backlight on Time:** 65
- Power Saving Timeout:** 2
- Monitoring LCD Cycle:** 0
- Set unit time with setup:** ☒

At the bottom, it says 'Operating system version 1.0 on unit, 1.0 on disk.' and there are 'Cancel' and 'Send To Unit' buttons.

(1) Unit Timer

The timer function sets the monitor to automatically turn on and start monitoring operations at a preset time in the future. The timer can be set for a one time monitoring session or it can be set to record at the same time every day. Using the timer extends the monitors battery life by turning on and monitoring only the time periods when Events occur and not the time periods between Events.

Note: When using a monitor in the Timer Mode, the monitor stops recording even if Event activity is present and exceeds the trigger levels. The monitor waits until after the present Event is recorded. If recording in the Histogram Record Mode, the monitor stops recording immediately and discards the last histogram interval if incomplete.

(2) Timer Mode

The timer can be set for a one time operation or repeated operations at the same time each day.

i Off

Choose this setting if you do not require the unit timer.

ii Monitor Once Only

Choose this setting if you want the monitor to turn on monitor for a set period of time, then turn off. Open the **Timer Mode** drop-down menu and choose **Monitor Once**.



- **Start Date**

Enter the calendar date when you want the monitor to turn on.

- **Start Time**

Enter the time of day when you want the monitor to turn on and start monitoring.

- **Stop Date**

Enter the calendar date to turn the monitor off.

- **Stop Time**

Enter the time of day to turn the monitor off and stop monitoring.

After you have configured the timer, click on **Send** to send the settings to the monitor. Next, you must enter the monitor into the Monitor Mode. To do this, choose **Start Monitor** from the **Monitor** command located under the **Unit Menu**.

iii Monitor Every Day

Choose this setting if you want the monitor to turn on and record at the same time every day beginning immediately. Open the **Timer Mode** drop-down menu and choose **Monitor Every Day**. Note the Start Date and Stop Date items dim indicating they do not require setting in this timer mode.

- **Start Time**

Enter the time of day when you want the monitor to turn on and start monitoring.

- **Stop Time**

Enter the time of day to turn the monitor off and stop monitoring.

After you have configured the timer, click on **Send** to send the settings to the monitor. Next, you must enter the monitor into the Monitor Mode. To do this, choose **Start Monitor** from the **Monitor** command located under the **Unit Menu**.

(3) Self Check Mode

Use the Self Check Mode for remote monitoring where you require a record indicating the monitor was operating properly over a period of time. The self check mode only occurs when the monitor is in the monitor mode. The monitor temporarily exits the monitor mode, at the same time each day specified by you, performs the check, and returns to monitor mode. The results appear in a monitor log entry.

To set the self check mode, move the mouse pointer to the **Self Check Mode** drop-down menu and click. Choose **On** to turn the self check mode on. Choose **Off** if you do not require self check to operate.

(4) Time

Enter a time for the Self Check Mode to run. Click on the **Time** boxes and enter a time.

(5) Sensorcheck

This setting chooses when to automatically run Sensorcheck to test your monitor and its sensors. You can choose to run Sensorcheck after recording each Event or only once before a monitoring session starts. You can also choose to disable Sensorcheck. If you choose **After Each Event**, Sensorcheck runs after recording each Event. Results are saved with each Event and appear on the monitor display. If you choose **Before Monitoring**, Sensorcheck runs once before monitoring starts, immediately after you enter the monitor mode. The results of this single Sensorcheck appear with each Event recorded during the monitoring session. This setting provides a zero recycle time and ensures you cannot miss an Event when using the continuous record mode (the Automatically Print Event After Recording function in the Printer Setup dialog box must also be turned off).

To select a Sensorcheck position, click on the **Sensorcheck** drop-down menu. Click on **After each Event** or **Before monitoring**. Select **Disabled** if you do not wish to use Sensorcheck.



(6) Measurement Units

The Blastmate III and Minimate Plus use either **Metric** or **Imperial** measurement units.

To choose the measurement units, position the mouse pointer on the **Measurement Units** drop-down menu and click. Click on either **Metric** or **Imperial**.

(7) Time Format

This sets the time format for the monitors clock. You can choose between the 24 hour and the 12 hour AM/PM time formats.

To choose a time format, click on either button.

(8) Backlight on Time

This command sets the length of time the backlight remains on by setting an adjustable timer from 0 to 255 seconds. To disable the backlight and not have it turn on, set the timer delay to 0. This conserves battery power.

To set the Backlight on Time, click on the **Backlight on Time** box and enter a new time.

(9) Power Saving Timeout

The Power Saving Timeout is a timer that automatically turns the monitor off when it has remained in the ready to monitor mode while detecting no key presses for a specified period of time. This conserves battery power. The monitor will also turn off while connected to a computer but automatically turns on again when the computer communicates with the monitor.

To set the Power Saving Timeout, click on the **Power Saving Timeout** box and enter a new time.

(10) Monitoring LCD Cycle

The Monitoring LCD Cycle is a timer that automatically starts a power saving mode. While in this mode, the monitor minimizes power consumption while continuing its monitoring operations. The monitor turns the display off for the time period set in this command, turns on the display momentarily, then cycles the display off again. To turn this feature off, set the time to zero. To reactivate the monitor and see the display, press the **On/Off** key.

To set the Monitoring LCD Cycle, click on the **Monitoring LCD Cycle** box and enter a new time.

(11) Set Unit Time with Setup

To synchronize the Unit clock with the personal computer clock, place a checkmark in the box prior to selecting **Send to Unit**. Disable **Set Unit Time with Setup** by clicking on the checkbox to clear the checkmark.

(12) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

i Cancel

Exit the dialog box and return to the Blastware Main Menu.

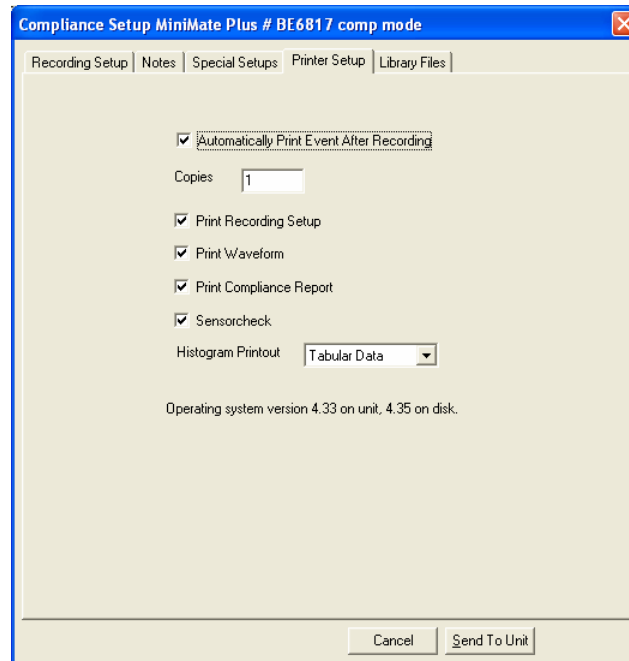
ii Send To Unit

Transfer your settings to the monitor.

d. Printer Setup - Blastmate III Only

To display the Printer Setup dialog box, open the **Unit, Setup, Compliance Setup** menu and select the **Printer Setup** tab.

The Printer Setup dialog box configures the Event Summary Report printed by the Blastmate III printer. Settings include when the report is printed, how many copies will be printed, and the reports contents. After you have entered your settings in each dialog box, choose **Send To Unit** to transfer your settings to the monitor.



(1) Automatically Print Event After Recording

Choose this to print the Event Summary Report immediately after recording an Event. To turn this on, position the mouse pointer on the checkbox and click the mouse button to display a checkmark.

(2) Copies

Multiple copies of the Event Summary Report can be printed automatically. The number of copies ranges from one to ten. Click on the **Copies** text box and enter a new number.

(3) Print Recording Setup

This prints the recording setup used by the monitor to record the Event. The setup information specifies the trigger source, trigger level, record time, sampling rate, and notes. Position the mouse pointer on the **Print Recording Setup** checkbox and click to display a checkmark.

(4) Print Waveform

This prints a graphical waveform representing the Events activity recorded by each channel. To include this, click on the **Print Waveform** checkbox.

(5) Print Compliance Report

Use this command to print the Compliance Report, also known as a National Frequency Standard, on each Event Summary Report. To include the compliance report, click on the **Print Compliance Report** checkbox to display a checkmark.

(6) Sensorcheck

This prints a graphical representation of the Sensorcheck results for each Geophone and the microphone channel. The Pass/Fail status of the Sensorcheck always appears on the Event Report, but the numerical results are only included when the graph is present. You can choose to include the Sensorcheck graph in the Event Summary Report or not. Click on the checkbox to display a checkmark and include the Sensorcheck graph.



(7) Histogram Printout

The setting configures how the Blastmate III printer prints histogram Events. Choose **Graphics** to print a histogram for each recorded interval. Choose **Tabular Data** to print numerical results of the data analysis for each interval. If you do not require printing of histogram record mode results, choose **None**.

(8) Command Buttons

To choose one of the command buttons, click the mouse pointer on the button.

i Cancel

Exit the Printer Setup dialog box and return to the Blastware Main Menu. You are prompted to send your changes to the unit.

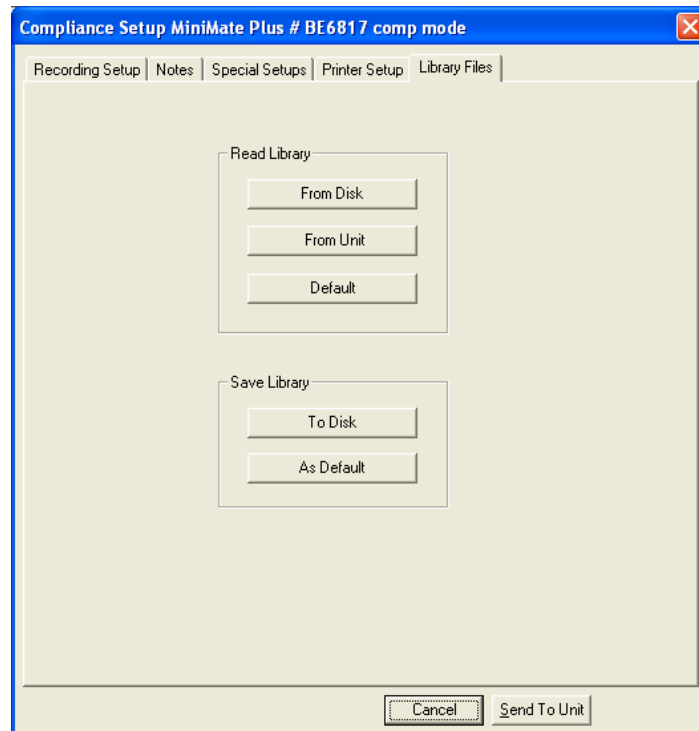
ii Send To Unit

Transfer your settings to the monitor.

e. Library Files

To display the Library Files dialog box, open the **Unit, Setup, Compliance Setup** menu and select the **Library Files** tab.

The Library Files dialog box allows you to load and save settings from your PC or the unit, and to specify any changes you have made to be the default settings. These files have a .set file extension.



(1) Read Library

i From Disk

Load a saved setup file from your PC. Locate previously saved setup files and load them to affect the unit currently connected to your PC by clicking on **Send to Unit**.



ii From Unit

Load the setup library files that are currently being used on the unit connected to your PC.

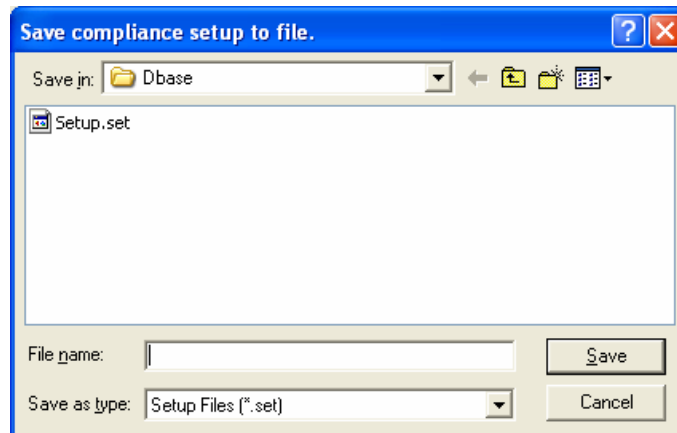
iii Default

Select **Default** to load the previously saved file.

(2) Save Library

i To Disk

Save your current setup settings to a file. Click on **To Disk**, and save the file into the default “Dbase” directory.



ii As Default

Use your current settings as the default every time you connect a unit and click on **Default**.

(3) Button Commands

To choose one of the command buttons, click the mouse pointer on the button.

i Cancel

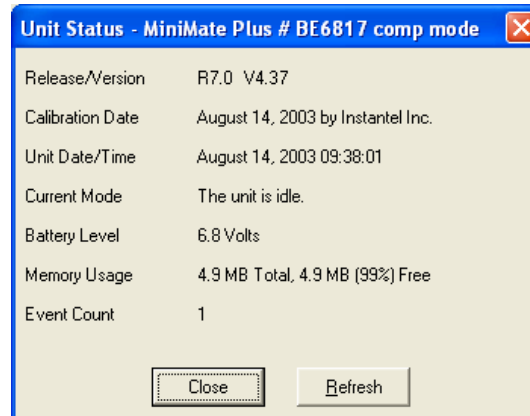
Exit the Printer Setup dialog box and return to the Blastware Main Menu.

ii Send To Unit

Transfer your settings to the monitor.

3.2.3 Status

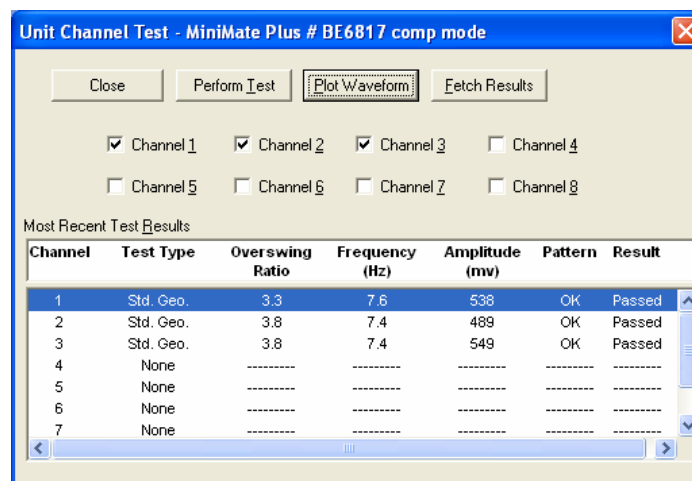
The Status command checks the monitor and displays the following information. To display the Status dialog box, open the **Unit Menu** and choose **Status**. Press the **Refresh** button to update the information. Press the **Close** button to return to the Main Menu.



3.2.4 Sensorcheck

This command runs Sensorcheck and checks the Blastmate III or the Minimate Plus Geophone and microphone sensors. If you have selected a 4.5 Hz Geophone in the Channel Setup dialog box, the unit will perform a continuity test rather than the standard Sensorcheck test. To display the dialog box, open the **Unit Menu** and choose **Sensorcheck**.

Test results of the last Sensorcheck performed by the monitor appear in the box. If no results are available, the word **None** appears in the Test Type column. Rows of dotted lines (-----) fill each of the other columns.



a. Close

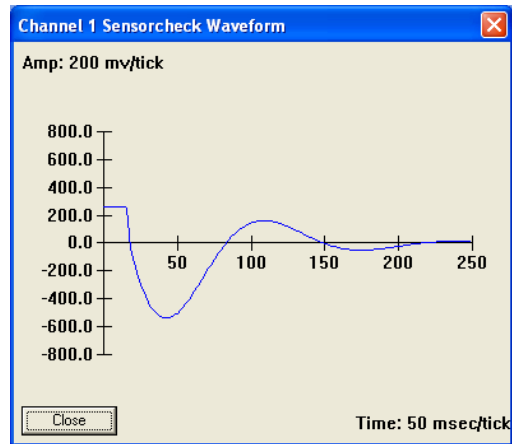
Choose this to return to the Main Menu.

b. Perform Test

This runs Sensorcheck and tests the sensors connected to the monitor. Click on the **Perform Test** button.

c. Plot Waveform

This displays a graphic representation of the Sensorcheck results. Move the cursor to the channel results you wish to see and press the **Plot Waveform** button. The plot appears on your computer display.



d. Fetch Results

This command obtains the most recent Sensorcheck results stored in the monitor. Click on the **Fetch Results** button.

e. Channel 1, 2, 3, 4, 5, 6, 7, and 8

You have a choice of which channels will be tested by Sensorcheck. Click on the checkbox to display a checkmark for each channel to be tested. To exclude channels from the Sensorcheck, click on the checkbox to remove the selection. Sensorcheck results for excluded channels are indicated by the word **None** in the Test Type column. Rows of dotted lines (-----) fill each of the other columns. For eight channel monitors, channels 5, 6, 7, and 8 will also be displayed.

f. Most Recent Test Results

This displays the Sensorcheck test results for each channel tested. The results for the Linear “L” and the “A” Weight microphones differ. The Linear “L” results appear with a Test Type called Square Wave and are similar to the dialog box above.

3.2.5 Date/Time

This sets the Date and Time in the Blastmate III or the Minimate Plus. Open the **Unit Menu** and choose **Date/Time**. The Set Unit Date/Time dialog box appears.

The figure shows a dialog box titled "Unit Date/Time - MiniMate Plus # BE6817 co...". It has two main sections. The top section, "PC Date/Time", has text boxes for "Date" (May 30, 2003) and "Time" (16:29:17), with a "Send to Unit" button below. The bottom section, "Unit Date/Time", has dropdown menus for "Date" (May, 30, 2003) and "Time" (16, 01, 53), with a "Set Date/Time" button below. At the very bottom are "Close" and "Adjust Speed" buttons.

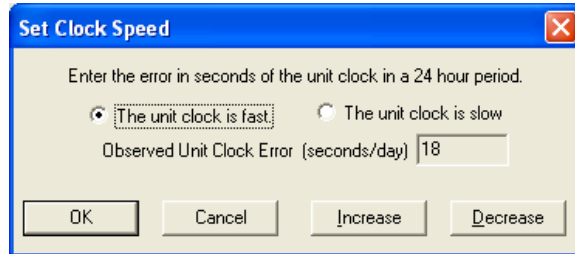
You may set the Date and Time in your monitor in two ways. The first method is to copy the settings from your PC, as displayed in the PC Date/Time area. Make sure the date and time are correct, and then click on the **Send to Unit** button. The date and time in the Unit Date/Time area will change to match the PC Date/Time. You can also set the date and time manually: enter the



current date and time in the Unit Date/Time area then send the changes to the unit by clicking on the **Set Date/Time** button.

a. Adjust Speed

The **Adjust Speed** button is used to adjust the units clock if it is running too fast or too slow. The Set Clock Speed dialog box appears:

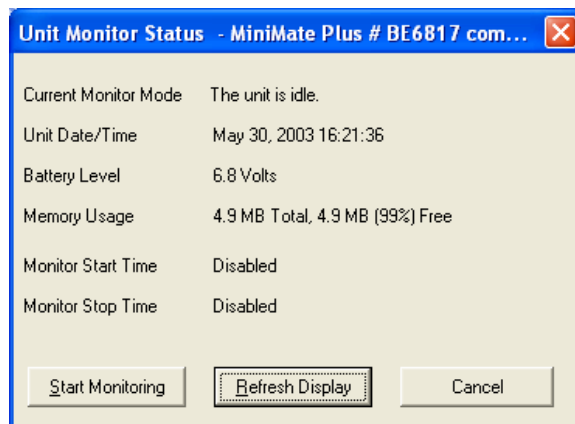


Select the appropriate radio button and enter the number of seconds in a 24-hour period that the clock is slow or fast. Use the Increase and Decrease buttons to change the number of seconds. Click OK to send the time correction to the unit and close the dialog box.

Note: The Self Check function must be activated for the unit in order for the time to be corrected. The time is adjusted as part of the Self Check. The Daily Self check is scheduled in hours and minutes and occurs at 30 seconds into the chosen minute. The amount of the correction is limited to 28 seconds so that the minute does not change. Example: 11:59:30 + 28 sec = 11:59:58 or 11:59:30 - 28 sec = 11:59:02

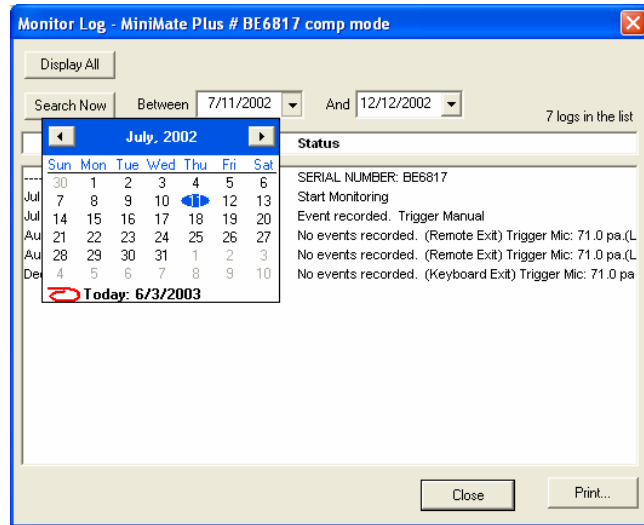
3.2.6 Monitor

The Monitor command starts and stops monitoring by your Blastmate III or Minimate Plus. Open the **Unit Menu** and choose **Monitor**. To start monitoring, press the **Start Monitoring** button. If the monitor is already in the monitor mode, the **Start Monitoring** button will read **Stop Monitoring**. You may need to click on **Stop Monitoring** several times to communicate with the unit over the modem and end the monitoring session.



3.2.7 Monitor Log

The monitor log lists monitoring periods for the Blastmate III or Minimate Plus, including date, start time, and stop time. To display the monitor log, click on the **Unit Menu** and choose **Monitor Log**. The Monitor Log dialog box appears.



a. Display All

Select **Display All** to view all the Events that are currently on the monitor.

b. Search Now

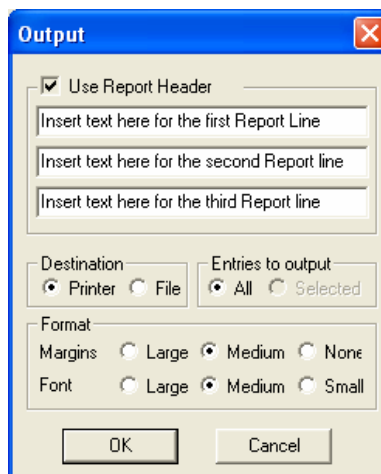
Enter dates into the **Between** and the **And** fields, by clicking on the small down arrow to the right of each box – this displays the calendar. By clicking on the left and right arrows, you can navigate through the calendar to select the inclusive dates you would like searched for Monitor Log entries.

c. Close

Select **Close** to return to the previous window.

d. Print

Select **Print** to enter the Output Dialog menu.



(1) Use Report Header

Click on the selection box next to **Use Report Header** to display a checkmark in the checkbox. This will include a title on the printed report. Clicking again will unselect the Use Report Header option. Input *text* in the three text boxes below the Use Report Header option – this will be the text that appears at the top of each printed page.



(2) Destination

To select the destination of the Output, you can either choose **Printer** or **File** by clicking on the radio button.

(3) Entries to output

The predefined default for this is **ALL**.

(4) Format

You have a choice between **Large**, **Medium**, and **None** for the margins.

	Top Margin	Left Margin
Large	1 ½ in. (3.8 cm)	¾ in. (1.9 cm)
Medium	1 in. (2.5 cm)	½ in. (1.3 cm)
No Margin	0 in. (0 cm)	0 in. (0 cm)

(5) OK

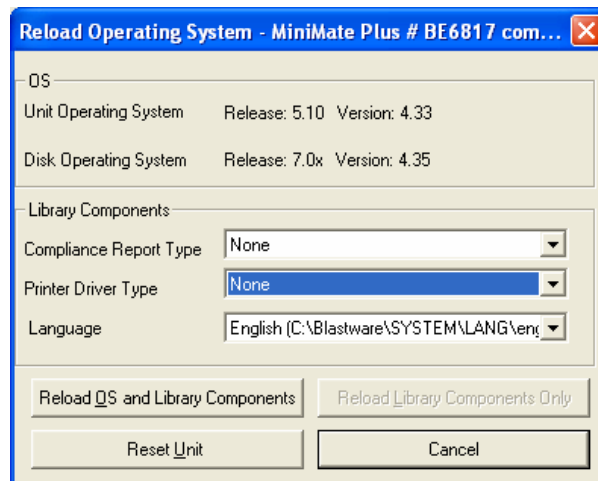
Click on **OK** to accept the current settings and proceed to the Printer Dialog box.

(6) Cancel

Click on **Cancel** to exit to the previous menu.

3.2.8 Reload Operating System

This command sends a new version of the operating system (OS) and library components to the monitor. To reload the operating system, click on the **Unit Menu** and choose the **Reload Operating System** command. The Reload Operating System dialog box appears.



a. Unit Operating System

This is the release number and version number of the operating system presently in the monitor.

b. Disk Operating System

This refers to the unit operating system stored in the Blastware program.

c. Compliance Report Type

This drop-down menu displays the current type of report loaded into the monitor. It also lists the available compliance reports in Blastware that you can choose to load into the monitor.



To choose a compliance report, click on the **Compliance Report Type** drop-down menu and select a report.

d. Printer Driver Type – For Minimate Plus and Minimate Blaster Only

The menu lists the available printer drivers for the Minimate Plus. Three printer models are supported: the Kodak Diconix 180 SI, Hewlett Packard DeskJet 320, and the Canon BJ-30 in Epson LQ mode. Choose the driver corresponding to your printer.

If your printer type does not correspond to either of these printers, choose the Canon BJ-30 in Epson LQ mode driver for printers capable of emulating the Epson LQ mode. Set the printer scaling to two-thirds of a page. For printers using Hewlett Packard's PCL printer language, choose the HP DeskJet 320 driver.

To choose a driver, click on the **Printer Driver Type** drop-down menu and select a driver.

e. Language

Different languages can be loaded into the monitor and used. This drop-down list identifies the language library files available for use.

To choose a language, click on the arrow and choose a language file. The language library must be loaded into the monitor. To load the language library, choose either the **Reload OS and Library Components** command to reload the operating system along with the language library, or the **Reload Library Components Only** command to load only the language library.

Note: New language files may be created using the Language Editor available in the Blastware Advanced software (optional).

f. Reload OS and Library Components

This command loads all the software required to operate the monitor including the disk operating system, the library components, and the compliance report into the monitor. This operation replaces all the software currently loaded into the unit. The disk operating system becomes the unit operating system. This feature is most commonly used to upgrade the monitor to the latest software.

WARNING: Make sure that you are replacing the unit operating system with the required disk operating system. This procedure cannot be reversed.

Select the required Compliance Report in the Compliance Report Type drop-down menu and press the **Reload OS and Library Components** button.

g. Reload Library Components Only

Select this command to send a new version of the Blastware library file to the monitor. The library file contains the complete language library for the entire monitor program. You can use this command to load a new language into the monitor.

You can also use this feature to load a new Compliance Report into the monitor. To do this, make sure the unit operating system release and version number match *exactly* the disk operating system release and version. If they do not match, the Reload Library Components Only button will be dimmed requiring you to use the Reload OS and Library Components button only. Select the required Compliance Report in the Compliance Report Type drop-down menu and press the **Reload Library Components Only** button.

h. Reset Unit

This command resets the monitor.

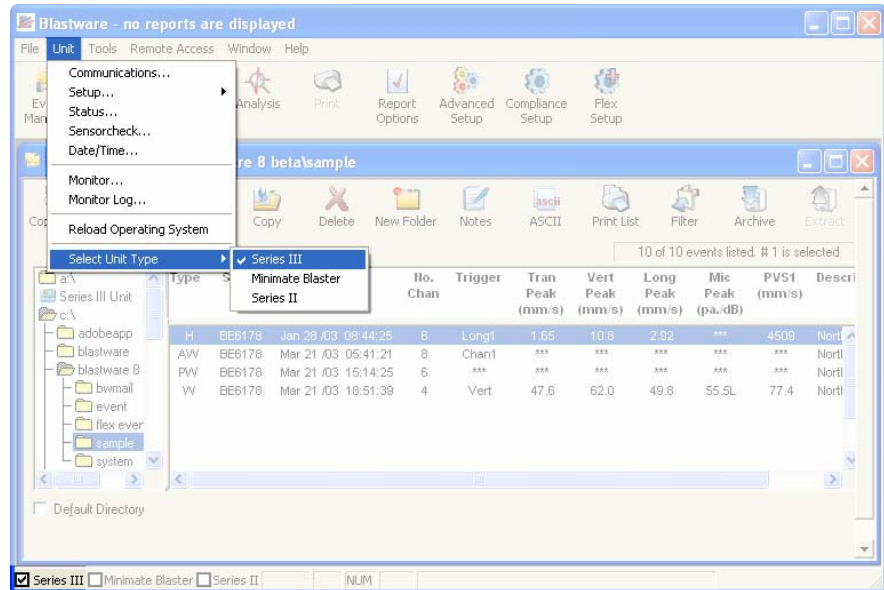
i. Cancel

Leave the Reload Operating System dialog box without changing the monitors current software.



3.2.9 Select Unit Type

The Series III Event Manager organizes your Event files. From this window you list, copy, delete, print, and view Events. The Series III Event Manager can be accessed in two ways, 1) from the **Main Menu** bar, select **Unit, Select Unit Type**, and then **Series III**, or 2) in the lower left-hand corner of the Main Blastware window, the Series III menus can be toggled on by clicking the check box (refer to the figure below):



Note to Series II users:

Blastware contains two Event Managers: the Series III Event Manager described in this section, and the Series II Event Manager. These menus are toggled by selecting the unit type at either the bottom left corner of the Event Manager window, or under the **Unit, Select Unit Type** menu selection. The Series II Event Manager displays the Events stored on your Series II monitor, and is used to copy Events to your PC. Once you have copied an Event over to your PC, you use the Event Manager to view and edit it. Previous and new Series II Events will be converted to Series III Events and the original files will be saved in the Series II directory:

DRIVE:\BLASTWARE\BW_SERIES2_BACKUP\"Unit Serial Number"

The Series II folder is automatically created prior to the conversion.

3.3 Tools Menu

The Tools Menu contains three commands in Compliance Mode, **Scaled Distance**, **Post Event Notes**, and **ASCII Conversion**.

3.3.1 Scaled Distance

The Scaled Distance menu invokes the Scaled Distance window, which contains commands for performing Scaled Distance Analysis. Scaled distance analysis is a useful tool for quickly and confidently calculating the maximum charge weight per delay and the minimum safe structure distance for a specific blast site. The information is presented in a simple and easy-to-read regression line graph.

The analysis is based on blast data for a site. Scaled distances (SD) and the peak particle velocities (PPV) are used as coordinates to plot points on a graph with logarithmic axes. SD is plotted on the X axis, and PPV is plotted on the Y axis. Since there is a correlation between SD and PPV, a



regression line is computed using the least squares method. This is a straight line which “predicts” with a specified confidence level whether a new data point will reside above or below the line. Both square root and cube root scaling can be used.

Event data from any Series III monitor can be loaded automatically, while data from other Events can be entered manually. Blastware can also read files saved by the Series II DS-550 Scaled Distance Program.

To open the Scaled Distance window, click once on the **Scaled Distance** menu.

Serial No.	Date/Time	Tran Peak (mm/s)	Vert Peak (mm/s)	Long Peak (mm/s)	Mic Peak (pa.dB)	Back Ground (pa.dB)	Weight (kg)	Distance (m)	Description
BE6178	Mar 21 /03 18:51:39	47.6	62.0	49.8	55.5	0.0	10.00	100.0	North Pole Quarry
BC6494	Apr 23 /03 09:37:33	13.6	6.48	18.9	12.0	0.0	0.0905	0.0914	SG1 SW 4

The Scaled Distance window displays summary information describing the Events, including the Peak Particle Velocity (PPV), the charge weight, and the distance.

a. File Menu

This menu contains the New, Load, Save, Print and Exit commands.

(1) New

The New command is used to create a new scaled distance file (.sdf). Each scaled distance file contains data from a number of blast Events, which you enter manually in the Edit Scaled Distance Record dialog box. (You can also add Events using the Event Manager, as described below). Once you have made all the settings for one Event, click on OK. The Event appears in the Scaled Distance window, and the Scaled Distance dialog box remains open. You can then add more Events to your scaled distance file.

When you first select the New command after starting Blastware, all the settings in the Edit Scaled Distance Record dialog box are blank, except for the date, which is copied from the settings on your PC. Once you have entered data for one Event and clicked OK, however, Blastware will use the data for that Event as the default values for your next Event. This feature makes it easier to rapidly enter a series of Events.

To create a new scaled distance file, select New from the File menu. The Edit Scaled Distance Record dialog box appears:



Edit Scaled Distance Record

Serial Number

Date/Time

Description

Geophone Peaks

Tran	Vert	Long
0.0	0.0	0.0

Microphone

Peak	Background
0.0	0.0

Weight

Distance

i Serial Number

Enter the serial number for the blast Event here. The serial number can be alphanumeric up to nine characters in length.

ii Date/Time

This field is used to enter the date and time the Event was recorded. The default information is either the current date and time, or the date and time for the previously entered Event.

iii Description

Enter a description of the Event here. Your description can be alphanumeric up to 31 characters in length.

iv Geophone Peaks

Geophone Peaks is used to enter the Peak Particle Velocity information recorded by the Geophone for the blast Event. You can enter the PPV for transverse (Trans), vertical (Vert) and longitudinal (Long) vibrations. Click on the appropriate box, and enter the PPV.

v Microphone

You can also enter air blast data recorded by the microphone. Enter the Peak and Background data. Click on the appropriate box, and enter the value.

vi Weight

Enter the weight of the charge used in the blast. Click on the box, and enter the value.

vii Distance

Enter the distance between the monitor and blast when the Event data was recorded. Click on the box, and enter the value.

viii Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

• OK

Press this to enter the Event into the scaled distance file. The Scaled Distance dialog box remains open.



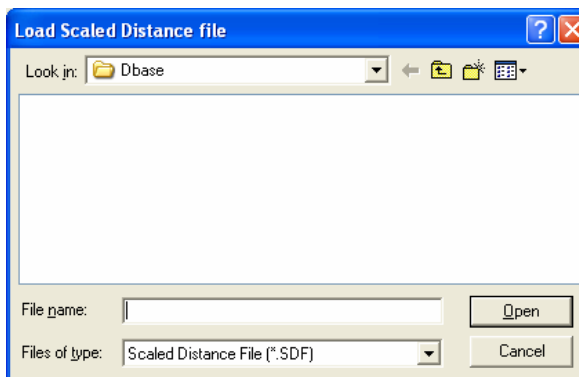
- **Cancel**

Press Cancel when you have finished entering Event data. The Scaled Distance dialog box will close, returning you to the Scaled Distance window.

WARNING: Do not forget to save your scaled distance file before exiting the Scaled Distance window. See below for details.

(2) Load

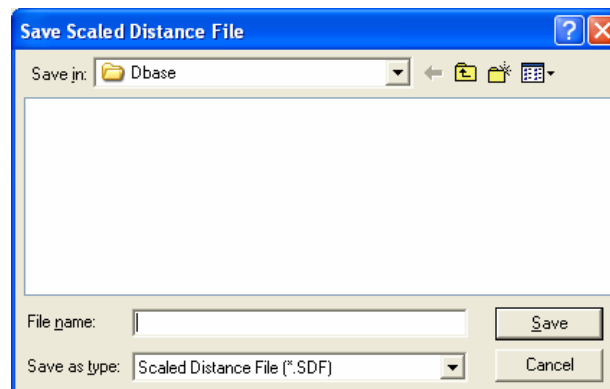
The Load command is used to load scaled distance files (.sdf) into the Scaled Distance window. The Load Scaled Distance file dialog box appears:



Navigate through your directories to locate the file. Click on **Open** to load the file into the Scaled Distance window.

(3) Save

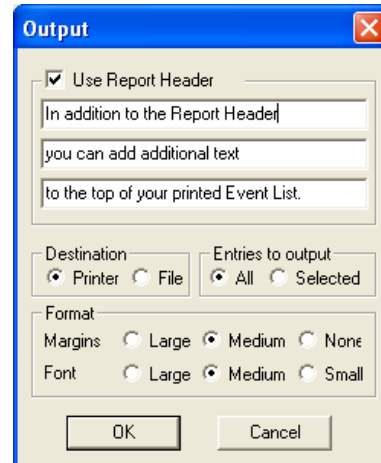
The Save command saves the scaled distance file currently within the Scaled Distance window. The Save Scaled Distance File dialog box appears:



Enter a filename for the new scaled distance file. Then navigate through your directories to choose the folder where you want to store the file. Click on **Save** to save the file.

(4) Print

The Print command invokes the Output dialog box, where you can choose to print a list of the scaled distance Events currently within the Scaled Distance Window, or save it to file.



i Use Report Header

Click this checkbox if you wish to add the existing **Report Title** as defined in the **Report Options** dialog box. You can also add up to three additional headers to the Event list printout by typing in the text boxes provided. The headers appear as bold, centered titles at the top of each printed page.

ii Destination

Choose where to print the Event list, either to a printer or to a file. If you choose a printer, the list prints on your printer. If you print to a file, the list is saved in standard text format. You can view and print the list using a text editing program like Microsoft WordPad.

iii Entries to output

You have a choice to output all Events appearing in the Event List or only selected Events. To select Events, click on the Event to highlight it.

iv Format

Under this command, you can choose the margin size and font size used in the printout.

v Margins

You have a choice between large, medium, and no margins.

	Top Margin	Left Margin
Large	1 ½ in. (3.8 cm)	¾ in. (1.9 cm)
Medium	1 in. (2.5 cm)	½ in. (1.3 cm)
No Margin	0 in. (0 cm)	0 in. (0 cm)

vi Font

You can choose either large, medium, or small fonts.

(5) Command Buttons

Choose **OK** to output the Event List. Choose **Cancel** to close the dialog without printing or saving to file.

(6) Exit

Choose this command to close the Scaled Distance window and return to Blastware's Main Window. The Save Scaled Distance File dialog box will automatically appear, prompting you to save your file. If you do not wish to save your file, click Cancel.



b. Edit Menu

The Edit menu contains commands for adding, deleting, changing and finding duplicates of Events within the currently displayed scaled distance file.

(1) Manual Append

The Manual Edit command opens the Edit Scaled Distance Record dialog box, where you can manually enter Event data. The dialog box uses data from the Event most recently added to the scaled distance file as the default settings. Once you have entered all the data for the Event, click on OK to add the Event to your scaled distance file.

(2) Delete

The Delete command deletes Events from the scaled distance file.

To delete one or more Events, first highlight them in the Scaled Distance window. Then select **Delete** from the Edit menu. The selected Events will automatically be deleted.

WARNING: If you delete Events on your computer by mistake, refer to your computer manual immediately for instructions on how to undelete files.

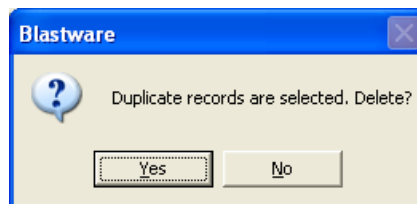
(3) Manual Edit

You use the Change command to make changes to Events in the scaled distance file. Select the Event in the Scaled Distance window, and then select **Change** from the Edit menu. The Edit Scaled Distance Record dialog box appears where you can alter the data for the Event.

(4) Find Duplicates

This command is used to find duplicate Events within your scaled distance file. If duplicates are not removed, the scaled distance analysis results may be distorted.

To remove duplicates, select Find Duplicates from the Edit menu. If any duplicates are found, the following dialog box appears:



To delete all duplicate Events, click on Yes. If you do not wish to delete duplicate, select No. If no duplicates are found, a message appears confirming this information.

(5) Zero Mic Background

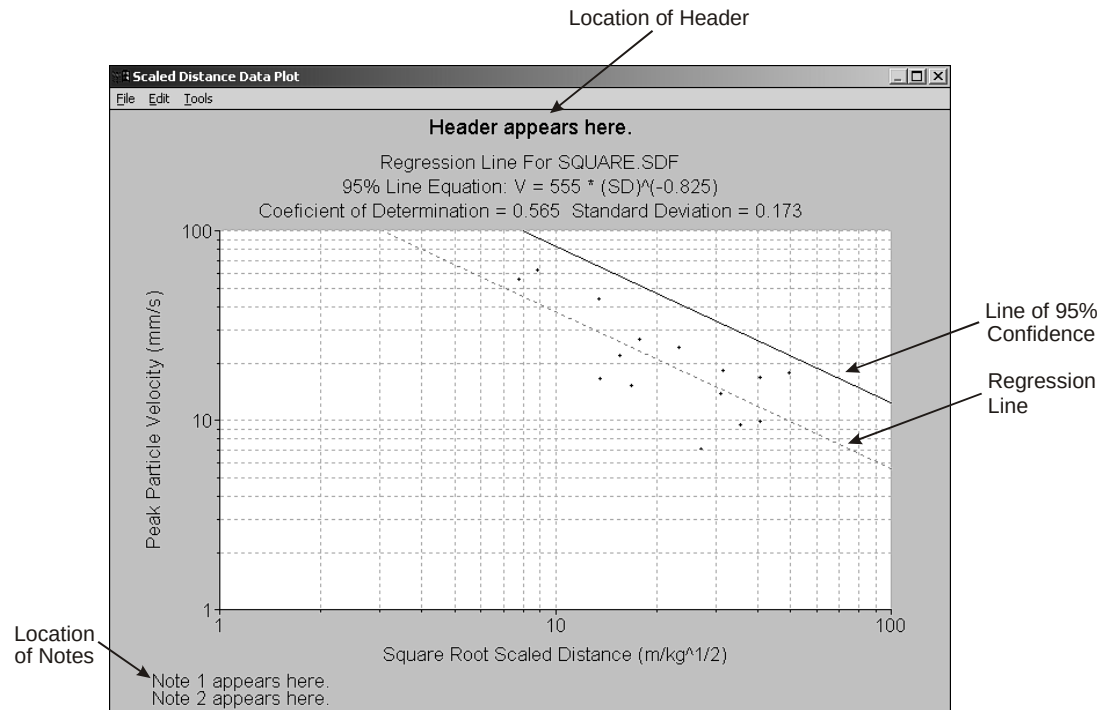
Some Scaled Distance files may contain erroneous data in the background. Select **Zero Mic Background** to place these values at zero.

c. Graph Menu

The Graph menu contains commands for performing scaled distance analysis on the file currently open within the Scaled Distance window. The Graph menu contains the following commands: Square Root, Cube Root, and Air Blast.

(1) Square Root

The Square Root command generates a graph showing the regression line for square root scaled distance.



i File

The Print menu contains commands for printing the scaled distance graph.

- **Save to Metafile**

Save the Scaled Distance Graph as a metafile, which can be inserted into a Microsoft Word document.

- **Copy to Clipboard**

From the file menu, select **Copy to Clipboard**. A bitmap image of the Scaled Distance plot is copied to your computers temporary memory. Open another Windows program that supports graphics and use the paste command, or simultaneously press **CTRL-V**, to place the bitmap image into the file.

- **Printer Setup**

Setup the defaults of your current printer, or select a different printer.

- **Print**

The Print command prints the scaled distance graph currently displayed.

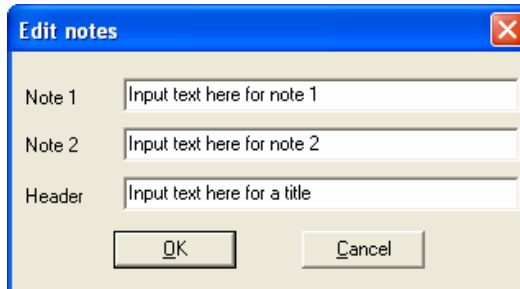
ii Edit

The Edit Menu contains the Notes command

- **Notes**

The notes command is used to append a header centered at the top of the Scaled Distance Data Plot window, and two notes that appear in the lower left-hand corner. This feature allows you to customize your graph for printing.

To open the Edit notes dialog box, select Notes from the Edit menu.



The 'Edit notes' dialog box has a blue title bar with a close button. It contains three text input fields labeled 'Note 1', 'Note 2', and 'Header'. Below the fields are 'OK' and 'Cancel' buttons.

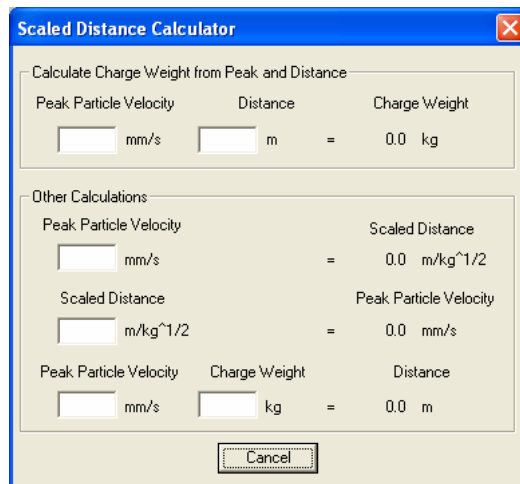
To enter notes or a header, click on the appropriate text box and type in the desired contents, to a maximum of 40 characters. Click on **OK** to save your notes. Click **Cancel (Esc)** to close the Edit notes dialog box without adding notes.

iii Tools

Under the Tools menu are various tools to calculate charge weight, safe distance and other factors, based on the scaled distance analysis.

- **Calculator**

The Calculator command invokes the Scaled Distance Calculator, where you can make a range of calculations based on a confidence level graph. This enables you to obtain precise information for the blast site. Enter the values in the appropriate boxes, and the results are displayed automatically. Click Cancel to close the dialog box.



The 'Scaled Distance Calculator' dialog box has a blue title bar with a close button. It contains two sections: 'Calculate Charge Weight from Peak and Distance' and 'Other Calculations'. The first section has input fields for 'Peak Particle Velocity' (mm/s), 'Distance' (m), and 'Charge Weight' (kg). The second section has input fields for 'Peak Particle Velocity' (mm/s), 'Scaled Distance' (m/kg^{1/2}), and 'Distance' (m). There are also output fields for 'Scaled Distance' (m/kg^{1/2}) and 'Peak Particle Velocity' (mm/s). A 'Cancel' button is at the bottom.

- **Calculate Charge Weight from Peak and Distance**

This area is used to calculate the charge weight based on values for PPV and Distance that you enter. Enter the PPV and the distance, and the charge weight is calculated automatically.

- **Other Calculations**

You can also calculate the Scaled Distance, Peak Particle Velocity, and the Distance. Enter the values; the results are calculated automatically.

- **Scaled Distance Table**

The Scaled Distance Table command invokes the Max Weight Table dialog box. This tool allows you to quickly calculate a range of charge weights at different distances, based on a PPV chosen by you. As with the Scaled Distance Calculator, results are based on the scaled distance graph, and have a specified confidence level.

To open the Max Weight Table dialog box, select Scaled Distance Table from the Tools menu.



Distance (m)	Weight (kg)
500	14.8
750	33.3
1000	59.2
1250	92.4
1500	133
1750	181
2000	237
2250	300
2500	370
2750	447

- **Distance**

Enter the first distance from the Event that you wish to begin calculating charge weight for. The distance you enter here will be the first entry in the table, as shown in the example above.

- **Increment**

This value determines the increase in distance between each entry in the table. For example, if you enter an initial distance of 500 m and set the Increment to 100 m, the table will display the maximum charge weight at 500 m, 600 m, 700 m, etc.

To enter the Increment, click on the text box with the mouse and type in the value.

- **Peak**

Enter the PPV for the charge weight calculation here. Click on the text box with the mouse and type in the value.

- **Table Size**

Enter the size of the table. The table can have up to 2000 entries. Click on the text box with the mouse and type in the value.

- **Command Buttons**

Click Calculate to display the weight results. Click Print to print the weight table. The Output dialog box appears, where you can choose setting to print the table, or save it to file.

iv View Data

This command displays all the numerical coordinates of the scaled distance graph.

#	X	Y
0	0.303964	13.843
1	0.303964	1.778
2	0.316228	9.52499e-
3	0.316228	0.111125
4	0.316228	9.52499e-
5	0.316228	9.52499e-
6	0.316228	9.52499e-

- **Copy**



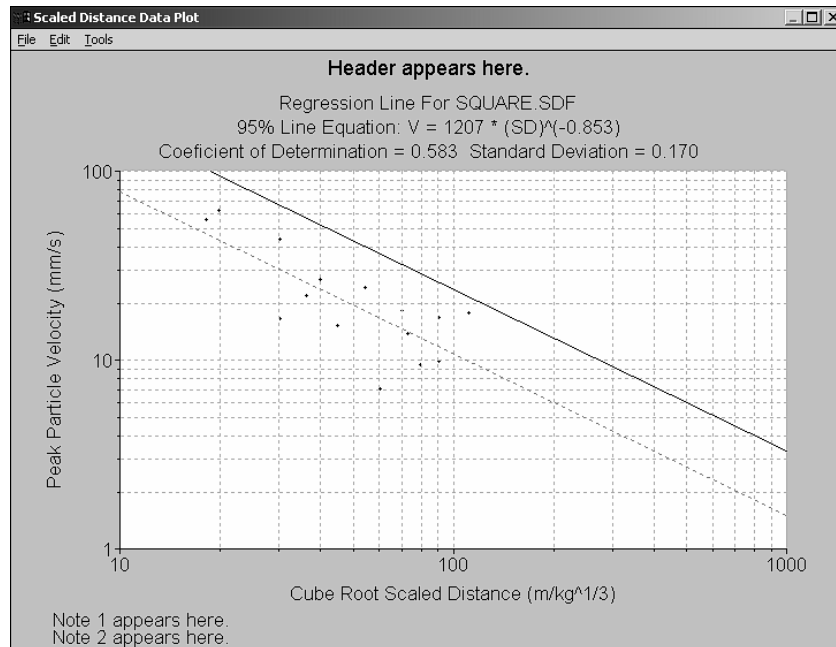
Use this command to copy the coordinates to third party analysis program such as Microsoft Excel. Click **Copy**. The information transfers to the computers clipboard file. From within the third party software such as Excel, choose paste. The coordinates appear within the program.

- **Format**

This controls the View Data table. **Width** controls the size of the table columns. **Precision** controls the number of significant digits.

(2) Cube Root

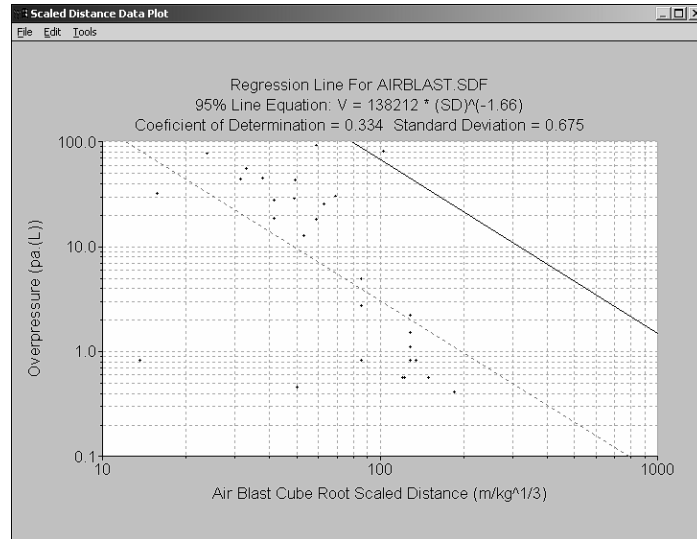
The Cube Root command generates a graph showing the regression line for cube root scaled distance.



The menu commands contained in this window are the same as those for the square root graph window.

(3) Air Blast

The Air Blast command generates a graph showing the cube root regression line for scaled distance using air blast data.



The menu commands contained in this window are the same as those for the square root graph window.

d. Add

Click on the **Add** button to include Events from the current directory into the Scaled Distance Event list window. Events can also be added manually by highlighting them in the Event Manager and then clicking on the **Add** button within Scaled Distance.

e. Also Plot 95% of Line

Input the confidence level in this box. Refer to the technical and “rule of thumb” description in Section 3.3.2, Part b. Algorithms, subsection (2).

3.3.2 Scaled Distance - Technical Description

This section describes the formulas used by Blastware to calculate scaled distance.

a. Scaled Distance

(1)

Dividing the distance from the blast by the square or cube root of the charge weight is familiar to the blasting industry and is known as the Scaled Distance. It arises from the fact that surface blast energy dissipates in all directions; i.e., it goes into a circular or spherical area surrounding the blast site.

(2)

The actual value of the scaled distance depends on the units of measure used in the equation,

$$SD = D/W^r$$

where the distance **D**, and weight of charge **W**, may be expressed in either Metric or Imperial units and **r** is either 1/2 or 1/3 depending on whether square or cube root is used. (Air pressure always uses cube root scaling.)

(3)

There is a correlation between scaled distance and particle velocity. If enough PPV (or pressure) - SD sample pairs are available, statistical analysis can be used to derive an expression to show this dependence. It is of the form,

$$P = H(SD)^{-\beta}$$

where



P = PPV is peak particle velocity (or air pressure),

H is the velocity (or air pressure) axis intercept i.e., P when $SD = 1$,

SD is the scaled distance,

β is the slope of the curve, i.e., the negative decay exponent

(4)

This is an equation for a curve of the form $y = ax^b$. (In the case of air pressure in dB, the equation is of the form $P = a + b \log SD$ where P is pressure.) If the logarithm is taken of both sides we have $\log y = \log a + b \log x$ which gives a linear xy relationship when plotted using log-log scales. Since the curve has been reduced to a straight line, we can perform linear regression analysis to find its equation. Linear regression is a statistical tool for determining a line of fit through a distribution of points on a graph.

b. Algorithms

(1)

Linear regression is used to find the equation of a straight line of the form

$$y = a + bx$$

where the slope b is computed from the expression,

$$b = \{ \sum (x_i * y_i - n * x * y) \} / \{ \sum (x_i^2 - n * x^2) \}$$

and the intercept a is computed from the expression,

$$a = y - b * x$$

The coefficient of correlation r is obtained by evaluating the expression,

$$r = \{ \sum (x_i * y_i - n * x * y) \} / \{ [\sum (x_i^2 - n * x^2)] [\sum (y_i^2 - n * y^2)] \}^{1/2}$$

and the sample standard deviation is evaluated from

$$s = [\{ \sum (y_i^2 - n * y^2) - \sum (x_i * y_i - n * x * y)^2 / \sum (x_i^2 - n * x^2) \} / n]^{1/2}$$

In the equations above, n is the number of points (or Event PPV, SD pairs) x_i and y_i are the i^{th} variable in the set $i = 1$ to n , and x and y are means of each of the variables in the given set.

(2)

A confidence line is based on the "rule of thumb" as a special case of Tchebychev's Rule. It states that in a normally distributed large population approximately 68% of the members lie within one standard deviation of the mean, whereas 95% of the members lie within two standard deviations.

For further reading, please see the following references.

Dowding, Charles H. BLAST VIBRATION MONITORING AND CONTROL. Englewood Cliffs, NJ: Prentice-Hall Inc., 1985.

Federal Register, Vol. 48, No. 46, Tuesday, March 8, 1983. RULES AND REGULATION. Washington, D.C.: U.S. Government Printing Office.

Newbold, Paul. STATISTICS FOR BUSINESS AND ECONOMICS. Englewood Cliffs, NJ: Prentice-Hall Inc., 1984.

Rosenthal, Michael F. and Gregory L. Morlock. BLASTING GUIDANCE MANUAL. Office of Mining Reclamation and Enforcement (OSMRE), March 1987.

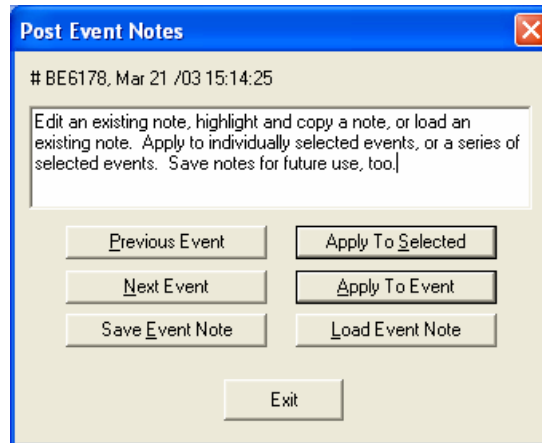
3.3.3 Post Event Notes

Select this command to view and change the Post Event Notes for an Event.

Editing notes for one Event only



To create or edit the note of a specific Event, select it in the Event List Box, and then select the **Edit Post Event Notes** command, or the **Notes** icon from the Event Manager toolbar. The following window appears:



Type in your notes and click the **Apply to Event** button when you are finished. Then click **Exit** to close the dialog box.

Editing notes for multiple Events

You may also view and change notes for multiple Events. Select a series of Events in the Event List Box, and then select the **Edit Post Event Notes** command (or select the **Notes** icon from the Event Manager Toolbar) to open the **Post Event Notes** window. Enter your note and select **Apply to Selected**, and click the **Save Event Note** button when you are finished to save your notes and move to the next Event in your list.

You can also use the standard Windows cut and paste commands to copy notes from one Event to another. Highlight the note you wish to copy and then press the Control (Ctrl) and C key simultaneously. Access the destination Event by using the **Previous Event** and **Next Event** buttons, place your cursor in the text box, and then press the Control Key (Ctrl) and V key simultaneously.

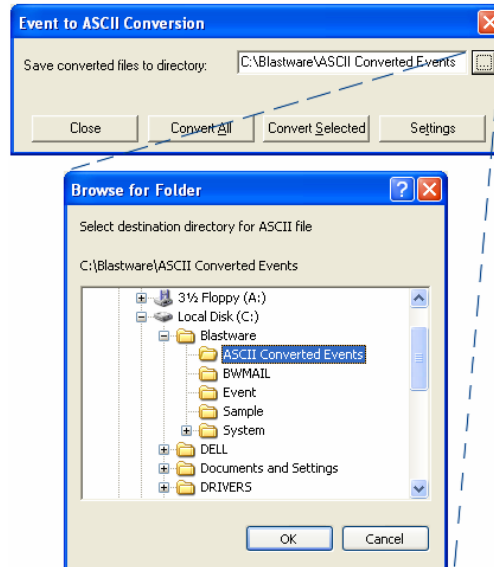
The **Previous Event** and **Next Event** buttons can also be used to view existing notes by scrolling through Events selected in the List Box. Be sure to save notes for an Event by clicking the **Save Event Note** button before moving to another Event. If no Events are selected, the notes for the first Event in the list are displayed.

Use the **Exit** command to close the dialog box.

3.3.4 ASCII Conversion

The ASCII output formats Blastmate Events into ASCII format (American National Standard Code for Information Interchange). This lets you use other programs to analyze the Blastmate Events. The ASCII conversion leaves the original Blastmate Event unaltered and creates a copy in the ASCII format.

To create an ASCII copy of an Event, select an Event in the Event List box then click on the **ASCII** button. The ASCII Conversion dialog box appears.



a. Save converted files to directory

Enter the path where you want the ASCII converted files to be saved, or use the browse button to locate a directory that you have already created. The default, indicated in the dialog box, is created automatically when you convert an Event for the first time. If you want to change the directory, click on the text window and press the backspace to delete the existing directory path. Then enter your new path.

b. Close

This closes the ASCII Conversion dialog box and returns to the Event Manager. Click on **Close**.

c. Convert All

Select this button to automatically convert all the Event files listed in the Event List box. Before using this command, open the ASCII Conversion Settings dialog box, and make sure that the Output File Name is *not* set to Fixed File Name. Otherwise each ASCII output file will overwrite the last converted file. See Settings below for more information.

d. Convert Selected

This converts only the Events you have selected from the Event List box. To select Events, click on the required Events. Each chosen Event is highlighted. Press the **Convert Selected** button and the Events are converted into ASCII files.

e. Settings

This customizes how the Blastmate Events are converted into ASCII files. Varying these settings changes how the Event information is organized within the ASCII file. Press the **Settings** button to display the ASCII Conversion Settings dialog box. To change the settings, click the mouse pointer in the box to be changed and enter the required information.



(1) String Delimiter

The character entered here separates the text information of an Event into separate single text lines in the ASCII file. This information includes the monitors setup information. The default setting is a double quotation mark.

(2) String Separator

The String Separator formats all strings into single lines within an ASCII file. The default setting is a line feed <10> and a carriage return <13>.

(3) Wave Sample Separator

The Wave Sample Separator separates all samples from each other. The default setting is a comma.

(4) Wave Channel Separator

The Wave Channel Separator divides each waveform from the other waveforms present in the Event. The default setting is a line feed <10> and a carriage return <13> at the end of a waveform.

(5) Histogram Column Separator

This lets you define how much space appears between histogram columns of Event information.

(6) Format Histograms Data into a Table

The histogram data can be unformatted or formatted into a table. In unformatted data, each sample appears under its record channel. Formatted data appears by sample, listed by the time it was recorded. The samples PPV and Frequency appear in columns beside each sample.

(7) Format Waveform Data into a Table

Waveform data for the Event can also be formatted into a table. If unformatted, waveform data for each channel appears in sequence, starting with Channel 1. Formatted data appears in the form of a table.

(8) Wave Data Column Width

This setting determines the width of the columns in the waveform data table. The default setting is 10.



(9) Output File Name

You can change the name of the ASCII file to a name of your choice. The default name is ASCII.txt.

WARNING: Converting multiple files without changing the output file name results in each ASCII output file overwriting the last converted file. Add a prefix or append a letter to the files to avoid this, see below.

i Fixed File Name

Use this method when converting files one at a time. You can change the name by deleting the existing name and entering a new name.

ii Prefix a letter

Use this method when converting multiple files.

Enter a letter in this text box. This letter is added to the beginning of each Blastmate Events filename and saved.

iii Append a letter

Use this method when converting multiple files.

Enter a letter in this text box. This letter is added to the ending of each Blastmate Events filename and saved.

iv Unit Serial Number and Event Date

Use this selection to save the ASCII conversion with the unit serial number and Event date as the name of the file. Below is an example of converted Event using this option:



BE6178_21_3_2003_18_51_39.txt

(10) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

- **OK**

Press this to save your settings.

- **Cancel**

Leave the Printer Setup dialog box without changing the current settings.

- **Defaults**

Changes all the settings to the default settings.

3.4 Remote Access

The Remote Access menu contains two features, Auto Call Home and Start Blastware Mail. Each of these features is also accessible via the Windows Start, Programs menu.

3.4.1 Auto Call Home

Use the Auto Call Home feature for easy, remote access to your monitor and data. Whenever an event occurs, the monitor automatically places a call to your PC and downloads event data into one central location on your hard disk drive. When the monitor is ready to call in, it switches its modem on, and dials in to your PC. When communication has been established, the PC checks the serial number of the monitor, and then executes the instructions you have set for that specific monitor. Once data has been downloaded, the PC terminates communication.



If you wish to download events from several monitors, you can stagger the call times to ensure that there is no overlap or get a multiple ComPort box and have multiple modems at the computers end. This feature also allows you to connect with up to twenty communication ports on your PC and remotely gather data from multiple vibration monitors simultaneously. You can view activity and error logs of the monitoring and data acquisition as it occurs. Whenever an event occurs, each monitor automatically calls your PC and downloads the event data into a specified directory. This information includes the unit serial number, communication port, and the date and time. This part of the Auto Call Home feature is useful when you are monitoring more than the four available communication ports on your PC.

To use this feature, you require telephone, cellular or satellite, modem connection to your Series III Blastmate or Minimate Plus monitor (with a serial number of 6000 or more), a PC equipped with a free serial port, and the Microsoft® Windows® operating system. Each communications port used on the PC must also have a modem.

Note: Once all setups for Auto Call Home are completed, it is strongly recommended that communications be checked before the unit is placed in the field. Some modem/phone combinations may require parameter changes to function properly. Refer to Chapter 6 for more information on setting up modems and communications settings.

a. Setup PC

The Setup PC command opens the Auto Call Home PC Setup dialog box, where you setup your PC for communication with remote monitors. You must tell Blastware which monitors to expect modem communications from. When the monitor phones in, the software checks the monitors serial number against the settings contained in the Auto Call Home PC Setup dialog box. If it finds a match, it executes the instructions you have specified.

To open the Auto Call Home PC Setup dialog box, select Setup PC from the Auto Call Home command under the Tools menu. Once you have made your settings, click on **OK** to save them.

The screenshot shows the 'Auto Call Home PC Setup' dialog box. It contains a table with columns for 'Remote Unit Serial No.', 'Description of Actions', and 'Edit'. The first row is populated with '1', 'BE6412', and 'Eastside Tunnel'. Below the table is a 'Sort by SN' button. A text label states 'Remote Unit Serial No. of * will match all serial numbers.' Below this is a checked checkbox 'Disconnect after being connected for' followed by a text box containing '3' and the label 'minutes (Range 1- 9999)'. At the bottom are buttons for 'Clear All', 'OK', 'Cancel', and a group box '20 Units in List' containing 'More' and 'Less' buttons.

	Remote Unit Serial No.	Description of Actions	Edit
1	BE6412	Eastside Tunnel	[Edit]
2			[Edit]
3			[Edit]
4			[Edit]
5			[Edit]

Sort by SN

Remote Unit Serial No. of * will match all serial numbers.

☒ Disconnect after being connected for 3 minutes (Range 1- 9999)

Clear All OK Cancel 20 Units in List More Less

(1) Remote Unit Serial No.

Enter the serial numbers of the Blastmate III or Minimate Plus units that you wish to use with Auto Call Home. Click on the text box and enter the serial number.

You can also create a single set of actions to be performed when any remote monitor calls in to your PC. In the first Remote Unit Serial No. field, enter the * character as the serial number. Then click on the Edit button to set the actions (see below). Blastware applies these actions to any monitor that calls in.

Note: Auto Call Home is supported by Blastmate III or Minimate Plus units with a serial number of 6000 or greater.

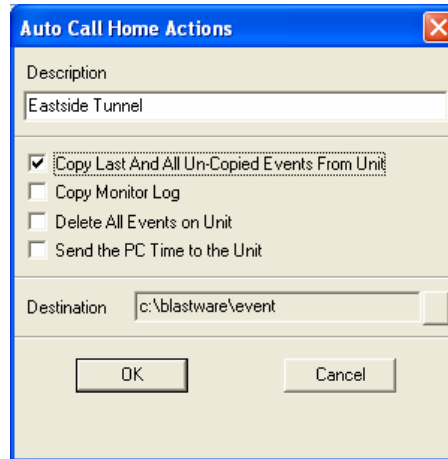


(2) Description of Actions

This area displays the description entered for the unit. The description cannot be edited here. Click on the Edit button (see below) to change your description.

(3) Edit

The Edit button invokes the Auto Call Home Actions dialog box. In this dialog box you tell Blastware what actions to perform when the monitor calls in.



i Description

Enter the description you wish to associate with this monitor. The description allows you to identify the monitor in a way that is meaningful to you. For example, you may wish to describe the monitor according to its installed location or by the project that it is monitoring. To enter a description, click on the text box and type in your description.

ii Copy Last and All Un-Copied Events From Unit

Check this checkbox to have Blastware download the most recent Event and all Events on the unit that have not yet been downloaded. The Events will be copied to the directory that you specify (see below).

To choose to download the most recent and all un-copied Events, click on the checkbox to display a checkmark.

iii Copy Monitor Log

Check this checkbox to have Blastware download the monitor log. The log will be copied to the directory that you specify (see below).

To choose to download the monitor log, click on the checkbox to display a checkmark.

iv Delete All Events on Unit

You can have Blastware delete all Events stored on the unit. Click on the checkbox to display a checkmark.

WARNING: If you select Delete All Events on Unit without also selecting Copy Last And All Un-Copied Events From Unit, you may delete Events that you have not yet copied to your PC. Once deleted, these Events cannot be recovered.

NOTE: This option is not available if the unit is set to Histogram Combo Recording Mode.



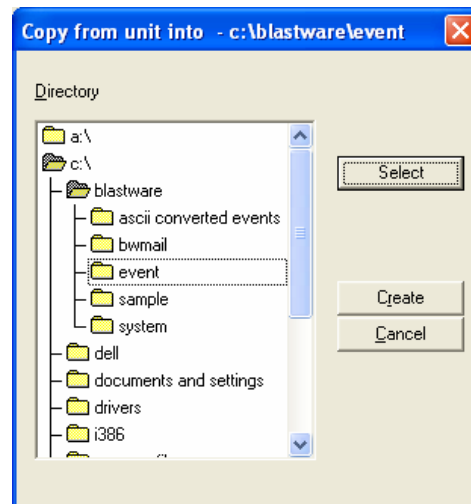
v Send the PC Time to the Unit

You can have the PC Time and Date settings sent to the unit. One second is added to the PC Time to allow for transfer delays.

NOTE: This option is not available if the unit is set to Histogram Combo Recording Mode.

vi Destination

This displays the directory where the data from the monitor will be copied. To select a directory, click on the button to the right of the description field. The following dialog box appears:



Navigate through your directories to select the destination directory. Press **Select** to make that directory the destination for downloaded Events. To create a new directory, press **Create** and enter the name of the directory in the dialog box that appears.

(4) "Disconnect after being connected for 'x' minutes (Range 1-9999)"

Check this box to have the Call Home connection automatically terminated after a certain time (1-9999 minutes). The timer starts as soon as the PC is successfully connected to the remote unit. If a Call Home connection is terminated because of this timeout a "Session timeout" entry is made in the CALLHOME.LOG.

Make sure that the timeout is long enough to allow all Events to download. For example, a 1-second 4-channel Event recorded at 1024 sps takes about 1 minute to transfer using a typical modem connection.

(5) Clear All

Press this button to clear all settings in the Auto Call Home PC Setup dialog box.

If you wish to clear the settings for only one monitor, erase the serial number. The Description field and all settings within the Call Home Setup dialog box will clear automatically.

(6) __ Units in List

This area lets you control how many monitor entries appear in the list (the minimum is five). The current number appears in the title. To add more entries, click on the More button. To remove entries, click on the Less button.

Note: Whenever you press the Less button, you will erase any settings you have made in the entry you are deleting. For example, if there are seven monitors in the list, and you press Less once, you will erase all settings for Monitor 7.



(7) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

- **OK**
Press this to save your settings and return to the Main Window.
- **Cancel**
Leave the dialog box without changing the current settings.

b. Setup Unit

The Setup Unit command opens the Call Home Setup dialog box. Enter the dial string and other settings for the remote modem, and set when the monitor will call in to your PC.

Multiple modem commands may be entered in the Call Home Dial string, the Call Home Auto Answer string or the Call Home Auto Answer Off string. Commands must be separated by the characters “\r” (backslash and a lowercase r).

The settings made in the Call Home Setup dialog box are stored directly on the unit. If you are using Auto Call Home with more than one monitor, you must set up each monitor individually.

The image shows a Windows-style dialog box titled "Call Home Setup: MiniMate Plus # BE6817". It contains several sections for configuring a remote modem connection. The "Enable Auto Call Home" checkbox is checked. The "Dial String" field contains ".+++ATDT5922368". The "Auto Answer: On" field contains ".+++ATH\rATS0=1" and the "Off" field contains ".+++ATS0=0". There are buttons for "USR Modem" and "Radio Modem". The "When to Call Home" section has two checked options: "After Event Recorded" (with a "Wait 0 Minutes" field) and "At Specified Times" (with a table for selecting hours and minutes). The "Modem Power Controlled by Relay or Remote Alarm" section has an "Enabled" checkbox checked and a "Warm Up Time 60 Sec." field. The "Communication Timeouts" section has fields for "Number of Retries" (3), "Time Between Retries" (15 Sec.), and "Wait for Connection" (60 Sec.). At the bottom are "Send" and "Close" buttons.

When to Call Home	
☒	After Event Recorded
Wait	0 Minutes
☐	Monitor while calling home
☒	At Specified Times
	Hour Min
☒	23 00
☐	00 00
☐	00 00
☐	00 00

(1) Enable Auto Call Home

Click on the checkbox to Enable Auto Call Home on the monitor currently connected to your PC.

(2) Dial String

Enter the dial string for the remote modem you intend to use with the monitor. The dial string must include the phone number for the telephone line to which your PC modem is connected. Your modem type may use a different dial string. Consult the documentation that came with your modem.



To change the string, click on the text box and enter the dial string. To insert a comma in the dial string without causing a 1 second pause, place the characters “\,” (backslash comma) into the string.

Note: The dial string for radio modems is RADIO RING.

(3) Auto Answer: On

Enter the text string the monitor sends to the modem to turn Auto Answer mode on when the modem is in data mode. The default text string has been tested on various modems from different manufacturers, and found to work adequately. However, you may wish to change the string to improve performance. Consult the documentation that came with your modem.

To change the string, click on the text box and enter the text string.

Note: The Auto Answer: On string for radio modems should be blank.

(4) Auto Answer: Off

Enter the text string the monitor sends to the modem to turn Auto Answer mode off. The default text string has been tested on various modems from different manufacturers, and found to work adequately. However, you may wish to change the string to improve performance. Consult the documentation that came with your modem.

To change the string, click on the text box and enter the text string.

Note: The Auto Answer: Off string for radio modems should be blank.

(5) When to Call Home

These settings determine when the monitor calls in to your PC to download data. If your unit is set to Histogram or Histogram Combo Recording Mode, you must schedule the unit to call home.

i After Event Recorded

To have the monitor download data after every Event, click on this checkbox to display a checkmark. The monitor will call in after the wait time you specify, as set below.

ii Wait ____ Minutes

Enter the length of time in minutes the monitor waits before calling in to your PC to download data. Click on the text box and enter the time. If you want the monitor to call in immediately after the Event, enter 0.

iii Monitor while calling home

Select this setting to ensure that the unit continues to record Events during downloading so that no Events are missed. If an Event is triggered during a download, the unit will stop the download, record the Event, and then restart downloading Events three minutes later to your PC. This function works *only* with downloads that occur right after the Event, or after the pre-set wait time. While in this mode, you are not able to set the time or delete Events.

Downloads scheduled at a specific time (see the next item) cannot be interrupted to capture an Event.

iv At Specified Times

You can have the monitor call in at the same time every day, up to four times a day, to download data. This setting is preferable for long-term monitoring as it ensures that the monitors memory is regularly cleared while preserving battery power. It is more efficient to have the unit call in only once or twice a day to download data rather than several times a day when an Event occurs.

Note: The “Monitor while calling home” function above does not work with scheduled downloads. Be sure to schedule your downloads for times when Events are unlikely to occur, to minimize the risk that an Event will be missed.



To enable downloads at specific times, click on the At Specified Times checkbox to display a checkmark. Then enter the time information in 24-hour format.

The unit will only call when it is in Monitor Mode. If the unit is set to call home when it is in Sleep Mode because the timer was set, it will not call home at that time.

(6) Modem Power Controlled by Relay or Remote Alarm

This setting enables you to conserve modem power for longer operation. The Blastmate III or Minimate Plus automatically toggles a pin on the auxiliary port that can be used to power the modem on or off as needed. The Warm Up Time is to allow the modem to initialize. Please contact InstanTel for advice on relay settings necessary to use this function.

Warning: The alarm can not be used if this feature is enabled.

(7) Communication Timeouts

This area contains information on the modem communication setup. You cannot change any of these settings. Number of Retries indicates the number of retries the monitor will make to call in if the line is busy on the first attempt. Time Between Retries is the time in seconds between these attempts. Wait for Connection is the time the monitor waits for instructions from the PC after its call has been answered; if no instructions are received within this time, the monitor terminates the connection. Serial Idle Time is the amount of time the monitor allows without any exchange with the PC before terminating the connection.

(8) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

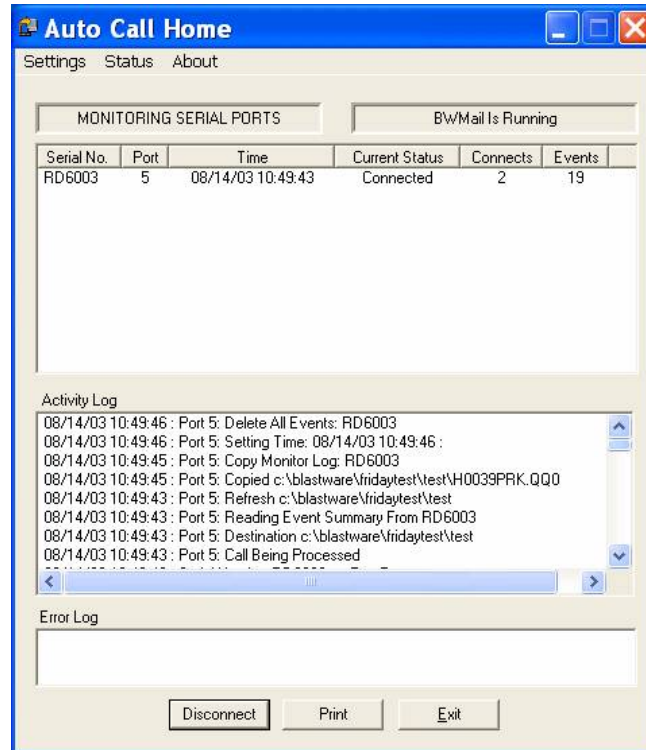
- **Send**
Press this to send your settings to the unit.
- **Close**
Leave the dialog box without changing the current settings.

c. Start

The Start command opens the Auto Call Home dialog box and allows you to monitor your serial ports. As long as the Auto Call Home dialog box remains open, your PC can receive messages. If you prefer, you may minimize the dialog box. To stop monitoring the serial ports click on **Disconnect**, or **Exit** to disconnect and return to the main Blastware window.

Refer to the figure below. Under the main menu bar, there are two message windows that indicate whether serial ports are being currently monitored, and if Blastware Mail is running or not. Within the Auto Call Home window, you can view the Serial No., Communications Port, the Time and Current Status (i.e. Connected, Disconnected), how many times the monitor has made successful connections, and the number of Events copied. Within the Activity Log you can view the status of each serial port as each unit calls home. If an error occurs during monitoring, you can view it in the Error Log window pane.

Note: Blastware Mail and Auto Call Home can not share the same communications serial port.



(1) Settings

Two selections are available under the Settings menu, CommPorts and Reports. Use these commands to setup the parameters for the Auto Call Home dialog box.

i CommPorts

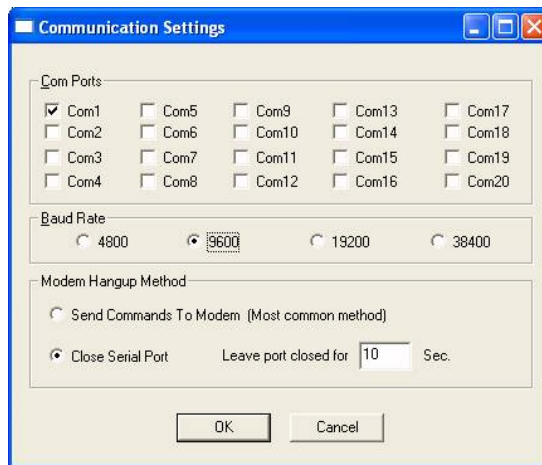
Select Settings from the main menu bar of the Auto Call Home dialog box, then click on **CommPorts** to display the **Communications Settings** dialog box. Within this dialog you can indicate which **CommPorts** you would like to monitor for activity by placing a checkmark in the box beside each port, from 1 to 20.

Place a checkmark next to the proper **Baud Rate** setting – this setting must match the setting of the communications ports you are monitoring with the Auto Call Home tool.

Select one of the two **Modem Hang up Methods**:

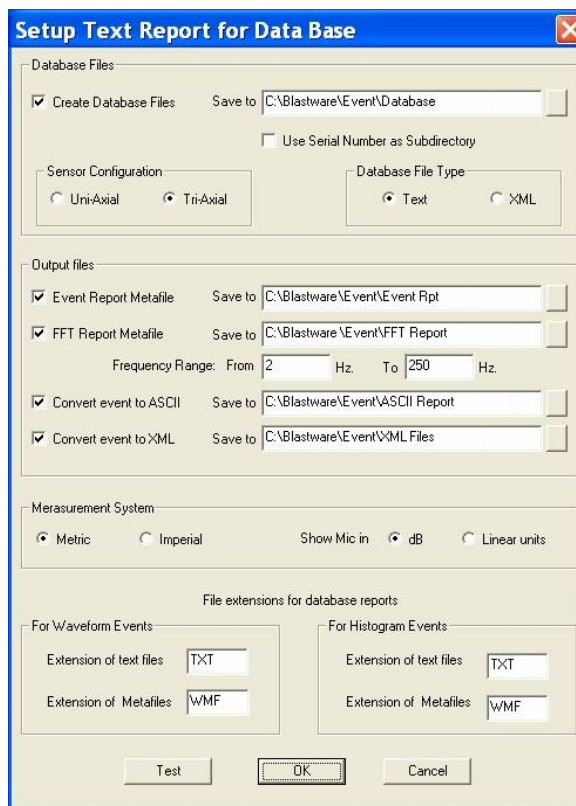
- 1) **Send Commands to Modem** – AT commands are sent to the modem to hang up, or
- 2) **Close Serial Port** – Some modems will not respond to the AT hang up command and require the serial port be closed to trigger a hang up. The port is closed for the specified number of seconds before it is opened again. While the port is closed it is not being checked for units calling home.

Select **OK** to accept the changes, or **Cancel** to ignore the changes and return to the Auto Call Home dialog box.



ii Reports

Select Settings from the main menu bar of the Auto Call Home dialog box, then click on **Reports** to display the **Setup Text Report for Data Base** dialog box:



- **Create Database Files**

If you would like to generate file copies of your reports, select **Create Database Files**. If it is an 8-channel Event that is being sent to a database file, two separate files, 4 channels each, is created.

File Naming Convention Example:

Event Name H0029YO8_CC0.txt



Database File Name	H0029YO8_CC0.txt or H0029YO8.xml
Event Report File	H0029YO8_CC0_1_4.wmf (4-channel example) H0029YO8_CC0_5_8.wmf (8-channel example)
FFT Report File	H0029YO8_CC0_FFT1_4.wmf (4-channel example) H0029YO8_CC0_FFT5_8.wmf (8-channel example)
ASCII Export	H0029YO8_CC0_ASCII.txt or H0029YOB_CC0_XML.xml

- **Save to**

Use the **Save to** text box to indicate the directory and folder in which you want the files to be saved, or select the “...” tab to browse and create directories on your PC.

To automatically save files into a folder that is automatically created using the serial number of the unit, place a checkmark in the **Use Serial Number as a Subdirectory** box.

- **Sensor Configuration**

Select your **Sensor Configuration** by either selecting the radio button next to **Uni-Axial** or **Tri-Axial**.

- **Database File Type**

Indicate what file type you would like to have the database files saved as, by either selecting the radio button next to **Text** or **XML**.

- **Output Files**

In this section of the dialog, you can select which file types you want to create, and also the directory path where you want to save each file type. Use the **Save to** text box and  to indicate a directory path for the saved files.

- a) **Event Report Metafile**

This feature is only available if the **Tri-Axial** format has been selected. Selecting **Event Report Metafile** will save the file in a graphic (.wmf) format.

- b) **FFT Report Metafile**

This feature is only available if the **Tri-Axial** format has been selected. Selecting **FFT Report Metafile** will save the file in a graphic (.wmf) format.

- c) **Frequency Range**

This feature is only available if the **Tri-Axial** format has been selected. Enter the **Frequency Range** you would like to include within your reports by inputting the range in the **To** and **From** boxes.

- d) **Convert Event to ASCII**

This feature is only available if the **Tri-Axial** format has been selected.

- e) **Convert Event to XML**

This feature is only available if the **Tri-Axial** format has been selected.

- **Measurement System**

Select the unit type that you would like to have the reports created in by either selecting **Metric** or **Imperial**. Select the unit which the microphone reading was created with, **dB** or **pa**.

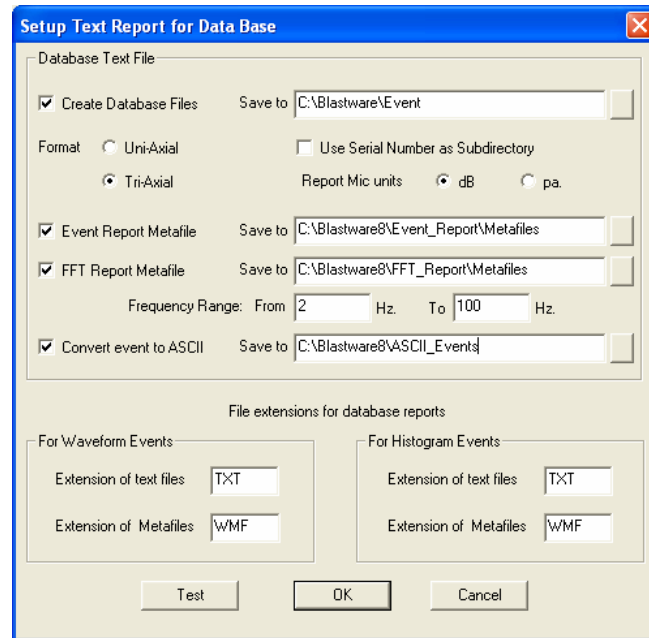
- **File extensions for database reports**

Under **File extensions for database reports** you can alter the file extension for either the database or metafile. Place your cursor in the box related to the extension you would like to



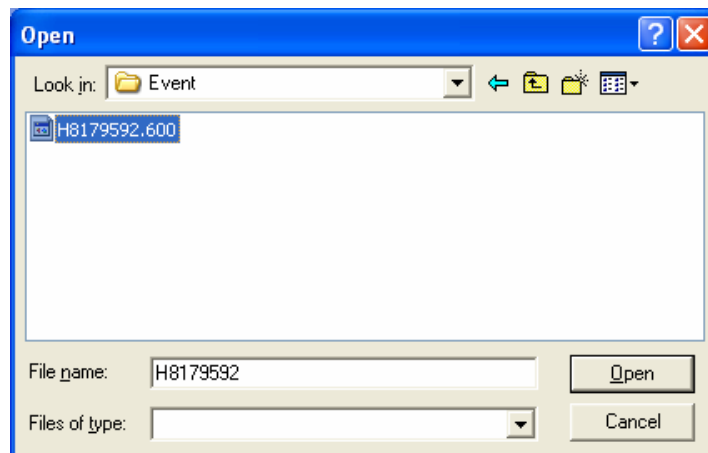
change under **For Waveform Events** or **For Histogram Events**, highlight the existing default text, and replace with an optional file extension name (i.e. JPG, TIF, BMP).

Warning: Use this with caution, as some programs will not be able to open the file if an improper extension is used.



- **Test**

You can test the file extension, to ensure that Windows recognizes the file type and that you are able to open the file with either a word processing or graphics program, by clicking on the **Test** button. When you click on the Test button, the following dialog appears:





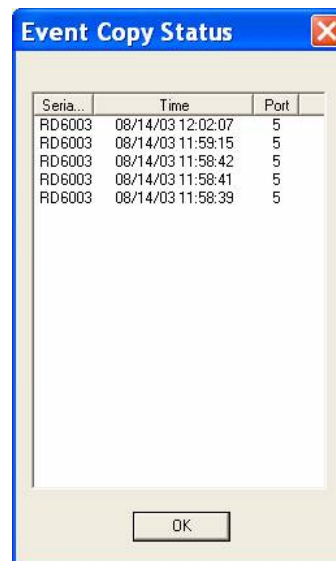
- **Open**
Highlight an existing event and select Open. The files will be written to the specified directory with the file extensions that you have input. Use the Windows File Explorer program to locate the files, and ensure that you can open them.
- **Cancel**
Click on Cancel to abort the test.

(2) Status

Select the **Status** to access the Event Copy status function.

i Event Copy

Click on **Event Copy** to access the Event Copy Status dialog box. This window displays the status of each communications Port, the Serial Number of the unit associated with that Port, and the time and date of each connection.



(3) Button Commands

i Disconnect

Use **Connect** to start the monitoring session of the currently active communications port.

ii Connect

Use **Disconnect** to end the monitoring session of the currently active communications port.

iii Print

Select **Print** to print out the Activity Log.

iv Exit

Select **Exit** to cancel the Auto Call Home session and return to the Blastware main window.

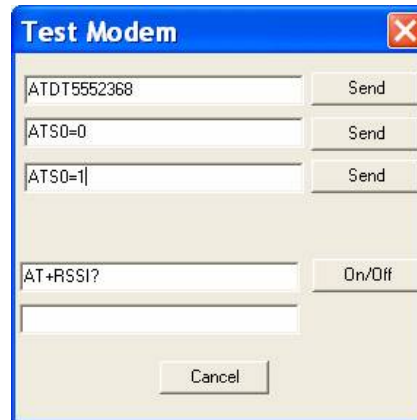
d. Test Modem

This feature is provided to enable you to further test the modem you are using with the remote monitor. Enter a text string of modem commands, and Blastware writes it to the serial port. You



can then evaluate the modems operation. If you require a more advanced testing tool, use a program such as HyperTerminal, supplied with the Windows operating system.

To access the Modem Test dialog box, select **Test Modem** from the Auto Call Home command in the Tools Menu.



Example test strings to send to the modem:

ATDT5552368	Dial Jim Rockford's home phone
ATS0=0	Auto answer off
ATS0=1	Auto answer on first ring
AT+RSSI?	Test the signal strength of a GSM phone

(1) Test text box

Enter the text string you wish to send to the serial port.

(2) Send Buttons

Click on Send to send the text string to the serial port.

(3) On/Off

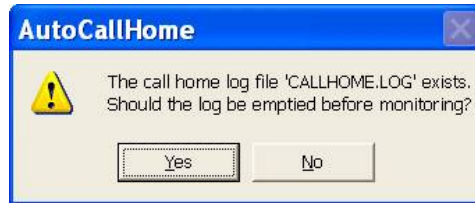
This setting allows you to send a command repeatedly to the modem, and check the response. Enter the command in the upper text box, and click the On/Off button. The button will change to Stop. The response from the modem appears in the lower text box. Click Stop to end the procedure.

(4) Cancel

Click Cancel to close the Modem Test dialog box and return to the Main Window.

e. Call Home Log

Every time you use Auto Call Home to receive data from a remote monitor, a log of the session is created. The log includes such information as a "Session Timeout" entry if a Call Home connection is terminated from exceeding your "Disconnect after being connected for 'x' minutes" setting. The log file, entitled CALLHOME.LOG, is stored in the directory containing the Blastware executable file (Blastware.exe), and can be printed or edited using a text editor such as Microsoft Notepad. When you select the **Connect** command in Auto Call Home, the following warning message appears asking you whether you wish to clear the data currently stored in the Call Home Log:



If you do not wish to save the current data, click Yes. The contents of the log will be deleted. If you would like to keep the information currently in the log, click No. The information for the current session will be added to the log.

3.4.2 Blastware Mail

Use Blastware Mail™ for automatic distribution of data to a wide variety of devices, such as cellular phones, pagers, PDAs and PCs. This is a separate application that works together with the Blastware software, Auto Call Home, and your internet connection. After events are automatically downloaded to your PC using the Auto Call Home, Blastware Mail automatically sends the results to the e-mail addresses and text-messaging-capable cellular/GSM phones you have specified. BW Mail allows you to create “accounts” in the Edit Mail Delivery dialog box that specify what information will be sent to which email addresses — the entire event file, or selected data for each channel. You can also send different information to different recipients, and choose to time-delay distribution. Cell phone users automatically receive peak information for each channel.

A Blastmate III or Minimate Plus is placed in the field with a telephone and modem connection. Events are automatically downloaded to your PC using the Auto Call Home feature of Blastware. Then Blastware Mail automatically sends the results to the specified email addresses.



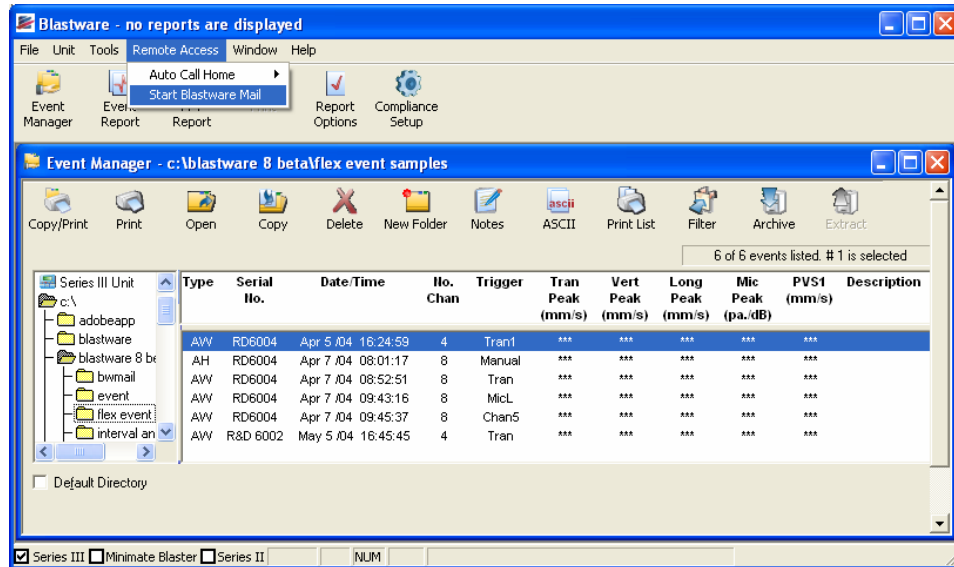
If a cellular network is being used to transmit data, the modems must be compatible with that network. For example, if you are using an analog (AMPS, or Advanced Mobile Phone System) cellular phone network, the modems must be MNP10EC compatible. The MNP10EC (Microcom Networking Protocol – Class 10 Enhanced Cellular) protocol means that the modem has the ability to adjust packet size, data rate, and transmission levels in response to an inadequate or fluctuating communication line. *Both the sending and receiving modems on an analog network must have the MNP10EC protocol capability. Also, ensure that you have proper cellular coverage.*

3.4.3 Starting Blastware Mail

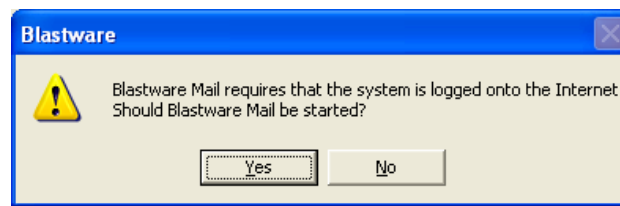
Blastware Mail can be accessed from within Blastware, or from the Windows Start button.

From Blastware

Click on the **Remote Access** menu, and then select **Start Blastware Mail**.



The following dialog box appears, prompting you to check that your internet service is running. Click **Yes** to start Blastware Mail.



Note: This dialog box will also appear if you have started Auto Call Home without first opening Blastware Mail. If you do not intend to use Blastware Mail for the Auto Call Home session, just click **No**. If you would like to open Blastware Mail, click **Yes**.

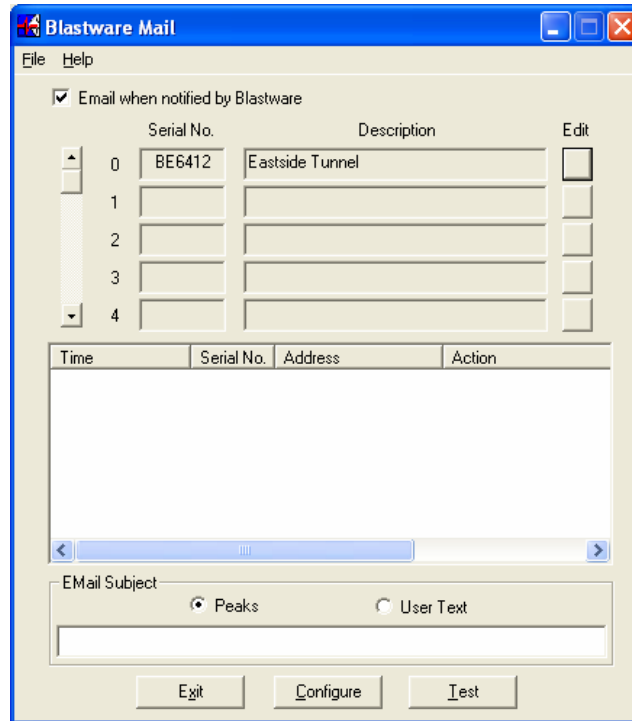
From the Windows Start Button

When accessing Blastware Mail from the Windows Start button, click on Programs, then find the Blastware folder. Within this folder is the Blastware Mail icon; click on this icon to launch Blastware Mail.

3.5 Blastware Mail Main Window

The main window provides an overview of current settings in Blastware Mail. To create or change your Blastware Mail accounts, click on the Edit button for that account.

Warning: In order to e-mail Event data from a remote monitor, Blastware Mail, and your Internet connection, must be open. In addition, you must also have selected the Start command for Auto Call Home.



a. File

This selection provides access to Configure, Test Email and Exit. See below for more information on these settings.

b. Help

This selection provides access to About Blastware, which displays the software version number and copyright information.

c. Email when notified by Blastware

Select this command to enable the sending of e-mail from within the Blastware Event Manager. The Mail button will appear directly under the Default Directory checkmark box in the Event Manager. See Sending E-Mail from the Event Manager below for more information on this feature.

d. Serial Number

This field displays the monitor serial numbers for the Blastware Mail account. To enter or change a serial number, click on the Edit button (see Editing Mail Delivery below for details). The character “*” indicates that results from any monitor will be forwarded as e-mail. The dialog box can only display five entries at a time: use the scrollbar to move up or down the list.

e. Description

This displays the description for the account, as entered in the Edit Mail Delivery dialog box. This entry cannot be edited here. Click on the Edit button to enter or change the description (see Editing Mail Delivery below for details).

f. Edit

Within the dialog box accessed from this button, you can define which information will be sent to an e-mail address — the entire Event file, or selected data for each channel. You can send different information to different recipients, and choose to time-delay distribution. Cell phone



users can automatically receive peak velocity or acceleration information for each channel (see Editing Mail Delivery below for details).

To create a new Blastware Mail account, click on the Edit button of a blank entry.

g. Time, Serial No., Address, and Action message window

This shows the results of each Blastware Mail session based on the settings that you have made within the Edit Mail Delivery dialog box. This log is refreshed with each new Blastware Mail session.

h. Email Subject

Define what will be in the subject area of the e-mail by selecting one of the following options:

(1) Peaks

The Peaks command displays the Unit Serial Number, Transverse (Tran), Vertical (Vert) and Longitudinal (Long) Peak information. The Mic, Date, and Time are also included. The following is an example of the information that would be shown in the subject line of an e-mail when Peaks is selected:

BE6412 T:5.59 mm/s V:13.2 mm/s L:2.79 mm/s Mic:4.25 pa.(L), Nov 24 /00 2:55:55 PM

(2) User Text

Input your own text message, up to 85 characters, that you would like to appear in the subject line of the e-mail(s).

i. Exit

Exit Blastware Mail.

j. Configure

The information required to complete the configuration settings can be located within your Windows Internet connection and email program configuration settings, or by contacting your Internet service provider.

(1) Sender

Input your personal information and Internet connection requirements in this area

**i From Name**

Insert the name of the person (or project) which you would like the recipient to see in the “From” field of the email message.

ii From Address

Enter your e-mail address.

iii Authentication Method

Use the drop down menu and select the proper **Authentication Method** required by your Internet service provider. SMTP authentication is a system where some sort of authentication, such as providing a user name and password, is carried out during the sending of an email message for security purposes.

Setting up SMTP authentication is something that you would typically do when initially configuring your e-mail software - most current e-mail client software is capable of authentication, and most Internet service providers require that you use this feature.

There are several different mechanisms available for authentication; many use plain text passwords, while more complex ones use security technology similar to encryption.

Blastware supports the **AUTH LOGIN**, **LOGIN PLAIN**, and **CRAM-MD5**, authentication protocols.

(2) Blind Carbon Copy

A copy of the message that you send will not be kept in your Sent folder; for a record, use Blind Carbon Copy to ensure that a message is sent to you, and to other individuals.

i Bcc Address

Place your cursor in the text box next to **Address**, and type the email address of the recipients you would like to receive a copy of the Event information; addresses input into this text field will not be visible to the recipients that you specify in the Edit Email Delivery dialog. Use a semi-colon with a space to separate each e-mail address

Example: consultant@consultant.com; customer@customer.com

(3) Server

This is the Domain Name System (DNS) server number of your Internet Service Provider.

i Host Name / Address

Place your cursor in the text box next to Host Name/Address and type in the number of the Internet Service providers server.

(4) OK

Click on **OK** to accept the information that you have input in the Configuration dialog box.

(5) Cancel

Click on **Cancel** to exit the Configuration dialog without accepting the information you have input.

k. Test Email

You are able to test your e-mail system by selecting the Test Email button.

Enter the e-mail address of the recipient in the Address field – you are able to send e-mail to yourself. If desired, you can also enter a Subject and a brief Message. Click the Send button to send the e-mail. If you have sent the e-mail to your own address, you will receive the message in your in box.



The 'Test Email' dialog box is used to configure and send a test email. It contains the following fields and controls:

- Configuration:**
 - From Address: consultant@consultant.com
 - SMTP Server: 123.22.333.01
 - Bcc Address: customer@location.com
- Send Test E-mail:**
 - To Address: consultant@consultant.com
 - Subject of E-mail: BE6178 T:1.65 mm/s V:10.8 mm/s L:2.92 mm/s T:0.381 mm/
 - Body of E-mail: (Empty text area)
- Progress:** (Progress bar)
- Buttons:** Exit, E-mail

If Blastware Mail is not able to establish a connection and send the e-mail, an error will appear – double check all entries in the **Configure** dialog box to ensure a proper connection.

3.6 Editing Mail Delivery

The Edit Mail Delivery dialog box is used to create Blastware Mail accounts that specify what information from which monitors will be sent to which e-mail addresses. Click on the **Edit** button located in the main Blastware Mail window, and the following dialog will appear:

The 'Edit Mail Delivery' dialog box is used to create Blastware Mail accounts. It contains the following fields and controls:

- Remote Unit Serial Numbers:** (List box with up/down arrows)
 - * will match all serial numbers
- Description used in Blastware Mail main screen:** (Text field)
- E-mail Address:** (List of 5 email address fields, each with a checkbox)
- Peak Filter:** (List of 5 checkboxes)
- Monitors:** (Grid of checkboxes for various monitors: Peak, Accel, Disp, Mic, Freq, PVS, PPV Cell Phone Page, Accel Cell Phone Page, PVS Cell Phone Page, Attach Event, Delay (minutes))
- Time:** (List of 5 date/time fields, each with a checkbox)
- Buttons:** OK, Cancel, Delete All

a. Remote Unit Serial Numbers

Type in the monitor serial number(s), or enter “*” to include all units.

b. Description

Enter a description for the Blastware Mail account. This entry will be displayed in the main Blastware Mail window.

c. Email Address

Click on the checkbox to activate the e-mail field, and then enter the e-mail address of the recipient. Enter only one address per field.



d. Peak Filter

Select this option to filter unwanted Events; specified Event information will only be sent if the Peak Particle Velocity of any of the three Geophone channels exceeds the number in this Peak Filter field. Example: by entering a value of 2, Blastware Mail will only send Events with a Peak Particle Velocity that exceeds 2 mm/s or 2 in/s, depending on the units of measure selected on the monitor.

e. Peak

Select this option to have the Peak Particle Velocity for the Transverse, Vertical and Longitudinal channels sent to the specified e-mail address.

f. Accel (Acceleration)

Select this field to send the peak acceleration value of each channel.

g. Disp (Displacement)

This sends the Peak Displacement of each channel.

h. Mic (Microphone)

Sends the Microphone channels peak sound pressure. The units of measure displayed will be those selected on the unit: decibels (dB), Pascal [pa. (L)], or pounds per square inch (psi).

i. Freq (Frequency)

This selection provides the Frequency of each Peak in the waveform.

j. PPV Cell Phone Page

Cell phone users can automatically receive the subject of the Event (e.g. BE6412 Nov 24 /00 2:55:55 PM), and the Transverse (Tran), Vertical (Vert) and Longitudinal (Long) Peak information for each channel. The Microphone channels peak sound pressure is also included.

k. Accel Cell Phone Page

Cell phone users can automatically receive the subject of the Event (e.g. BE6412 Nov 24 /00 2:55:55 PM), and the Peak Acceleration of each channel. The Transverse (Tran), Vertical (Vert) and Longitudinal (Long) Peak information for each channel, and the Microphone channels peak sound pressure is also included.

l. PVS Cell Phone Page

Cell phone users can automatically receive the subject of the Event (e.g. BE6412 Nov 24 /00 2:55:55 PM), and the Peak Vector Sum (PVS) of each channel. The Transverse (Tran), Vertical (Vert) and Longitudinal (Long) Peak information for each channel, and the Microphone channels peak sound pressure is also included.

m. Attach Event

Attaches the entire Event to an email.

n. Delay (minutes)

Select this setting if you wish to have e-mail sent from the unit a specified period after each Event. Enter a delay time in minutes.

o. Date

Use this setting to specify a specific date for the unit to send e-mail. Make sure that Blastware, your and Internet connection is open, at the date specified.

p. Cancel

Returns you to the Blastware Mail main window, without retaining any of the changes that you have made.



q. Delete All

Clears all addresses and settings.

3.7 Example Setup

Below is an example of how to setup your computer to download Events from a remote monitor and distribute them as e-mail. There are three steps to complete.

Step 1: Create an account in Blastware mail.

Click on the Edit button, and enter the monitor serial number, recipient e-mail addresses and other information in the Edit Mail Delivery dialog box. Your settings should appear similar to the following:

	E-mail Address	Peak Filter	Peak	Accel	Disp	Mic	Freq	PVS	PPV Cell Phone Page	Accel Cell Phone Page	PVS Cell Phone Page	Attach Event	Delay (minutes)	Time
☒	1 consultant@site1.com	☒	0	☒	☒	☒	☒	☒	☒	☒	☒	☒	0	3:40:43 PM
☒	2 consultant@site2.com	☒	0	☒	☒	☒	☒	☒	☒	☒	☒	☒	2	3:40:43 PM
☒	3 projectmanager@work.com	☒	0	☐	☐	☐	☐	☐	☒	☐	☐	☐	0	1:00:00 PM
☒	4 regulations@office.com	☒	0	☒	☒	☒	☒	☒	☐	☐	☐	☐	0	3:00:00 PM
☐	5	☐	0	☐	☐	☐	☐	☐	☐	☐	☐	☐	0	3:40:43 PM

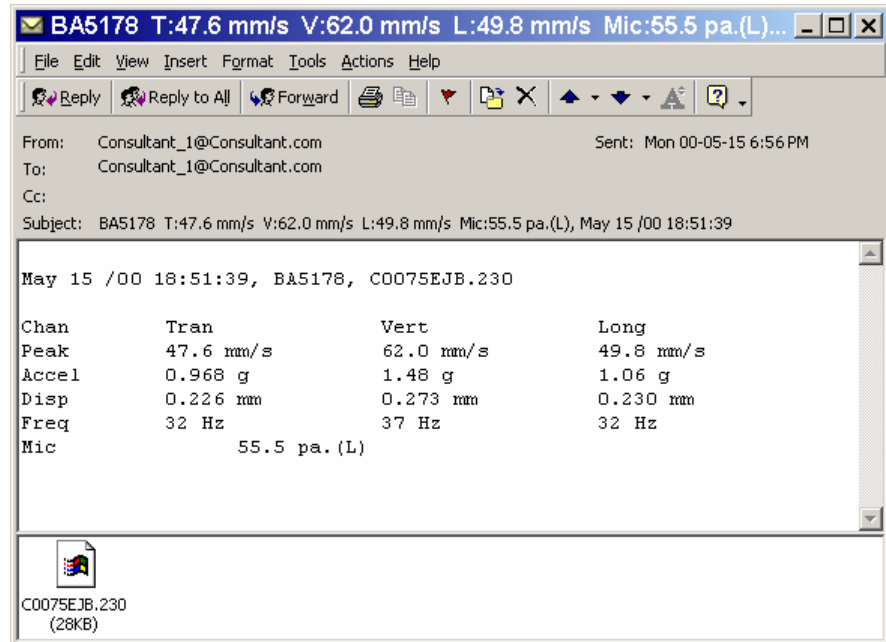
Step 2: Open your Internet connection and email software

Make sure that your e-mail software is open and that you are connected to the Internet.

Step 3: Start Auto Call Home

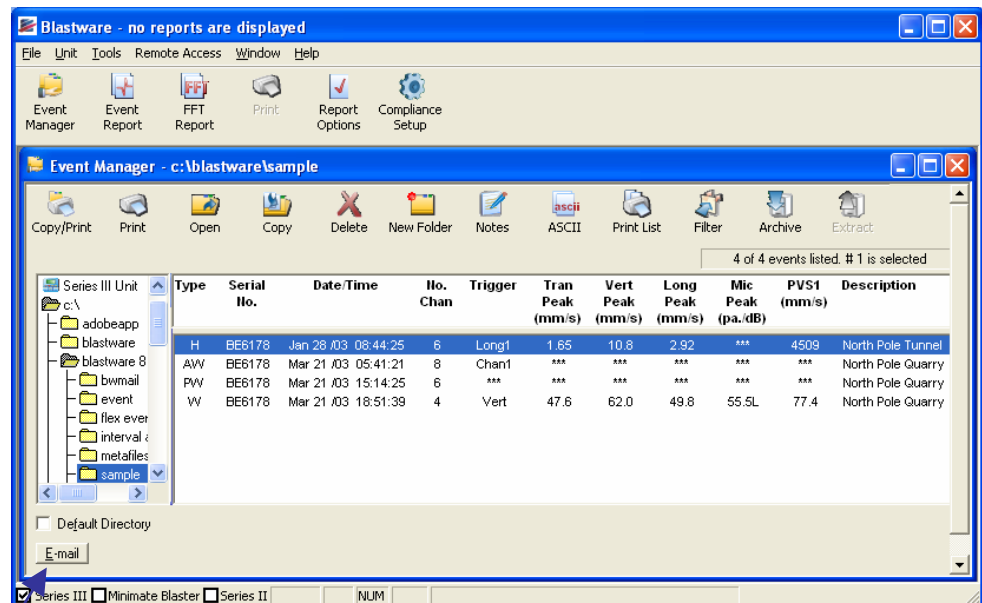
From the Tools Menu in Blastware, go to Auto Call Home and select Start. In order to download Events, you must have setup the remote monitor along with its modem.

Your PC is now setup to distribute Event data as e-mail. Remember, **Blastware Mail, Auto Call Home, the e-mail program, and your Internet connection must remain open.** Below is a sample e-mail file of what Consultant@site1.com would receive, including the Event attached as a file (this file can be copied to the hard drive and opened in Blastware and analyzed). "Peaks" was selected for the "Email Subject."



3.8 Sending E-mail from the Event Manager

Once you have launched Blastware Mail, you can also e-mail Events directly from the Event Manager, provided that you have setup an account that includes the units serial number (please see Editing Mail Delivery above for details). As the example below shows, a Mail button appears directly below the Default Directory check box in the Event Manager.



Access Blastware Mail by clicking on this icon.

To send an Event, simply select it in the Event Manager, and then click the Mail button.



3.9 Windows Menu

Control the layout of opened windows, or control which types of reports you want to view, from within the Blastware program by using the commands under the Windows menu.

3.9.1 Cascade

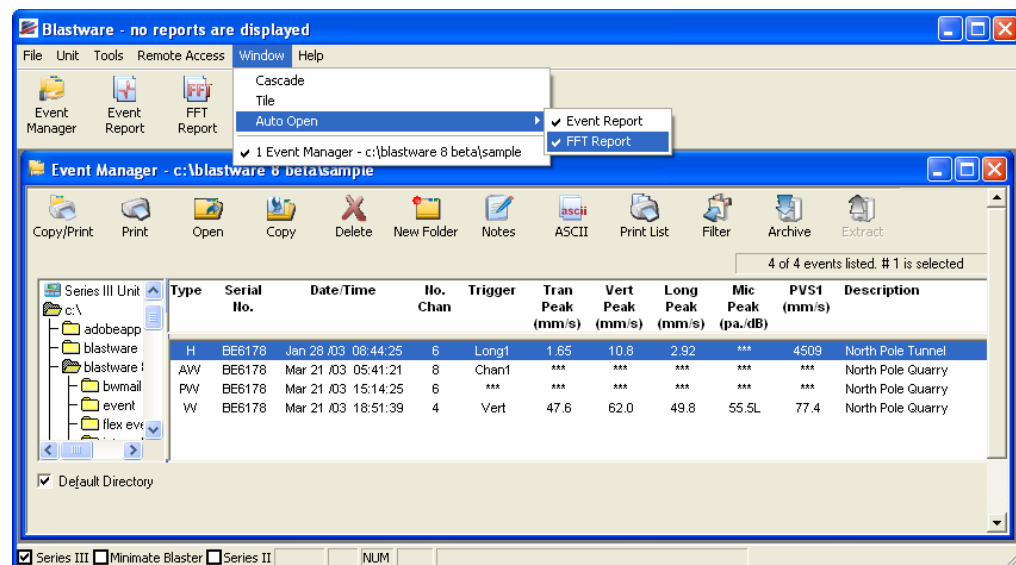
Click on the **Cascade** command to align your windows in a layered, overlapping arrangement, with the most current window residing on top.

3.9.2 Tile

Click on the **Tile** command to align your windows from top to bottom, but not overlapping, with the most current window at the top.

3.9.3 Auto Open

Use Auto Open to indicate which reports you want displayed when you double click on an event in the Event Manager. Blastware will open the associated Event and/or FFT Reports that were pre-selected under the Main Menu, Window, Auto Open list.



Double click on the Event for which you would like to view the associated Event and FFT Reports. Each Report is generated in a new window.

From the bottom of the Windows menu, you can toggle between opened reports and the Event Manager by highlighting and clicking on the desired item.

3.10 Help Menu

The Help Menu provides on-line help information, System Information about your computer, information about the Blastware program, and the latest Readme file. The Readme file contains important information about changes or enhancements that were made to the software since the previous version.



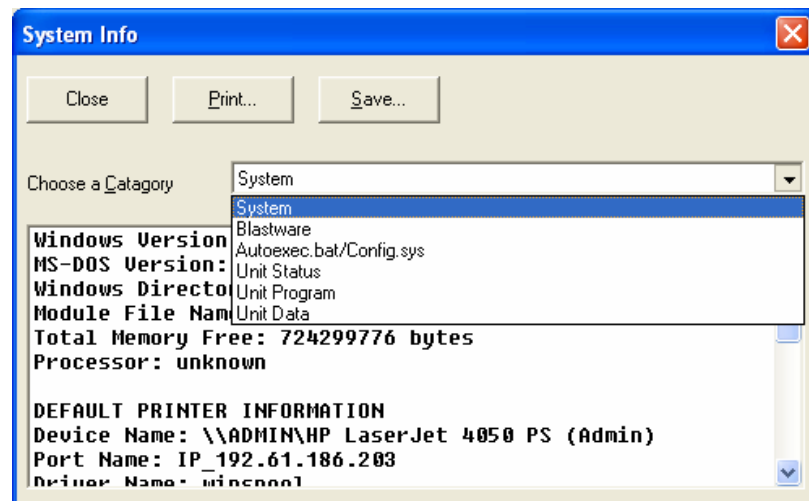
3.10.1 Help

Blastware offers an extensive on-line help information system. You can access the system by choosing this menu item or by pressing the **F1** key when the Event Manager or any dialog box or window is open. The Blastware Help Window appears.

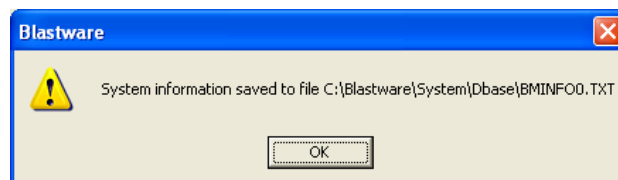
3.10.2 System Info

The System Info dialog provides specific information about your computer and the software it is using. This information is used by Instantel Service Technicians when diagnosing computer problems.

To help in diagnosing your software or unit, an Instantel Service Technician may ask you to select a specific category from the drop down menu:



After selecting the appropriate category, print the information by clicking on the **Print** button. Click on the **Save** button to save the information, click on the **Save** button. The information is saved to a text file called BMINFO0.TXT located in a default directory, as shown below:



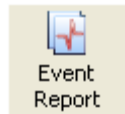
3.11 Blastware Main Menu Icon Toolbar

The command buttons on the Blastware Main Menu Icon Toolbar are used to execute the most often used operations.



3.11.1 Event Manager

If you have an Event or FFT Report open, you can access the Event Manager by clicking on the **Event Manager** command in the Blastware Main Menu Icon Toolbar. This will bring the Event Manager to the forefront. Or, if you have closed the Event Manager, clicking on this menu selection will reopen the Event Manager window.



3.11.2 Event Report

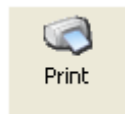
You can view an Event Report by selecting the event and clicking on the **Event Report** icon located in the toolbar. These reports can also be accessed by pre-selecting them under the **Window** menu, then **Auto Open** – select the reports you would like to view automatically by highlighting them with a check mark. The default is both reports. To automatically view reports using the Auto Open selections, double click your left mouse button on the desired event, and the reports will be created in a new window based on the settings you have defined within File menu, Report Options dialog.



3.11.3 FFT Report

You can view an FFT Report by selecting the event and clicking on the **FFT Report** icon located in the toolbar. These reports can also be accessed by pre-selecting them under the **Window** menu, then **Auto Open** – select the reports you would like to view automatically by highlighting them with a check mark. The default is both reports. To automatically view reports using the Auto Open selections, double click your left mouse button on the desired event, and the reports will be created in a new window based on the settings you have defined within File menu, Report Options dialog.

The FFT Report includes a frequency range of 2 – 250 Hz. The parameters for this report are set in Report Options.



3.11.4 Print

Print the currently opened report by clicking on the **Print** icon located in the toolbar.



3.11.5 Report Options

Refer to Section 3.1.2 for a full description of the Report Options command.



3.11.6 Compliance Setup

Refer to Section 3.2.2 for a full description of the Compliance Setup command.

3.12 Event Manager Icon Toolbar

The command buttons on the Event Manager window are used to execute the most often used operations. First you select the Events. To select a single Event, simply click on it with the left mouse button once. To select multiple Events, click on the first Event in a group. Hold the **Shift** key down, and click on the last Event in the group. The entire group is highlighted. To select multiple Events that do not appear in order within the Event List, click on the first Event. Press



and hold the **Control (Ctrl)** key down while clicking on the remaining Events. To de-select the Events, click anywhere on the Event List.

3.12.1 **Copy/Print**

This copies or prints all the Events on the unit. Right-clicking on the **Copy/Print** icon displays the following dialog box:

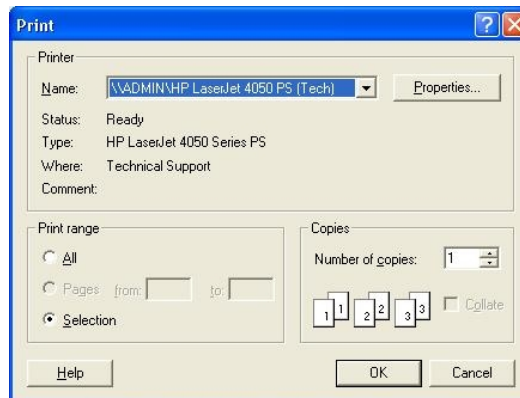


In this example, all Events and the Monitor Log will be copied to the default C:\BLASTWARE\EVENT\ folder and then show the Windows Printer Dialog box.

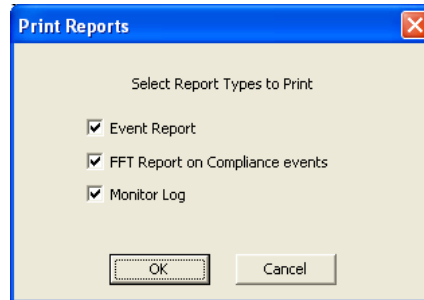
Additional information about viewing the Monitor Log is provided under **Report Options** and the **Monitor Log** command. Refer to the Index.

3.12.2 **Print**

Use this command to print the Event Reports. To print all Events, press the **Print** button. To print selected Events, select the Events and then press the **Print** button. The Print dialog box appears. To print an Event on the monitor, you must first copy it to the computer hard disk, or display the Event Summary Report by double-clicking on the Event (this automatically copies the Event to your default destination directory on your hard disk).



Under **Print Range**, click on **All** to print all Events or click on **Selection** to print the Events you have selected. To change settings for your printer, click on the **Properties** button. Press the **OK** button and the following dialog will appear:



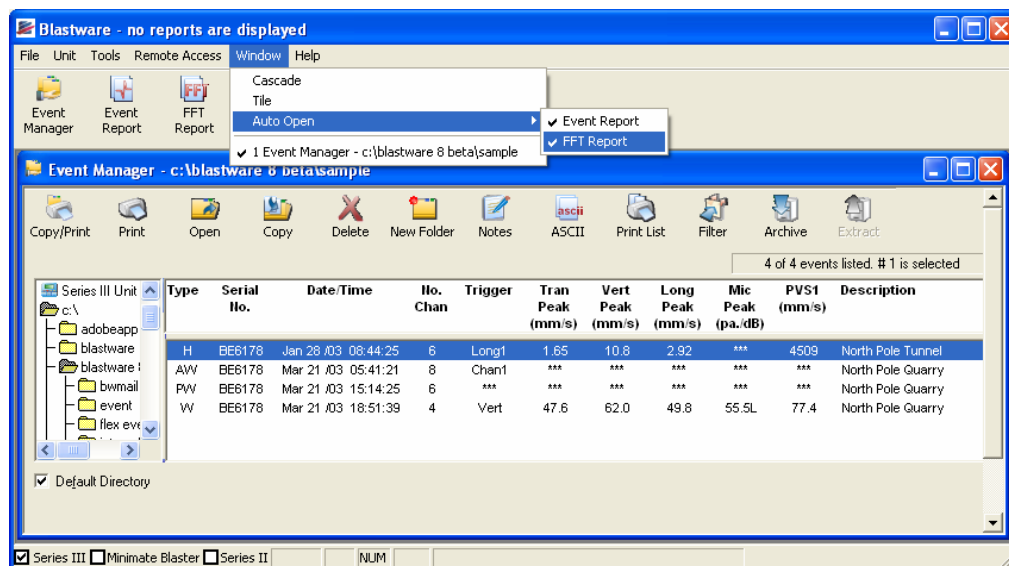
Select which report types that you would like to print for the series of Events that you have selected. You may also print the Monitor Log. Select **OK** to proceed with printing.

3.12.3 Open

Select an Event and click on the **Open** icon – Blastware will open the associate Event and/or FFT Reports that were pre-selected under the Main Menu, Window, Auto Open list.

Example:

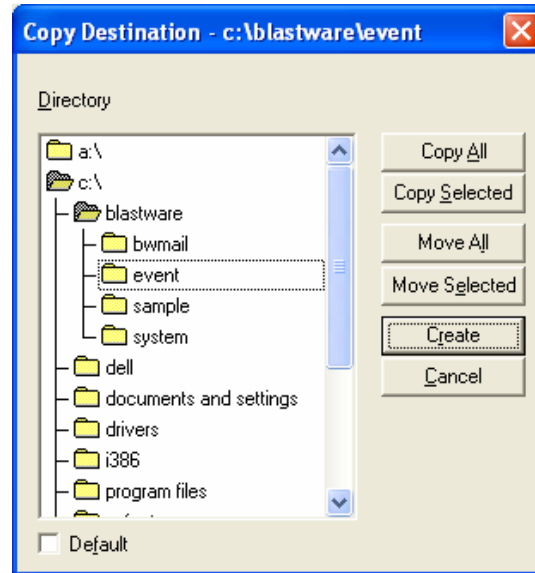
Select the Event you would like to view and right-click once to highlight it – reports for only one Event can be opened at a time. Select the types of Reports you would like to view for an Event. The selections are toggled on and off by clicking on the menu item. If a check mark is present, then the selected Report will be generated in a new window.



Double click on the Event for which you would like to view the associated Event and FFT Reports. Each Report is generated in a new window.

3.12.4 Copy

The **Copy** button copies Events. Press the copy button to display the Copy Destination dialog box. Click on the Default checkbox to designate a default directory to copy Events to.



a. Copy All

To copy all the Events in the Event List box, press the **Copy All** button. The Events, along with the monitor log (for Blastmate III and Minimate Plus) are copied to the destination directory indicated in the title bar of the Copy Destination dialog box.

b. Copy Selected

This copies only the Events you have selected from the Event List box. To select Events, click on the required Events. Each chosen Event is highlighted. Press the **Copy Selected** button.

c. Move All

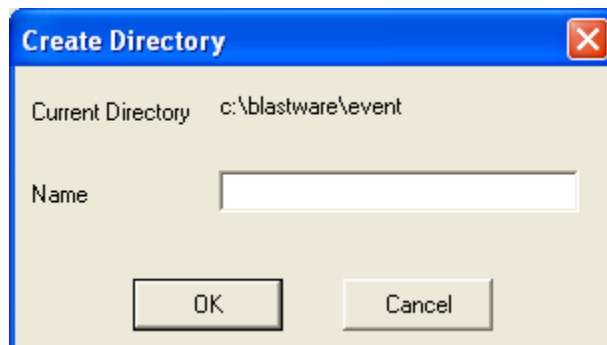
To move all the Events in the Event List box, press the **Move All** button. The Events, along with the monitor log (for Blastmate III and Minimate Plus) are moved to the destination directory indicated in the title bar of the Move Destination dialog box.

d. Copy Selected

This moves only the Events you have selected from the Event List box. To select Events, click on the required Events. Each chosen Event is highlighted. Press the **Move Selected** button.

e. Create

Choose this to create a new directory in the Event subdirectory. Press the **Create** button. The following dialog box appears.



Enter the name of the directory you want created and press **OK**.



f. Cancel

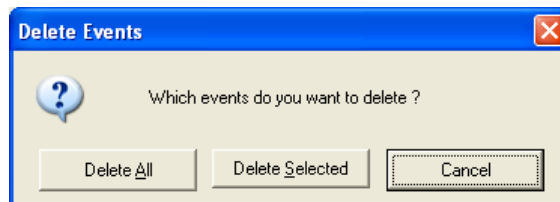
Returns to the Event Manager without changing the current settings



3.12.5 Delete

The **Delete** button deletes Events from either your computer or a monitor. On the computer, you can delete all Events or select some Events to delete. On the monitor, you can delete all Events only.

To delete Events, go to the directory containing the Events you wish to delete. If you wish to delete only certain Events, first highlight them in the Event List window. Press the **Delete** button to invoke the Delete Events dialog box. To delete only the Events you have selected, press the **Delete Selected** button. Press the **Delete All** button to delete all Events in the directory.



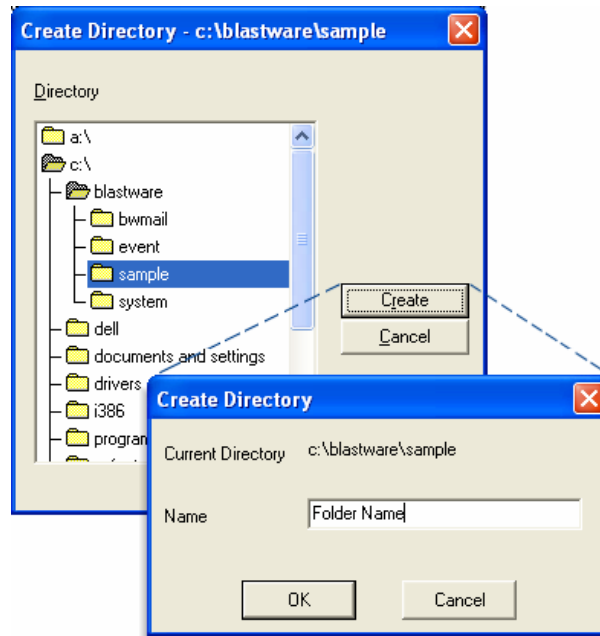
WARNING: Events deleted from the monitor cannot be recovered. Be sure to protect your Events by either printing them first to obtain a paper record or uploading the Events to a computer. If you delete Events on your computer by mistake, go to your Recycle Bin, located on the Windows® Desktop, and Restore the deleted Events.

To view restored files, you must click on a different folder within the Directory List window, then return to the folder from which the files were deleted, and then restored. This will refresh the folder so that you can view the restored files.



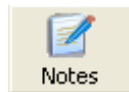
3.12.6 New Folder

When the **New Folder** icon is selected, a dialog box appears, **Create Directory**. Select an existing folder or hard drive letter that you would like to create the new folder under, then click on **Create**.



Input a file name of up to 119 characters. Special characters, \ / : * ? " < > |, are not allowed as part of a file name. If any of these special character are input, or if the file name exceeds 119 characters, you will not be able to click on **OK** to create the directory and exit the dialog – a warning message for the file name length will be shown.

Use the Windows Explorer to edit, delete, copy, or rename folders created within Blastware.

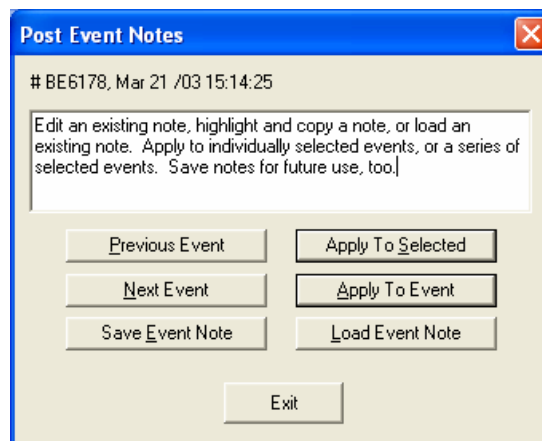


3.12.7 Notes

Select this command to view and change the Post Event Notes for an Event.

Editing notes for one Event only

To create or edit the note of a specific Event, select it in the Event List Box, and then select the **Edit Post Event Notes** command, or the **Notes** icon from the Event Manager toolbar. The following window appears:



Type in your notes and click the **Apply to Event** button when you are finished. Then click Cancel to close the dialog box.



Editing notes for multiple Events

You may also view and change notes for multiple Events. Select a series of Events in the Event List Box, and then select the **Edit Post Event Notes** command (or select the **Notes** icon from the Event Manager Toolbar) to open the **Post Event Notes** window. Enter your note and select **Apply to Selected**, and click the **Save Event Note** button when you are finished to save your notes to a file and move to the next Event in your list.

You can also use the standard Windows cut and paste commands to copy notes from one Event to another. Highlight the note you wish to copy and then press the Control (Ctrl) and C key simultaneously. Access the destination Event by using the **Previous Event** and **Next Event** buttons, place your cursor in the text box, and then press the Control Key (Ctrl) and V key simultaneously.

The **Previous Event** and **Next Event** buttons can also be used to view existing notes by scrolling through Events selected in the List Box. Be sure to save notes for an Event by clicking the **Save Event Note** button before moving to another Event. If no Events are selected, the notes for the first Event in the list are displayed.

Using the **Exit** command closes the dialog box.



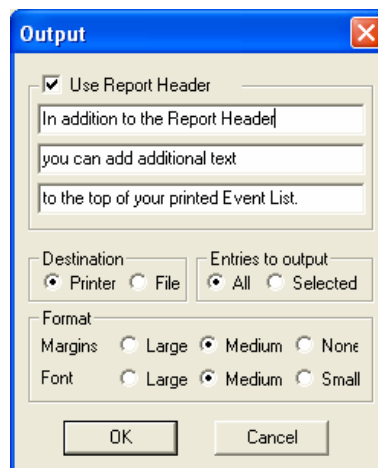
3.12.8 ASCII Conversion

The ASCII output formats Blastmate Events into ASCII format (American National Standard Code for Information Interchange). This lets you use other programs to analyze the Blastmate Events. The ASCII conversion leaves the original Blastmate Event unaltered and creates a copy in the ASCII format. Refer to Section 3.3.4 for a complete description of this command.



3.12.9 Print List

This prints a list of all the Events presently displayed in the Event List box. Click on **Print List**. The following dialog box appears.



a. Use Report Header

You can add up to three additional headers to the Event list printout by typing in the text boxes provided. The headers appear as bold, centered titles at the top of each printed page.



b. Destination

Choose where to print the Event list, either to a printer or to a file. If you choose a printer, the list prints on your printer. If you print to a file, the list is saved in standard text format. You can view and print the list using a text editing program like Microsoft WordPad.

c. Entries to output

You have a choice to output all Events appearing in the Event List or only selected Events. To select Events, click on the Event to highlight it.

d. Format

Under this command, you can choose the margin size and font size used in the printout.

(1) Margins

You have a choice between large, medium, and no margins.

	Top Margin	Left Margin
Large	1 ½ in. (3.8 cm)	¾ in. (1.9 cm)
Medium	1 in. (2.5 cm)	½ in. (1.3 cm)
No Margin	0 in. (0 cm)	0 in. (0 cm)

(2) Font

You can choose either large, medium, or small fonts.

e. Command Buttons

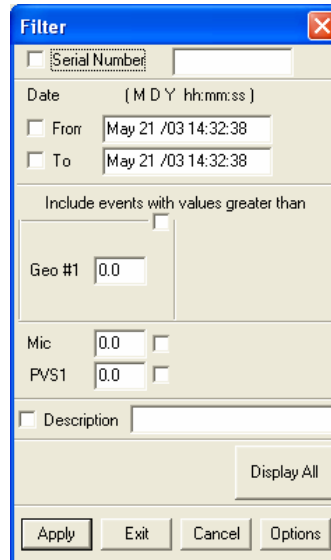
Choose **OK** to output the Event List. Choose **Cancel** to close the dialog without printing or saving to file.



3.12.10 Filter

This filter selects Events to display within the Event List based on chosen criteria. For example, if using several Series III monitors, filter the Event List to display a single monitor's Events using its serial number as a filter criteria.

To filter the Event List, click on the **Select Events** button. The Event Selection Criteria dialog box appears. The dialog box presents several selection criteria used to filter Events. Enter the selection criteria and click on the **Apply** button. Enter criteria combination to display very specific Events within the Event List.

A screenshot of a 'Filter' dialog box. It has a title bar with a close button. Inside, there's a checkbox for 'Serial Number' with an adjacent text field. Below that is a 'Date' section with a format '(M D Y hh:mm:ss)'. It contains 'From' and 'To' checkboxes, each followed by a date/time field showing 'May 21 /03 14:32:38'. There's a section 'Include events with values greater than' with a checkbox and a 'Geo #1' field set to '0.0'. Below that are 'Mic' and 'PVS1' fields, each with a '0.0' value and a checkbox. At the bottom is a 'Description' checkbox and a text field. A 'Display All' button is on the right. At the very bottom are 'Apply', 'Exit', 'Cancel', and 'Options' buttons.

a. Serial Number

Use this to display all the Events recorded with a specific monitor. Click on the checkbox to activate this search filter, and then enter the monitors serial number. Monitor serial numbers appear within the Event Lists Serial No. column. Each Event identifies the recording monitors serial number.

Note: The Event List can be customized to display or remove Event information. If the Serial No. column does not appear, move the mouse pointer over the column names and double click the right mouse button. Choose the **Use Default Columns** command. This displays the default Event Manager including the Serial No. column.

b. Date

This command displays only those Events recorded during a specified time period.

(1) From

This setting displays all Events recorded since a specified date and time up to and including the present date and time. All Events recorded after the specified time appear while all Events recorded before this time do not.

Click on the **From** checkbox to display a checkmark. Enter the date and time. Click the **Apply** button to display the specified Events.

(2) To

This setting displays all Events recorded up to and including the date and time specified. All Events recorded before this time appear while all Events recorded after this time do not.

Click on the **To** checkbox to display a checkmark. Enter a date and time. Click the **Apply** button to display the specified Events.

(3) Choosing Both From and To

Use both the From and To settings to display Events during a specified time period. For example, enter a From date and time as Nov 15/98. Enter a To date and time of Nov 16/98. This combination displays all Events recorded from November 15, 1998 at 00:00 (midnight) to November 16, 1998 at 00:00 (midnight). Unless specified, the time defaults to or 00:00 a.m. (midnight).

To display Events within a specified time period, click on the **From** checkbox to display a checkmark. Enter a time to indicate the beginning of the period. Click on the **To** checkbox to display a checkmark. Click the **Apply** button to display the Events.



c. Include Events with values greater than

This section filters Events based on recorded values. Events with values greater than the specified value appear while Events with values less than the specified value do not. For example, enter a value within the Geo #1 box. Only those Events with values greater than the specified value appear in the Event List.

To filter Events based on recorded values, click on one or all of the **Geo #1**, **Mic**, or **PVS1** checkboxes. Enter a value for each and click the **Apply** button.

Note: The **Options** button displays a dialog box offering other Event values to choose from.

d. Description

Events can be filtered based on the Location information saved with an Event as part of the User Notes. Events containing any part of the entered text appear in the Event List.

Click on the checkbox to display a checkmark. Enter the text and click on the **Apply** button.

e. Display All

This command removes all filters and displays all the Events within the Event List.

f. Apply

This command applies the selected criteria to the Event List and displays the new filtered list.

g. Exit

This command saves the most recent changes and closes the dialog box.

h. Cancel

This command discards the most recent changes and closes the dialog box.

i. Options

This displays options to customize the Event Selection Criteria dialog box.



(1) Geophone

This section displays the Tran, Vert, and Long channels as either a single Geo group or as individual channels within the Event Selection Criteria dialog box.

Click on the **Triaxial, same peak used for all geo channels** option to display the channels as a group. Click on the **Individual, specify peak for each channel** option to display the channels individually.

(2) 4 Channels or 8 Channels

This settings lets you choose whether to display either four or eight channel Events. Click on either selection to display a checkmark in the checkbox.



(3) Hide/Keep Buttons

These options select Events manually from within the Event List using the conventional Windows Shift and Control keys.

i Keep Selection

This command displays the currently highlighted Events while hiding all other Events.

ii Hide Selection

This hides all selected Events within the Event List.

iii Keep Log

This command displays all the Log files currently appearing within the Event List.

iv Hide Log

This command hides all the Log files currently appearing within the Event List.

(4) OK

Applies the selections and closes the dialog box.

(5) Cancel

Closes the dialog box without applying the settings.

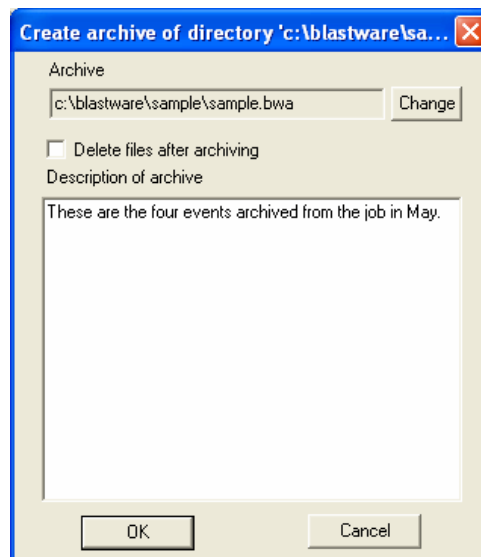


3.12.11

Archive

This command adds all the Events displayed within an Event List to a single archive file. This helps with file management by grouping related Event files together for storage purposes. Archive files appear within the Event List indicated as type ARC. The files extension is BWA. The files within an archive must be extracted before they can be viewed or printed.

To create an archive, display the required Event List and click the mouse pointer on the **Archive** button. The Create Archive dialog box appears.



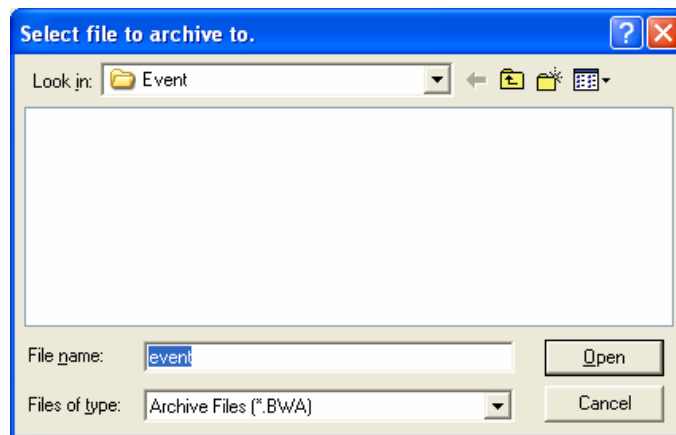
a. Archive

The field shows the name of the archive location and the directory to which it will be saved. To change the name and location, click on the Change button; see the following section.



b. Change

Click on the **Change** button to enter a new name or location for the archive. The following dialog box appears.



Under File name, enter the name of the archive. Choose the location to place the new archive: search through your directories in the Folders window. If you want to choose a different drive, select it under Drives.

c. Delete files after archiving

Choose to delete the original files after they have been added to the archive. Click on this option to display a checkmark.

d. Description of archive

Enter a description of the archive for future reference. Descriptions can be alphanumeric up to 1024 characters in length. Archive descriptions appear when you click the **Quick View** button with the archive highlighted within the Event List.

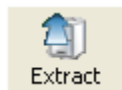
e. OK

Click on this button to create the archive.

f. Cancel

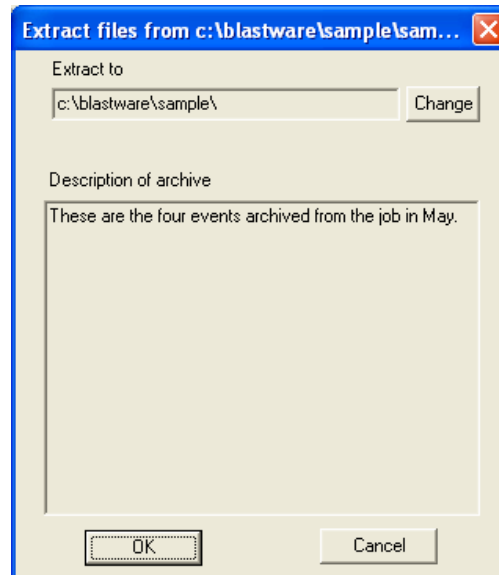
Close the dialog box without creating an archive.

3.12.12



Extract

This command extracts Event files from an archive. To extract files, click on an archive file to highlight it within the Event List. Click on the **Extract** button. The Extract dialog box appears. This button can be activated only after selecting an archive from within the Event List.

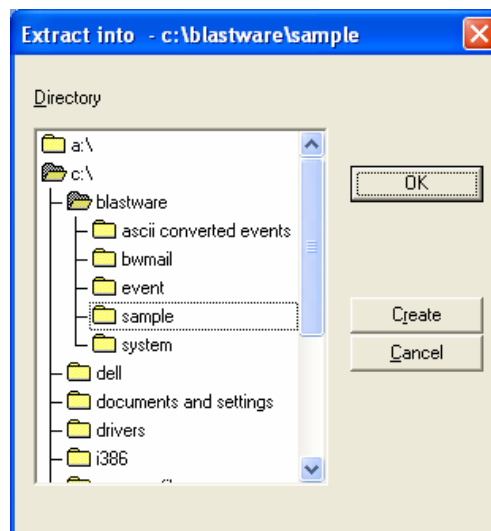


a. Extract to

This field displays the location to which the files will be extracted. To change the location, click on the **Change** button; see the following section.

b. Change

Click on the **Change** button to enter a new location for the archived files. The following dialog box appears.



Click the mouse pointer on the required directory to highlight and select it. To create a new directory, click the **Create** button, then enter the path and name of the new directory. Follow the example at the top of the dialog box. Click the **OK** button.

c. Description of archive

The archive's description appears within this window. The description was added to the archive when it was created.

d. OK

Extract the files from the archive and close the dialog box.



e. Cancel

Close the dialog box without extracting the files.

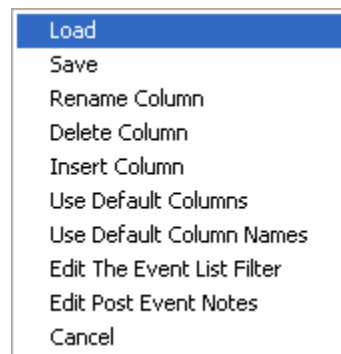
3.13 Directories List Box

Refer to the figure in section 3.1. This box displays a directory tree of all directories located on the hard drive containing the Blastware program. All Event files appear in the Blastware directory under the Event subdirectory. This is the default directory indicated by the Default Directory checkbox located in the lower left hand corner of the window. To access directories, place the mouse pointer on the directory icon and double click the left mouse button. The Events appear in the Event List box.

3.14 Event List Box

Refer to the figure in section 3.1. The Event List box displays Events in the selected directory along with summary information describing the Events. If you choose the unit icon (Series III only), the Events stored on the monitor appear in the list. You can select one or more Events to copy, delete, print, or view. If you display the unit directory which lists the files on the monitor, you must first copy the files to the computer before you can view or print them. If you click on the **Event Report** icon, a copy of the Event will be created before opening it.

Position your mouse in the title bar (i.e. the area with the bold titles, including Type, Serial No., Date/Time, etc.) of the **Event List Box**, and double-right click; a menu of shortcuts to commonly used features appears:



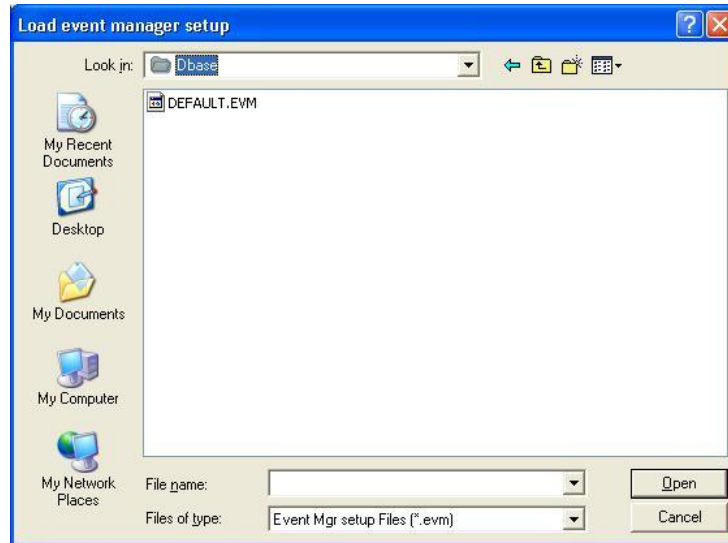
To select an Event, move the mouse pointer on top of the Event and click the left mouse button. The cursor highlights the Event. To select multiple Events, click on the first Event in a group. Hold the **Shift** key down, and click on the last Event in the group. The entire group is highlighted. To select multiple Events that do not appear in order within the Event List, click on the first Event. Press and hold the **Control (Ctrl)** key down while clicking on the remaining Events. To de-select the Events, click anywhere on the Event List.

With the Event selected, you can now press one of the command buttons located at the top of the screen. The message above the Event List indicates the number of Events in the current directory, and the Event currently selected. The information within the Event List can also be manipulated in various ways. You can insert or remove columns, change the column names, or filter Events to display only those Events of interest. To customize the Event List, move the mouse pointer over the column names and double click to display the following popup menu.

a. Load

With this command, you can display a saved Event List setup. Event lists can be customized to display different columns of data.

To load an Event List setup, position the mouse pointer over a column name and double click the left or right mouse button. Choose the **Load** command. The following dialog box appears.



Select a setup file. All setup files have an .evm extension and appear in Blastware's dbase subdirectory. Click **OK** to load the file. To exit without loading a setup file, click **Cancel**.

b. Save

This command saves a customized Event List. Save the setup after you have customized the Event List by changing columns and column names. The next time you require this Event List, all you have to do is load it.

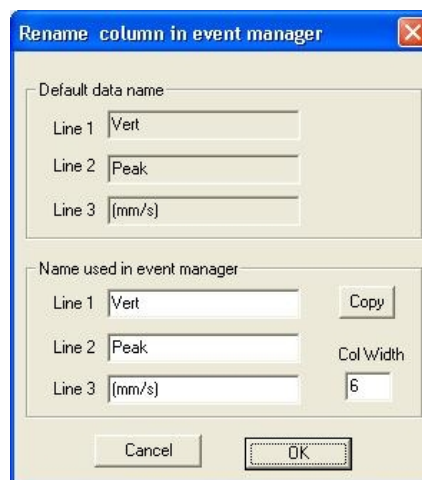
To save an Event List setup, position the mouse pointer over a column name in the Event List and double click the left or right mouse button. Choose the **Save** command.

Enter a name for the setup file. All setup files have an .evm extension and appear in Blastware's dbase subdirectory.

c. Rename Column

The column names appearing in the Event List can be changed to the name of your choice. These can be returned to their default names by choosing the Use Default Column Names command, see below.

To rename a column name, position the mouse pointer over the column name to be changed and double click the left or right mouse button. Select the **Rename Column** command. The following dialog box appears.



The dialog box presents two sections. The first section, Default data name, displays the default Instantel column name. The second section, Name used in Event manager, displays the names



currently used. These names can be changed. Names can be entered on Lines 1, 2, 3, or all. Names may include alphanumeric characters. You can specify the width of the column by entering the number of point character size value in the Col Width field. Click the **Copy** button to enter the default names from the first section into the second section. Click **OK** to save the new names. The names appear immediately in the Event List box. Click **Cancel** to close the dialog box without changing the names.

d. Delete Column

This command removes an entire column from the Event List box. The remaining columns shift to the left.

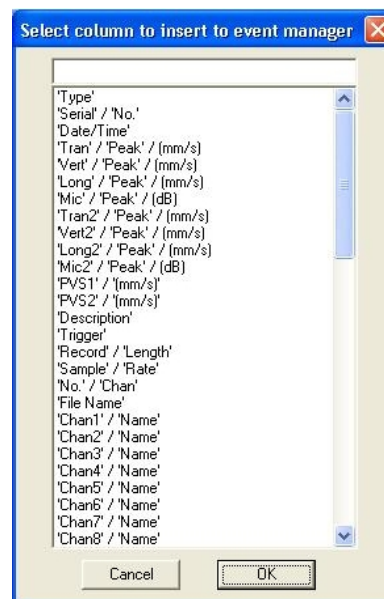
To delete a column and remove it from the Event List display, position the mouse pointer on the column name to be removed. Double click the left or right mouse button and choose the **Delete Column** command.

Note: Deleting a column does not delete the supporting data. It just removes the column from the Event List box. The column can be displayed again using the Insert Column command described below.

e. Insert Column

This command inserts a column into the Event List box. The remaining columns shift to the right.

To insert a column, position the mouse pointer over an existing column name. The new column appears to the left of this column. Double click the left or right mouse button. Choose the **Insert Column** command. The following dialog box appears.



This dialog box lists all the columns that can be used in the Event List. Please see the following table for a description of each column. To insert a column, select a name then click the **OK** button. Click **Cancel** to close the dialog box without inserting a column.

Event Column Title	Description
Type	List all Event types.
Serial / No	Identifies the recording monitors serial number.
Date/Time	Date and time of the Event.
Tran / Peak (mm/s)	Transverse channels peak particle velocity.
Vert / Peak (mm/s)	Vertical channels peak particle velocity.



Long / Peak (mm/s)	Longitudinal channels peak particle velocity.
Mic / Peak (pa.)	Microphone channels peak sound pressure.
Tran2 / Peak (mm/s)	Second transverse channels peak particle velocity (eight channel monitors).
Vert2 / Peak (mm/s)	Second vertical channels peak particle velocity (eight channel monitors).
Long2 / Peak (mm/s)	Second longitudinal channels peak particle velocity (eight channel monitors).
Mic2 / Peak (pa.)	Second microphone channels peak sound pressure (eight channel monitors).
PVS1 / (mm/s)	Peak Vector Sum for the first Transverse, Vertical, and Longitudinal channels.
PVS2 / (mm/s)	Peak Vector Sum for the second Transverse, Vertical, and Longitudinal channels (eight channel monitors).
Description	This displays the first line of the User Notes. By default this is the Location note.
Trigger	This identifies the trigger source for the Event.
Record / Length	This is the overall length of the Event.
Sample / Rate	This is the sample rate for the Event.
No. / Chan	This identifies the number of channels recorded in the Event.
File Name	This lists the Events file name.
Chan1 / Name	Channel 1 name entered in the Advanced Setup dialog box.
Chan2 / Name	Channel 2 name entered in the Advanced Setup dialog box.
Chan3 / Name	Channel 3 name entered in the Advanced Setup dialog box.
Chan4 / Name	Channel 4 name entered in the Advanced Setup dialog box.
Chan5 / Name	Channel 5 name entered in the Advanced Setup dialog box.
Chan6 / Name	Channel 6 name entered in the Advanced Setup dialog box.
Chan7 / Name	Channel 7 name entered in the Advanced Setup dialog box.
Chan8 / Name	Channel 8 name entered in the Advanced Setup dialog box.
Chan1 / Units	Channel 1 units entered in the Advanced Setup dialog box.
Chan2 / Units	Channel 2 units entered in the Advanced Setup dialog box.
Chan3 / Units	Channel 3 units entered in the Advanced Setup dialog box.
Chan4 / Units	Channel 4 units entered in the Advanced Setup dialog box.
Chan5 / Units	Channel 5 units entered in the Advanced Setup dialog box.
Chan6 / Units	Channel 6 units entered in the Advanced Setup dialog box.
Chan7 / Units	Channel 7 units entered in the Advanced Setup dialog box.
Chan8 / Units	Channel 8 units entered in the Advanced Setup dialog box.
Chan1 / Peak	The peak particle velocity calculated for channel 1.
Chan2 / Peak	The peak particle velocity calculated for channel 2.
Chan3 / Peak	The peak particle velocity calculated for channel 3.
Chan4 / Peak	The peak particle velocity calculated for channel 4.
Chan5 / Peak	The peak particle velocity calculated for channel 5.
Chan6 / Peak	The peak particle velocity calculated for channel 6.
Chan7 / Peak	The peak particle velocity calculated for channel 7.
Chan8 / Peak	The peak particle velocity calculated for channel 8.
Chan1 / Peak / Time	The time of the peak particle velocity for channel 1.
Chan2 / Peak / Time	The time of the peak particle velocity for channel 2.
Chan3 / Peak / Time	The time of the peak particle velocity for channel 3.
Chan4 / Peak / Time	The time of the peak particle velocity for channel 4.
Chan5 / Peak / Time	The time of the peak particle velocity for channel 5.
Chan6 / Peak / Time	The time of the peak particle velocity for channel 6.
Chan7 / Peak / Time	The time of the peak particle velocity for channel 7.
Chan8 / Peak / Time	The time of the peak particle velocity for channel 8.
Tran / Freq. / Hz	Transverse channels Zero Crossing Frequency.
Vert / Freq. Hz	Vertical channels Zero Crossing Frequency.
Long / Freq. Hz	Longitudinal channels Zero Crossing Frequency.
Tran2 / Freq. / Hz	Second transverse channels Zero Crossing Frequency (eight channel monitors).



Event Column Title	Description (continued)
Vert2 / Freq. Hz	Second vertical channels Zero Crossing Frequency (eight channel monitors).
Long2 / Freq. Hz	Second longitudinal channels Zero Crossing Frequency (eight channel monitors).
Tran / Displ / mm	Transverse channels peak displacement.
Vert / Displ / mm	Vertical channels peak displacement.
Long / Displ / mm	Longitudinal channels peak displacement.
Tran2 / Displ / mm	Second transverse channels peak displacement (eight channel monitors).
Vert2 / Displ / mm	Second vertical channels peak displacement (eight channel monitors).
Long2 / Displ / mm	Second longitudinal channels peak displacement (eight channel monitors).
Tran / Accel / g	Transverse channels peak acceleration.
Vert / Accel / g	Vertical channels peak acceleration.
Long / Accel / g	Longitudinal channels peak acceleration.
Tran2 / Accel / g	Second transverse channels peak acceleration (eight channel monitors).
Vert2 / Accel / g	Second vertical channels peak acceleration (eight channel monitors).
Long2 / Accel / g	Second longitudinal channels peak acceleration (eight channel monitors).
Start / Date	This displays the date the Event started recording.
Start / Time	This displays the time the Event started recording.
Post Event Note / first line	This displays the first line of the post Event notes.
End / Date	This displays the date the Event stopped recording.
End / Time	This displays the time the Event stopped recording.
Job	Title or brief description of the job.

f. Use Default Columns

This command changes the Event List box columns back to the original columns first used by the Blastware software. Notice the names of the default columns do not automatically revert to the original names. If you want the default column names, use the Use Default Column Names command described below.

WARNING: This command overwrites your custom Event List. If you want to display and use your custom Event List again, choose the Save command (see above) to save your setup before selecting the Use Default Columns command.

g. Use Default Column Names

This command changes the column names to the Blastware default column names.

WARNING: This command overwrites the displayed column names. If you want to use these names again, choose the Save command (see above) to save your setup before selecting the Use Default Column Names command.

h. Edit the Event List Filter

This command filters Events from within the Event List according to criteria you assign. Each Event List column can be filtered once. Filtering removes all the Events that do not meet your criteria. To help you keep track of the number of Events within an Event List and the number of



Events that have been filtered, a message appears in the top right hand corner of the Event List box.

Note: The Select Events command also filters Events.

To filter the Event List, position the mouse pointer on the required column and double click the left or right mouse button. Select the **Edit the Event List Filter** command. The following dialog box appears.

The dialog box titled "Enter event list filter criteria" has a blue title bar with a close button. It contains the following fields and controls:

- Column Title:** A text field containing "No. Chan".
- Data For Comparison:** A text field containing "6". To its right is a button labeled "Remove Current Filter".
- Comparison:** A section with three radio buttons: "Greater than" (selected), "Less than", and "Equal to". To the right of these is a button labeled "Remove All Filters".
- At the bottom are two buttons: "OK" and "Cancel".

(1) Column Title

This is the column you chose to filter.

(2) Data for comparison

In the Data For Comparison text box, enter a value to be used by the filter. For example if you choose to filter the Date/Time column, enter a date using the same format as the date appearing in the Event List.

(3) Comparison

Use the following criteria to filter the Event List.

i Greater than

This includes all Events having a value greater than the data for comparison value entered above.

ii Less than

This includes all Events having a value less than the data for comparison value entered above.

iii Equal to

This includes all Events having a value equal to the data for comparison value entered above. This command can be used with the Greater than and Less than commands.

(4) Remove Current Filter

This removes the filter applied to the selected column.

(5) Remove All Filters

This removes all the filters applied to the columns appearing in this Event List.

(6) Command Buttons

The **OK** button applies the filter. Click **Cancel** to close the dialog box without changing the settings.

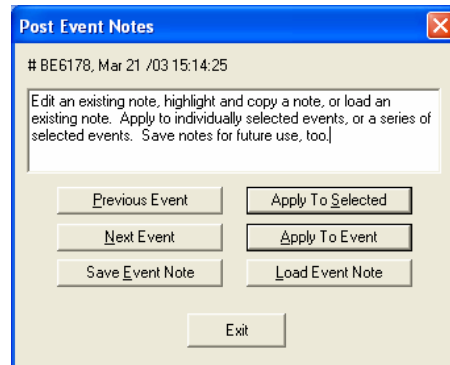
i. Edit Post Event Notes

Select this command to view and change the Post Event Notes for an Event.



Editing notes for one Event only

To create or edit the note of a specific Event, select it in the Event List Box, and then select the **Edit Post Event Notes** command, or the **Notes** icon from the Event Manager toolbar. The following window appears:



Type in your notes and click the **Apply to Event** button when you are finished. Then click Cancel to close the dialog box.

Editing notes for multiple Events

You may also view and change notes for multiple Events. Select a series of Events in the Event List Box, and then select the **Post Event Notes** command (or select the **Notes** icon from the Event Manager Toolbar) to open the **Post Event Notes** window. Enter your note and select **Apply to Selected**, and click the **Save Event Note** button when you are finished to save your notes and move to the next Event in your list.

You can also use the standard Windows cut and paste commands to copy notes from one Event to another. Highlight the note you wish to copy and then press the Control (Ctrl) and C key simultaneously. Access the destination Event by using the **Previous Event** and **Next Event** buttons, place your cursor in the text box, and then press the Control Key (Ctrl) and V key simultaneously.

The **Previous Event** and **Next Event** buttons can also be used to view existing notes by scrolling through Events selected in the List Box. Be sure to save notes for an Event by clicking the **Save Event Note** button before moving to another Event. If no Events are selected, the notes for the first Event in the list are displayed.

Using the **Exit** command closes the dialog box.



Notes:



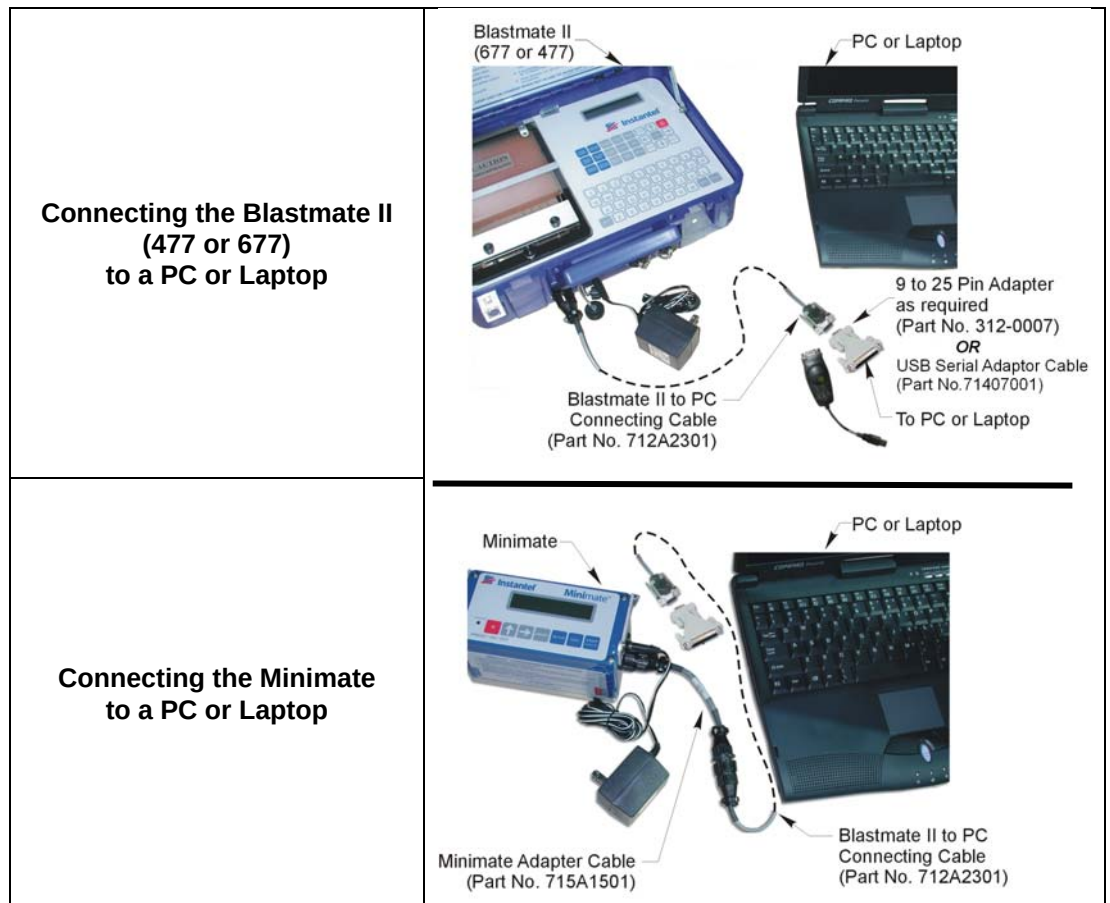
4. SERIES II MENUS

Blastware is fully compatible with all Series II monitors. The Series II commands communicate directly with Series II monitors—including the Blastmate II 677, 477, and DS-077 Minimate—allowing you to change setups, check your sensors and download data. The Blastware software copies Series II Events directly from a Series II monitor without having to use the Series II DOS software. Blastware then makes a copy of the Event, leaving the Series II Event in its original form. Once completed, all of the extensive commands and features of the Blastware software can be applied to the new Event.

4.1 Connecting Series II Monitors to Your Computer

Connect the Blastmate II 677, 477, or Minimate to your computer using the Blastmate III PC Connecting Cable provided (part number 712A2301). (This cable is also sometimes referred to as the Blastmate II serial or connecting cable.) Turn the power Off on the monitor and the computer. Attach the Blastmate PC connecting cable to a serial port on your computer. Use a 9 pin to 25 pin adapter if required. Connect the other end of the cable to the AUX connector located on the front of the Blastmate II 677 or 477. For the Minimate, first connect the Minimate Adapter Cable (part number 715A1501) to the monitor, and then connect the Blastmate PC connecting cable. Do not force the connectors or possible damage may result.

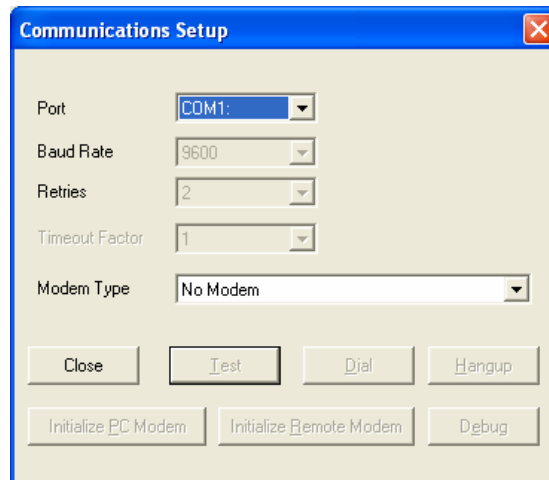
WARNING: Use the Blastmate III PC connecting cable only (part number 712A2301). (Series II users may recognize this cable as the Blastmate II serial or connecting cable.)





4.2 Selecting a Serial Port

Before your computer can communicate with your Series II monitor, you must tell Blastware what serial port you are using to connect to your monitor with the Blastmate III PC connecting cable. This is done in the Communications Setup dialog box. Select the Communications Setup command in the Unit Menu.



Set the Port drop-down menu to match the number of the serial port. You have a choice between Ports 1 - 20. Identify the serial port on your computer and choose the same number in the Port box. See your computers manual for information on how to identify serial ports.

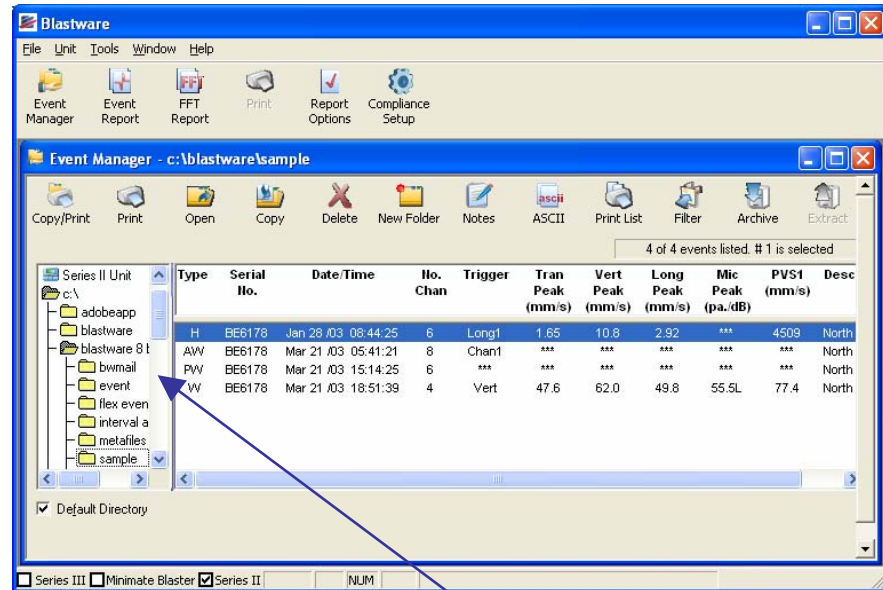
The other settings within this dialog box, including the Test button, do not apply to Series II monitors. Click on Close to save your settings and quit the Communications Setup dialog box. Your computer and monitor can now communicate.

4.3 Series II Event Manager

The Series II Event Manager displays the Events stored on your Series II monitor, and is used to copy Events to your PC, and delete them from the monitor. The Series II Event Manager is not used to display or edit your Event data.

Access the Series II menus by clicking and placing a checkmark in the **Series II** box located at the lower right hand corner of the Event Manager. The menus may also be accessed by selecting **Unit, Select Unit Type**, and then clicking on **Series II**. Once you have copied Events over to your PC, you use the main Event Manager, accessed from the File Menu, to view and edit them.

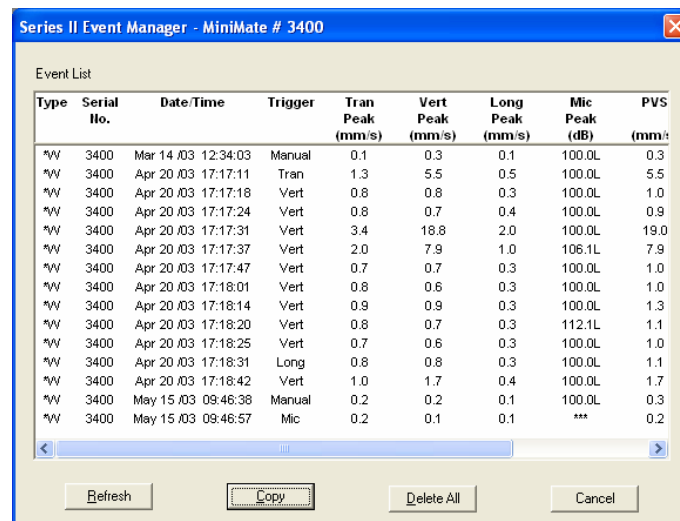
After connecting the monitor to the computer and selecting a serial port, open the **Series II Event Manager** by clicking on the **Series II Unit** icon in the Directories List Box:



Select Unit Type

Directories List Box

Blastware automatically reads the Events stored on the monitor and displays them within the Series II Event Manager list:



a. Refresh

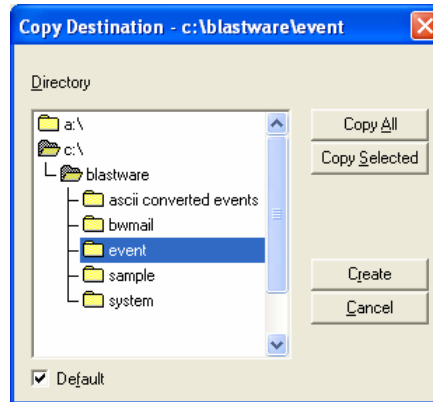
This command reads and displays the Events stored in the monitor again. The monitor can be the same one initially connected or a different monitor just connected to the computer.

To update the Event List, open the **Series II Event Manager** and click on the **Refresh** button.

b. Copy

This command copies Events from the monitor to the computer.

To copy Events, place a checkmark in the Series II box and then choose the **Event Manager** command. Click on the **Copy** button. The following dialog box appears.



(1) Directory

This window displays the directory where the files will be copied to. To select a directory, position the mouse pointer on the directory and click the left mouse button.

(2) Default

This option sets the Event Manager to automatically copy Events to the same directory currently selected. Click on this checkbox to display a checkmark.

(3) Copy All

The Copy All command copies all the Events on the monitor to the computer.

(4) Copy Selected

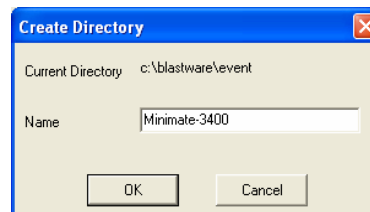
This command copies only those Events selected within the Event List.

To select an Event, click on it to highlight it. To select multiple Events, click the first Event in the Event List, hold the **Shift** key, then select the last Event. To select multiple Events not appearing in order within the Event List, click on the first Event, hold the **Control** key, then click on the remaining Events. Click on the **Copy Selected** button to copy the Events to the computer.

Note: If a communications error occurs while copying Events, a dialog box appears with the following commands. **Abort** - stops copying Events and deletes the last incomplete Event. **Retry** - copies the current Event again and continues copying the remaining Events. **Ignore** - skips the current Event and continues copying the remaining Events.

(5) Create

Click the **Create** button to create a new directory to copy the Event files to. Click on the window and enter a directory path and a name for the new directory. Click on the **OK** button.



(6) Cancel

This command closes the dialog box.

c. Delete All

The Delete All command erases all the Events stored on the monitor. All the Events must be deleted as a group.

WARNING: Events deleted from the monitor cannot be recovered.



d. Cancel

Closes the Series II Event Manager dialog box.

4.4 Series II Unit Menu

The Unit Menu contains several commands to program the Blastmate II or Minimate. After you have changed the setups, Blastware transfers the changes to the monitor. In order for Blastware to complete this successfully, a Blastmate II or Minimate must be connected to the computer using the Blastmate II PC connecting cable. Before you enter this menu and attempt to change the setups, connect a monitor to your computer. See Chapter 4, Section 4.1, for information on how to connect a monitor to a computer.

4.4.1 Compliance Setup

The Compliance Setup dialog box programs the monitor's Recording Mode, Storage Mode, Record Time, Record Interval, Trigger Source, and the Geophone and Microphone setups. After choosing the settings, click on the **Send** button to transfer the settings to the monitor.

To display the Recording Setup dialog box, ensure that the Series II menus have been enabled; click on **Unit**, **Setup**, and **Compliance Setup**.

Note: The availability of the following settings differ between the Blastmate II and Minimate monitors due to the different features offered by each model.

a. Record Mode

The Record Mode determines how the monitor records Events.

To choose a recording mode, click on the **Record Mode** drop-down menu and select a record mode. Choose one of the following record modes.

(1) Single Shot Record Mode

Use Single Shot record mode to record one Event automatically. The monitor records the Event, displays the results, and stops. No further recording occurs. Recording begins automatically when an Events particle velocity or overpressure exceeds a preset trigger level.



(2) Continuous Record Mode

Use Continuous record mode to record multiple Events automatically. The monitor records an Event, displays the results, and continues to monitor, ready to record following Events. The monitor records all Event activity that exceeds a preset trigger level.

(3) Manual Override Record Mode

Use Manual Override record mode if automatic triggering is unreliable, due to excessive wind or nearby vehicle activity, or to record the background noise level in the vicinity of a site. The monitor begins recording when you choose **Enter Monitor Mode** from the **Series II Menu**.

(4) Strip Chart Record Mode (Blastmate II Only)

Use the Strip Chart record mode for long-term recording periods such as monitoring pile driving operations. Strip Chart record mode operates with Blastmate II 677 and 477 monitors.

In this mode, the monitor stores summary Event information in intervals rather than in the real time continuous method used in the other record modes. The monitor continues to sample data continuously at the chosen sample rate but only stores the relevant peaks for the interval. This reduces the data recorded to specific criteria only and greatly increases the monitors recording time. For each interval, the monitor calculates the maximum positive and negative peaks, the frequency of the largest peak, and the peak vector sum over the entire Event. Histogram mode prints all peaks over the entire Event along with the numerical results of the data analysis. In tabular mode, only the numerical results print.

(5) Storage Mode (Blastmate II Only)

The Storage Mode setting determines the amount of data recorded with each Event. In the Full Data setting, the monitor records all Event data. In Summary Only mode, the monitor records all Event data **except** each channels graphical waveforms and the Compliance Report.

To select a storage mode, click on the **Storage Mode** drop-down menu. Click the mouse pointer on either **Full Data** or **Summary Only**.

(6) Record Time

The Record Time setting chooses between a fixed record time and an auto record time.

To select a Record Time, click on the **Record Time** drop-down menu. Click the mouse pointer on Auto for auto record time or on one of the one to ten seconds options.

(7) Record Interval (Strip-Chart Only)

Set the record interval for the Strip-Chart record mode. The record interval is the period of time the monitor records Event information before applying the data analysis techniques. For each interval, the monitor calculates the maximum positive and negative peaks, the frequency of the largest peak, and the peak vector sum over the entire Event.

To choose a Record Interval, click on the **Record Interval** drop-down menu and choose an interval.

(8) Trigger Source

This setting determines whether the Geophone, microphone, or both start the monitor recording if an Events activity exceeds a preset trigger level.

To choose a Trigger Source, click on the **Trigger Source** drop-down menu. Choose **Geophone** to start recording when an Events seismic activity exceeds a preset trigger level. Choose **Microphone** to start recording when an Events air pressure exceeds a preset trigger level. Choose **Geo/Mic** to start Event recording when either an Events seismic activity or air pressure exceeds the preset trigger levels.



(9) Geophone

The following options setup the Geophone channel for recording.

Note: The Geophone must be enabled as a trigger source before these settings can be changed.

i Trigger Level

The trigger level sets a threshold that must be exceeded by an Events activity before the monitor begins recording. Use your judgment when setting a trigger level. You must set the level high enough so the monitor does not trigger on unwanted Events such as nearby vehicle traffic. At the same time, you have to set the trigger level low enough so that an Events activity exceeds the trigger level and starts the monitor recording.

To set a trigger level, click on the **Trigger Level** box. Enter the new level.

ii Alarm Level (Blastmate II Only)

The alarm level controls the triggering of an optional remote alarm (711A1401).

The remote alarm sounds two alarms: warning and alarm. The warning alarm sounds when Event activity exceeds the set Geophone trigger level. The alarm level can be set to a different level that is higher than the trigger level of the Geophone. This allows for the triggering of a second alarm at the higher level.

For example, in pile driving operations the remote alarm triggers a warning when activity exceeds the trigger level for the Geophone, notifying the operator that the pile driving activity has exceeded that set level. The second alarm triggers when activity exceeds the alarm level, set to a higher level, notifying the operator to re-evaluate the piling operation.

To set an alarm level, click on the **Alarm Level** box. Enter the new level.

(10) Microphone

The following options setup the microphone channel for recording.

Note: The microphone must be enabled as a trigger source before these settings can be changed.

i Weighting (Blastmate II Only)

Choose the microphone type connected to the monitor. Choose either Linear, A Weight, or C Weight.

To choose a microphone type, click on the **Weighting** drop-down menu. Choose a type.

ii Trigger Level

The trigger level sets a threshold that must be exceeded by an Events activity before the monitor begins recording. Use your judgment when setting a trigger level. You must set the level high enough so the monitor does not trigger on unwanted Events such as nearby vehicle traffic. At the same time, you have to set the trigger level low enough so that an Events activity exceeds the trigger level and starts the monitor recording.

To set a trigger level, click on the **Trigger Level** text box. Enter the new level.

iii Alarm Level (Blastmate II Only)

For a description of the optional remote alarm, see to the Geophone channel in the previous section.

To set an alarm level, click on the **Alarm Level** box. Enter the new level.

iv Range (Blastmate II Only)

Set the range for Strip-Chart record mode only. The Range controls the plotter (printer) output on the monitor. The range also controls the sensitivity of the monitor.

To choose a range, click on the **Range** drop-down menu. Choose a range.



b. Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

- **OK**
Accept the changes and do not exit the dialog box.
- **Cancel**
Cancel the changes and return to the previous window.
- **Apply**
Apply the changes and exit the dialog box.
- **Help**
Select **Help** to launch the menu to access help on the Series II dialogs.

4.4.2 Notes

The Notes dialog box lets you enter notes about Events. These notes are then saved with every Event when it is recorded. Notes become part of the permanent record and cannot be changed after an Event has been recorded. After you have entered your settings in each dialog box, choose **Send** to transfer your settings to the monitor.

To display the Notes dialog box, open the **Series II Menu** and select **Notes**. The Series II Unit Notes dialog box appears.

The screenshot shows the 'Series II Setup' dialog box with the 'Notes' tab selected. The 'Recording Setup' tab is also visible. The 'Notes' tab contains a text area with the text 'Unit test for mic 1242 only'. Below the text area are three input fields: 'Distance to Blast', 'Weight/Delay', and 'Scaled Distance'. At the bottom of the dialog box are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'.

To enter notes, click on a space and delete the existing notes by pressing and holding the **Backspace** key. Enter the new notes.

a. Location

Enter the location where monitoring is to take place.

b. Client

Enter the client for whom the monitoring is being performed.



c. User

Enter the name of the person performing the monitoring.

d. Extended Notes

Use this area to enter additional notes as required up to a maximum of 640 characters.

e. Distance from blast (Blastmate II Only)

Enter the distance from the monitor to the blast in feet or meters.

f. Charge Weight (Blastmate II Only)

Enter the charge weight of the blast in pounds or kilograms.

g. Scaled Distance (Blastmate II Only)

The Scaled Distance is calculated automatically, and appears within this dialog box and on Event Summary Reports.

h. Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

- **OK**

Accept the changes and do not exit the dialog box.

- **Cancel**

Cancel the changes and return to the previous window.

- **Apply**

Apply the changes and exit the dialog box.

- **Help**

Select **Help** to launch the menu to access help on the Series II dialogs.

4.4.3 Timer Mode Setup

The timer function sets a Blastmate II or a Minimate to automatically turn on and start monitoring operations at a preset time in the future. The timer can be set for a one time monitoring session or to record at the same time every day. Using the timer extends the monitors battery life by turning on and monitoring only the time periods when Events occur and not the time periods between Events.

To display the **Timer Mode Setup** dialog box, select **Unit, Setup**, and then click on **Compliance Setup**.

Note: When using a monitor in the Timer Mode, the monitor stops recording even if Event activity is present and exceeds the trigger levels. The monitor records the current Event then stops.



a. Timer Mode

The timer can be set for a one time operation or repeated operations at the same time each day.

To select a timer mode, click on the **Timer Mode** drop-down menu and select the required option. Choose **Off** to disable the timer. Choose **Monitor Once Only** if you want the monitor to turn on and record a single session, then turn off. Choose **Monitor Every Day** if you want the monitor to turn on and record at the same time every day beginning immediately.

(1) Start Date

Enter the calendar date for the monitor to turn on.

(2) Start Time

Enter the time of day for the monitor to turn on and start monitoring. Change the time format between the twenty-four-hour clock and the twelve-hour clock in the **Report Options** dialog box located within the **Options Menu**.

(3) Stop Date

Enter the calendar date to turn the monitor off.

(4) Stop Time

Enter the time of day to turn the monitor off and stop monitoring.

b. Daily Self Check (Blastmate II only)

Use the self check mode for remote monitoring where you require a record indicating the monitor was operating properly over a period of time. The self check mode program operates when the monitor is in the monitor mode. The monitor temporarily exits the monitor mode, at the same time each day specified by you, performs the check, and returns to monitor mode. The results appear in a monitor log entry.

To set the self check mode, move the mouse pointer to the **Self Check Mode** drop-down menu and choose **On** to turn the self check mode on. Choose **Off** if you do not require self check to operate.



(1) Time

Enter a time for the Self Check Mode to run. Click on the **Time** boxes and enter a time.
To choose one of the following command buttons, click the mouse pointer on the button.

c. Command Buttons

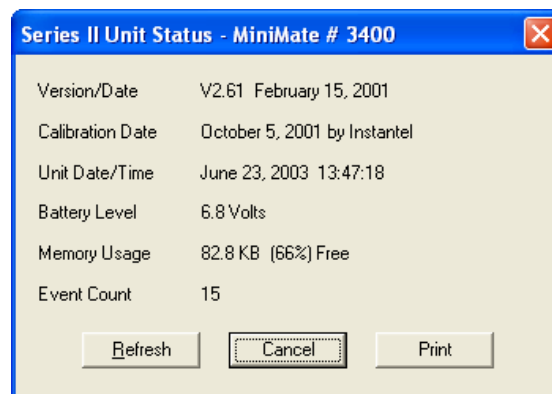
To choose one of the following command buttons, click the mouse pointer on the button.

- **OK**
Accept the changes and do not exit the dialog box.
- **Cancel**
Cancel the changes and return to the previous window.
- **Apply**
Apply the changes and exit the dialog box.

4.4.4 Status

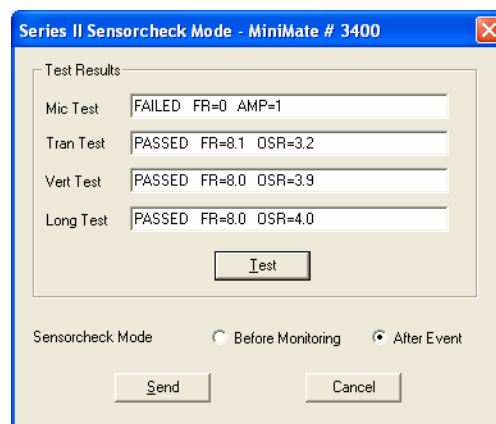
The Status command checks the monitor and displays the following information.

To display the Status dialog box, select **Unit** menu, then click on **Status**. Press the **Refresh** button to update the information. Press the **Cancel** button to return to the Blastware Main Menu, and the **Print** button to print out a copy of the Status settings.



4.4.5 Sensorcheck

This command runs Sensorcheck, which checks the Blastmate II or the Minimate Geophone and microphone sensors. To display the dialog box, open the **Unit Menu** and choose **Sensorcheck**.





a. Test Results

This area displays the results of the Sensorcheck. In addition to indicating the Pass/Fail status, the display offers basic information on the sensor. For the microphone, the frequency (FR) and ampere rating (AMP) are given. For the Geophone, the frequency (FR) and overswing ratio (OSR) are shown for each of the transverse, vertical and longitudinal sensors.

(1) Mic Test

This displays the results of testing on the microphone.

(2) Tran Test

This displays the results of testing on the Geophones transverse sensor.

(3) Vert Test

This displays the results of testing on the Geophones vertical sensor.

(4) Long Test

This displays the results of testing on the Geophones longitudinal sensor.

(5) Test button

This runs Sensorcheck and tests the sensors connected to the monitor. Click on the **Test** button.

b. Sensorcheck Mode

You can choose to have the unit run Sensorcheck regularly, either before or after Events are recorded. The results are stored with the Event file, and are displayed in the Quick View window in the Event Manager

(1) Before Monitoring

To have the unit run Sensorcheck before monitoring, click on this setting.

(2) After Event

To have the unit run Sensorcheck after monitoring, click on this setting.

(3) Send

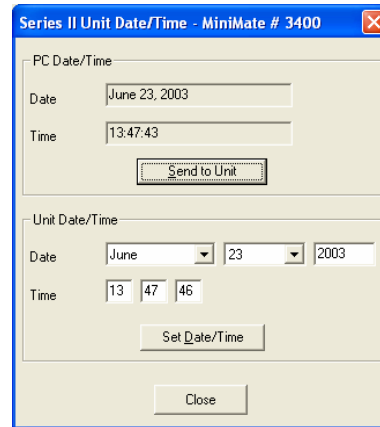
Click on this button to save your settings to the unit run.

(4) Cancel

Click on this button to exit the Sensorcheck dialog box

4.4.6 Date/Time

This sets the Date and Time in the Blastmate II or Minimate. To display the date and time, select **Unit** menu, then click on **Date/Time**. The Series II Unit Date/Time dialog box appears.

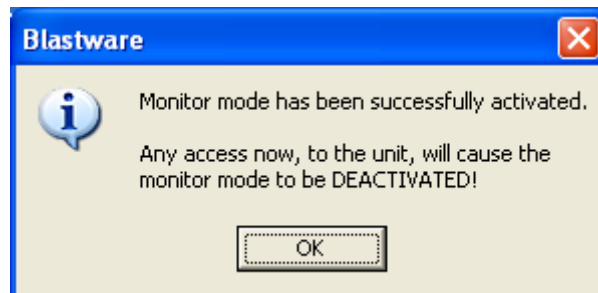


You may set the Date and Time in your monitor in two ways. The first method is to copy the settings from your PC, as displayed in the PC Date/Time area. Make sure the date and time are correct, and then click on the **Send to Unit** button. The date and time in the Unit Date/Time area will change to match the PC Date/Time. You can also set the date and time manually: enter the current date and time in the Unit Date/Time area then send the changes to the unit by clicking on the **Set Date/Time** button.

4.4.7 Monitor Mode

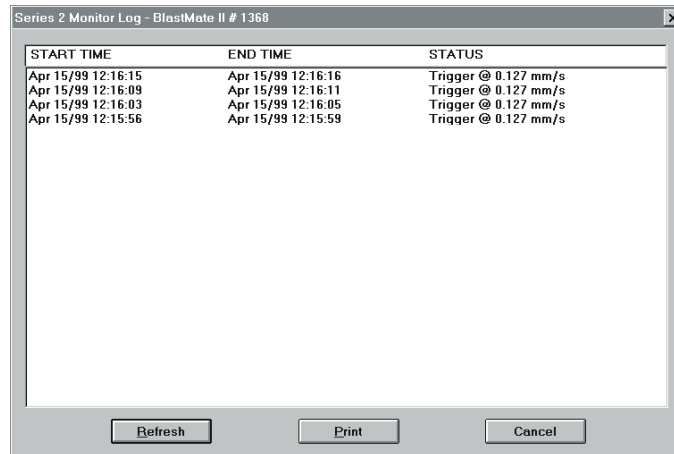
This command starts a Blastmate II or a Minimate monitoring. Choosing one of the other commands within **Unit Menu** also stops monitoring.

WARNING: Choosing a command within the Series II Menu automatically sends a signal telling the monitor to exit the monitor mode.



4.4.8 Monitor Log

The monitor log lists monitoring periods for the Blastmate II, including date, start time, and stop time. To display the Monitor Log, select **Unit** menu, then click on **Monitor Log**. The Series II Monitor Log dialog box appears. Choose **Print** to print a copy of the Monitor Log. The Output dialog box will appear. Click **Cancel** to close the Monitor Log dialog box.



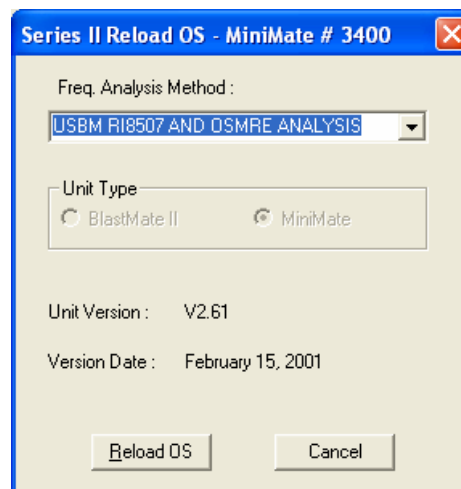
A screenshot of a software window titled "Series 2 Monitor Log - BlastMate II # 1368". It contains a table with three columns: START TIME, END TIME, and STATUS. The table lists four trigger events. Below the table are three buttons: Refresh, Print, and Cancel.

START TIME	END TIME	STATUS
Apr 15/99 12:16:15	Apr 15/99 12:16:16	Trigger @ 0.127 mm/s
Apr 15/99 12:16:09	Apr 15/99 12:16:11	Trigger @ 0.127 mm/s
Apr 15/99 12:16:03	Apr 15/99 12:16:05	Trigger @ 0.127 mm/s
Apr 15/99 12:15:56	Apr 15/99 12:15:59	Trigger @ 0.127 mm/s

4.4.9 Reload Operating System

This command sends a new version of the operating system to your Blastmate II or Minimate. To reload or view the operating system, select **Unit** menu, then click on the **Reload Unit OS** command. The Series II Reload OS dialog box appears.

Note: Series II users are strongly recommended to download the latest version of the Series II operating system to the monitor (ver 2.6 for the Minimate and ver 5.5 for the Blastmate). The new version ensures year 2000 compatibility. Note, however, that once you have downloaded the OS from Blastware, you will no longer be able to download the OS from the Series II DS-467 or DS-567 software.



A screenshot of the "Series II Reload OS - MiniMate # 3400" dialog box. It features a "Freq. Analysis Method" dropdown menu set to "USBM RI8507 AND DSMRE ANALYSIS". Below this is a "Unit Type" section with radio buttons for "BlastMate II" and "MiniMate". The "Unit Version" is displayed as "V2.61" and the "Version Date" as "February 15, 2001". At the bottom are "Reload OS" and "Cancel" buttons.

a. Freq. Analysis Method

This drop-down menu lists the available frequency analysis methods for compliance monitoring. To choose a frequency analysis method, click on the **Freq. Analysis Method** drop-down menu and select a method.

b. Unit Type

This indicates what kind of monitor is connected to your PC: a Blastmate II or Minimate. Blastware will automatically reload the appropriate operating system.

c. Unit Version

This is the version number of the operating system presently in the monitor.



d. Version Date

This is the release date of the operating system version presently in the monitor.

e. Reload OS

This command loads the most recent version of the operating system to your monitor.

WARNING: If you have Events stored on the unit, they will be erased when you reload the operating system. Download all Event files to your PC before reloading the OS.

f. Cancel

Exit the Series II Reload OS dialog box without reloading the operating system. You will return to the Blastware Main Window.



Notes:



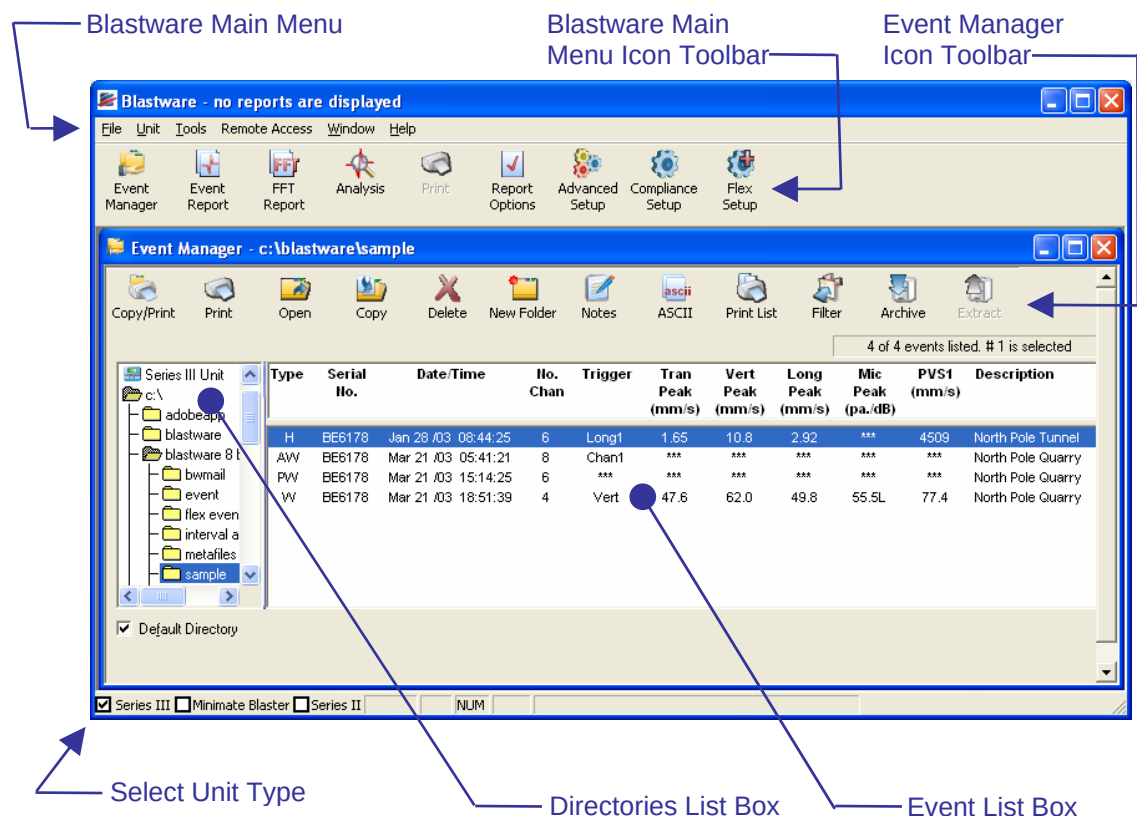
5. BLASTWARE ADVANCED MODULE (OPTIONAL)

This chapter describes the optional Advanced Module for the Blastware software. This module offers additional features and capabilities to the Blastware program. Features include advanced setup procedures to use sample rates ranging from 512 sps to 65536 sps and configure virtually any type of sensor to be used by the Series III monitor. The module also includes analysis software to offer you unparalleled ability to analyze waveforms. You can perform FFT calculations and determine the frequency of a waveform at any point with the easy to use Windows® interface.

The advanced module is designed to easily integrate with the compliance module. It adds features to the Compliance Module without changing the look and operation of the Blastware software, allowing you to easily begin using the software. It builds on the Compliance Module.

This section of the manual explains the new advanced module features without repeating the Compliance Module information. The operations you perform using the Compliance Module are still available to you from the Blastware menus. If you have to refer to these operations when using the advanced module, flip back to the appropriate compliance module section or press **F1** at any time to access the on-line help system.

The Main Window contains the Blastware Main Menu, an Icon Toolbar, and other standard Windows controls. You access all Blastware commands from the main window.



Several additions are available in the Advanced Module software, dependent on which reports or features you have accessed. In the Blastware Main Menu Icon Toolbar, there is the addition of the Analysis and Advanced Setup icons. Also, within the Blastware Main Menu, there are additional



menu selections under Tools, and the Process menu, which is only available when you are performing an analysis of an event.

5.1 Event Manager – Advanced Module

The Event Manager operates exactly the same in the advanced module as it does in the compliance module. You can use it to copy Events from the monitor, delete Events both from the monitor and from your computer, print, view, and perform advanced analyses.

Refer to the figure in Section 5. The titles under the “Type” column of the Event List Box change for each type of Event. This is due to the wide variety of possible Event types you can record using the advanced software. If you have advanced Events, the Event List automatically changes.

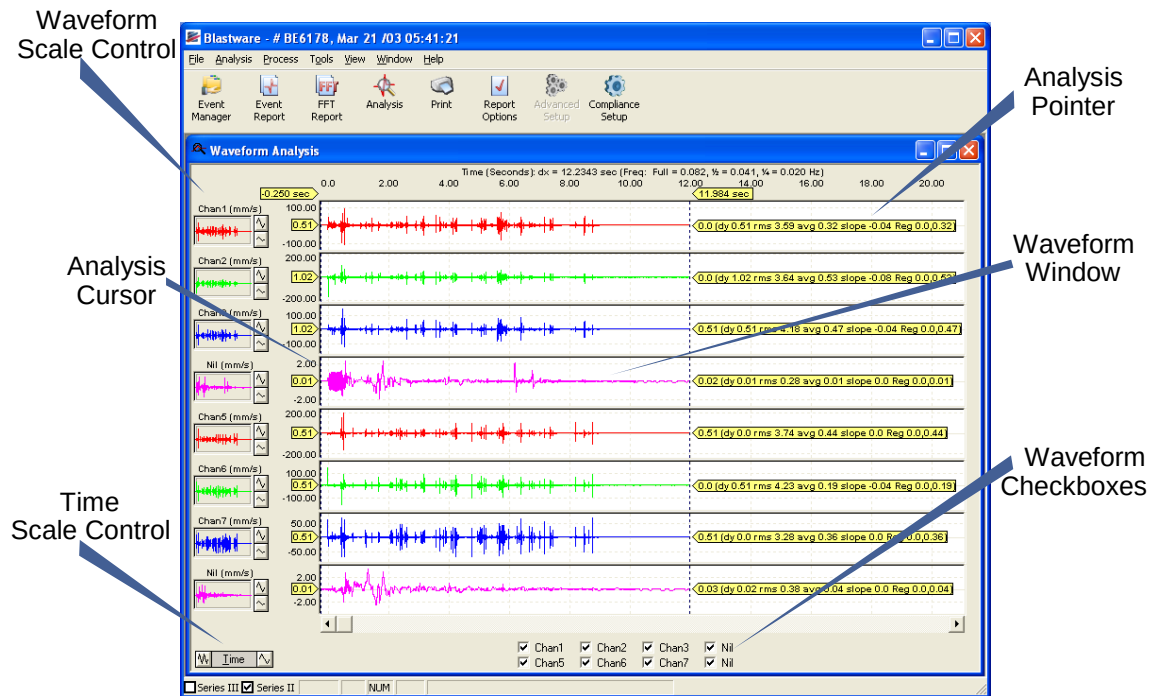
If you have both types of Events, you may find it useful to create two sub-directories in your Blast directory located on your computers hard disk. Name the two directories differently and store your compliance and advanced Events separately in each of the two directories.



5.2 Analysis Window

This analysis window displays all Blastmate Event waveforms including Series III compliance and advanced Events and Series II Events. Within this window, you can zoom in on the waveforms to examine them, add post Event notes, convert the files to ASCII format, view a report of the Event, calculate frequency at any two points on the waveforms, perform a Fast Fourier Transform (FFT) on the waveforms, and display timelines.

To display the window, display the Event Manager and click on the **Analysis** icon found on the Blastware Main Menu Icon Toolbar. The analysis window appears.



5.2.1 Waveform Window

This window displays an Events waveforms. One to eight waveforms may be displayed at the same time, depending on the number of channels recorded in the Event.

a. Analysis Cursors

Use the analysis cursors to analyze any part of a selected waveform. The cursors indicate Event time and amplitude.

(1) Moving the Cursors

The analysis cursors can be moved across the waveforms using either the mouse or the keyboard. Using the mouse, click on the cursor to select it (it will flash) and then double-click at the new position. You can also simply click and drag it.

Using the keyboard, press the **Tab** key repeatedly until the required analysis cursor begins to flash indicating it is selected. Press the **Left** or **Right Arrow** key to move the cursor one position in either direction. To move the cursor in increments of ten, hold the **Ctrl** key while pressing the **Left** or **Right Arrow** key. The analysis cursor jumps ten positions with each key press.

(2) Analysis Pointers

The analysis pointers indicate Event time, waveform amplitude, and the absolute difference in waveform amplitudes between the two points presently indicated by the analysis cursors.

The analysis pointers appear on both the left and right analysis cursors. On the left cursor, the top pointer indicates the time for the current position of the cursor. The pointers inside each waveform window display the amplitude of the waveform at the analysis cursors current position.

For the right analysis cursor, the top pointer indicates the time for the current position of the analysis cursor. The pointers inside each waveform window indicate the amplitude of the waveform at the cursors current position. The pointers also indicate the difference in amplitude



between the amplitude at the first cursors position and the amplitude at the second cursors position.

The data displayed by the Analysis Pointers can be configured using the Cursor command, located in the View menu.

(3) Calculations

Time and frequency calculations appear above the waveform windows. The time, indicated by dx, is the time period between the two analysis cursors. The frequency calculations indicate the frequency of the waveform located between the two analysis cursors. Frequency calculations include full, half, and quarter calculations depending on the portion of a waveform being analyzed.

b. Timelines

The timelines indicate the timing of sequences throughout an Event. The timelines indicate delays according to the manufacturers specifications. By overlaying the timelines on the Events waveforms, it is possible to compare stated performance to actual performance.

To view timelines, click on the **View Menu** and choose **Timelines**. You have to configure your timelines before they can appear on the Events waveforms.

To aid in analysis, the timelines can be moved as a group. To move the timelines, position the mouse pointer over any timeline and double click the left mouse button. The analysis cursor moves directly over top of the timeline. Press the right mouse button to select the timelines. The selected timeline reappears as a dashed line indicating it is selected. To move the timelines, position the mouse pointer on a timeline and click the left mouse button. Drag the timeline to the required position. You can also use the keyboard, press the **Left** or **Right Arrow** keys to move the timelines one position. Hold down the **Ctrl** key while pressing the **Left** or **Right Arrow** keys to move the timelines ten positions with each key press.

5.2.2 Waveform Scale Control

Waveform Scale Control changes the scale of the waveform displayed in the waveform window. The waveforms channel name along with the units of measurement appears above the window. Within the scale window itself, a large shaded section reflects the current view of the waveform window. To change the current view, position the mouse pointer on the waveform and double click the left mouse button. The center of the shaded area jumps to the new position. Notice the waveform window redisplay the waveform at this new position.

To increase the scale (enlarge) or decrease the scale (shrink) the displayed waveform, click the top button repeatedly or the bottom button repeatedly until the desired view appears. Notice this changes the amplitude scale located on the left hand side of the waveform window.

5.2.3 Time Scale Control

This changes the time axis scale for all displayed waveforms.

To increase the time axis, click on the right button. To decrease the time axis, click on the left button. Notice the shaded area in each of the waveform scale windows changes size indicating the change in the amount of a waveform that can appear within the waveform window.

5.2.4 Waveform Checkboxes

These checkboxes display or hide an Events waveforms. All available waveforms appear indicated by their channel name. Channel names vary depending on the type of Event. For compliance Events, the channel names are Tran, Vert, Long, and Mic. For advanced Events, the channel names correspond to the names chosen by you in the advanced setup dialog box. For eight channel monitors, the channel names are Tran1, Vert1, Long1, and Mic1 for the first four channels and Tran2, Vert2, Long2, and Mic2 for channels five to eight.



To display a waveform, click on the checkbox to display a checkmark. The waveform appears within a waveform window. To hide a waveform, click on the checkbox to clear the X. The waveform disappears from the waveform window. You can choose one waveform to view and automatically turning off all the others by holding down the CTRL key and clicking the left mouse button with the mouse pointer on the desired waveform.

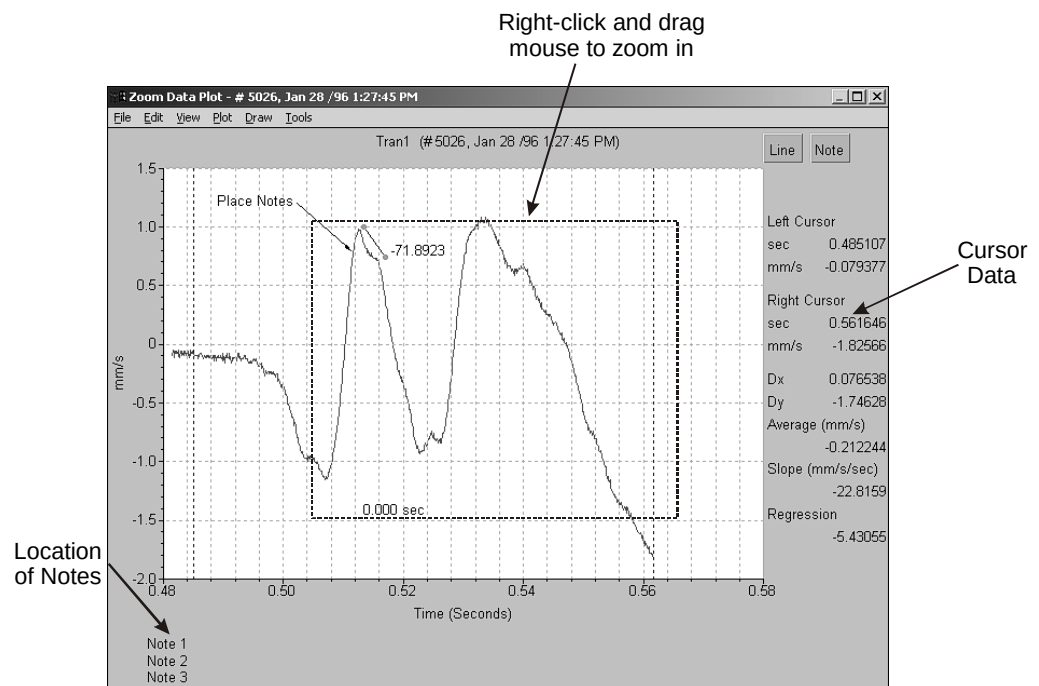
5.2.5 Zoom Data Plot Command

The Zoom Data Plot command provides a detailed window for a selected region of a waveform channel. The portion of the waveform that is between the Analysis Cursors is the area that will be shown in the Zoom Data Plot window.

To select a specific region of a waveform channel, click on the cursor with the mouse to select it (the cursor will flash) and then double-click at the new position. You can also simply click and drag the cursor. Once the Analysis Cursors are positioned, double-click with the right mouse button within a channel to view the Zoom Data Plot window for that channel.

In the Zoom Data Plot window you are able to zoom in again using the same process, or by right clicking and dragging a box across the desired area as shown below; releasing the mouse button will instantly produce an enlarged view of the area of interest.

You can also move the Analysis Cursors within the Zoom Data Window by clicking once at the location you wish to move the Cursor. The Analysis Cursor that is closest to the position you have indicated will move.



a. File

Save Zoom Data Plot images to file for future reference, print them, and modify the printer setup.

(1) Save as Metafile

Saves the selected Zoom Data Plot view as a color image with the .wmf (Windows Metafile Format) file extension, a popular bitmap file format. The image saved includes the graph bars, waveform, inserted Notes, and Left/Right Cursor Calculations. This file may then be used in reports, or sent as an e-mail attachment.



(2) Copy to Clipboard

From the file menu, select **Copy to Clipboard**. A bitmap image of the Scaled Distance plot is copied to your computers temporary memory. Open another Windows program that supports graphics and use the paste command, or simultaneously press **CTRL-V**, to place the bitmap image into the file.

(3) Print

Prints the Zoom Data Plot.

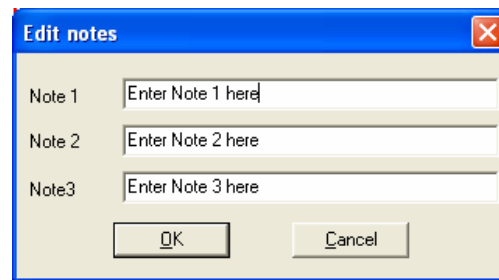
(4) Printer Setup

This command specifies the type of printer connected to the computer and configures the printer settings.

b. Edit

(1) Notes

This command is used to add notes to the Zoom Plot. You can add up to three notes, which appear in the lower left-hand corner of the window. These notes will also appear on your print outs.



Enter the desired notes, and then click on OK. The notes will appear in the Zoom Data Plot window.

c. View

(1) Cursor Data

Toggles on/off the Cursor Data displayed on the right hand side of the Zoom Data Plot window. Cursor Data includes the following information:

Left Cursor

Sec – time at the left cursor

mm/s – waveform amplitude at the left cursor

Right Cursor

Sec – time at the right cursor

mm/s – waveform amplitude at the right cursor

Dx

X value difference between the first cursor and the second cursor

Dy

Y value difference between the first cursor and the second cursor

Average

Displays the average value between the two cursors

Slope

Indicates the point to point slope of the waveform between the two cursors

Regression

Displays the slope as calculated by a linear regression between the two cursors



d. Plot

Return the Zoom Data Plot window to its original zoom window, or perform multiple zooms.

(1) Restore

Restores the Zoom Data Plot window to the initial zoom settings selected in the Waveform Analysis window, while maintaining the position of the Analysis Cursors of the last selected zoom.

(2) Zoom

The Zoom command increases the size of the waveform located between the cursors. You can also zoom in on a waveform using the mouse. Click and hold down the right mouse button and drag to create a box over the area to be enlarged; then release the button.

e. Draw

The Draw menu contains various commands to insert annotations on the Zoom Data Plot window. You can add Slope Lines, Notes, Arrows, and Time Delays.

(1) Slope Line

Add Slope Lines within the Zoom Data Plot window to assist in annotating multiple slopes. Lines may also be added using the Line button in the upper right hand corner of the Zoom Data Plot window. Once the line is created, it may be moved by the click-and-drag method. Place the cursor cross-hairs over the light gray ball at either end of the line, and move to the desired location.

i New

Select this command and then click and hold down the left mouse button at the beginning of the line. Drag the line to the desired location, and release the button. The annotation updates as the line is moved until the mouse button is released, allowing for accurate placement.

ii Delete

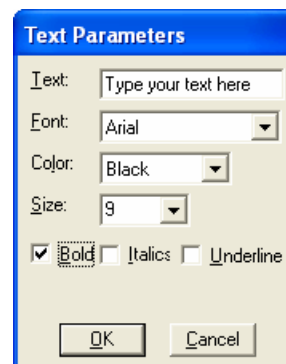
Delete Slope Lines and related annotations by selecting the Delete command, then clicking on either gray ball at the end of a Slope Line.

(2) Paste Note

Paste Note allows you to create, edit, and move notes of up to 120 characters within the Zoom Data Plot window. The Paste Note command is also available by using the Note button in the upper right hand corner of the Zoom Data Plot window. Once the text is created, it may be moved by the click-and-drag method. Place the cursor over the text and move to the desired location.

i New

Places a note in the Zoom Data Plot window. After selecting this command, place the cursor in the desired location and click the left mouse button once. The Text Parameters dialog box appears:





Input the text and select the font style, color, and size. After completing the text field box, press OK to finish the command.

ii Delete

The cursor will change to cross-hairs after selecting this command; place the cursor over the Note to be deleted and click once. Once Notes are deleted they cannot be restored.

iii Edit

To edit an existing Note, place the cursor over the Note and double-click the left mouse button. The Text Parameters dialog box will appear allowing you to edit the text content and attributes.

(3) Arrow

Use arrows to associate Notes with specific data.

Arrows may be moved by using the click-and-drag method. Place the cursor over either the arrow, or the end of the leader line, until the cursor changes to the four-way arrow style; then click-and-drag to the desired location.

i New

Arrows are created using the click-and-drag method. Select New, and then place the cursor where you would like the line to start; drag the arrow to the desired position.

ii Delete

Select the Delete command and move the cursor to either end of the arrow or leader line until the cursor changes to the four-way arrow style. Click once with the left mouse button to delete the arrow.

(4) Time Delay

A Time Delay is drawn parallel to the time axis and annotated with the duration of time between the two arrowheads. Time Delays may be moved by using the click-and-drag method. Place the cursor over either arrow until the cursor changes to the four-way arrow style, and drag to the desired location.

i New

Insert Time Delays in a Zoom Data Plot by using the click-and-drag method. Select New, and place the cursor where you would like to start the Time Delay; then drag the arrow to the desired position and release the mouse button. While positioning the line, the annotation for the delay automatically updates as the line is used. The line may also be positioned horizontally by sliding the cursor up or down while performing the click-and-drag motion.

ii Delete

Select the Delete command and move the cursor to either arrow until the cursor changes to the four-way arrow style. Click once with the left mouse button to delete the Time Delay.

f. Tools

(1) View ASCII Data

This command displays the numerical coordinates of the entire waveform appearing within the Zoom Data Plot window.



TestData		
Copy Format		
#	X	Y
0	-0.25	0.508017
1	-0.249878	0.508017
2	-0.249756	0.508017
3	-0.249634	0.508017
4	-0.249512	0.508017
5	-0.24939	0
6	-0.249268	0
7	-0.249146	0
8	-0.249023	0
9	-0.248901	0.508017
10	-0.248779	0.508017
11	-0.248657	0.508017

i Copy

Use this command to copy the coordinates to third party analysis program such as Microsoft Excel. Click **Copy**. The information transfers to the computers clipboard file. From within the third party software such as Excel, choose paste. The coordinates appear within the program.

ii Format

This controls the View Data table. **Width** controls the size of the table columns. **Precision** controls the number of significant digits.



5.3 Advanced Setup

Advanced Setup configures the Blastmate III and the Minimate Plus monitors for advanced operation. The Series III monitors must be configured using the Blastware software before they can be used in the advanced mode. Advanced Setup can be accessed by either clicking on the **Advanced Setup** icon in the Blastware Main Menu Icon Toolbar, or by clicking on **Unit, Setup, Advanced Setup**.

To configure the monitor, select the appropriate settings within the Advanced Setup tabbed dialogs of Recording Setup, Notes, Special Setups, and Library Files. After you have chosen the required settings, select **Send To Unit** to send the settings to the monitor. If you do not wish to accept the changes, or send them to your unit, then select **Cancel**.



Advanced Setup

Recording Setup | Notes | Special Setups | Printer Setup | Library Files

Channels

	Name (5 char max)	Units (6 char max)	Sensitivity (Volts/Unit)	Gain 1X 8X	+/- Trigger Level Enable	+/- Resolution (Units)	+/- Range (Units)	
☒	1	Tran1	in/s	0.16113302	☒ ☐	0.500	☒	0.00500 10.00
☒	2	Vert1	in/s	0.16113302	☒ ☐	0.500	☒	0.00500 10.00
☒	3	Long1	in/s	0.16113302	☒ ☐	0.500	☒	0.00500 10.00
☒	4	Mic1	psi	22.22024757	☒ ☐	0.01000	☒	0.00004 0.0725
☒	5	Tran2	mm/s	0.00634382	☒ ☐	20.0	☒	0.127 254
☒	6	Vert2	mm/s	0.00630383	☒ ☐	20.0	☒	0.128 256
☒	7	Long2	mm/s	0.00634382	☒ ☐	20.0	☒	0.127 254
☒	8	Mic2	pa	0.00322267	☒ ☐	10.00	☒	0.250 500

Instrument

Record Mode: Sample Rate:

☐ Aux Trigger Storage Mode: ☒ Full ☐ Summary

Record Time:

PC is not attached to a unit.

a. Recording Setup

(1) Channels

Configure the monitors channels using the following settings. These items can only be changed using the Blastware software (advanced module).

i Select

Choose the channels to be used during advanced operations. Click on the checkbox to display a checkmark to enable the channel. Channels must be enabled or disabled according to the following restrictions; Channel 1 only, Channels 1 and 2, Channels 1 through 4, or Channels 1 through 8 (eight channel monitor required).

ii Name (5 char max)

Enter a name to refer to the channel name. The name can be a maximum of five characters long.

iii Units (6 char max)

Enter a name to refer to the measurement units for each channel. The following table summarizes InstanTel sensor units. Refer to the manufacturers specifications for non InstanTel sensors.

InstanTel Sensor	Units	
	Imperial	Metric
Series III L Microphone (714A9801)	pounds/ square inch [psi (L)]	Pascal [Pa(L)]
Series III A Weight Microphone (714A2001)	decibels (dBA)	decibels (dBA)
Standard Triaxial Geophone (ISEE, 2-250 Hz) (714A9701)	inches/second (in/s)	millimeters/second (mm/s)
Standard Triaxial Geophone (DIN, 1-315 Hz) (718A3301)	inches/second (in/s)	millimeters/second (mm/s)



Uniaxial 4.5 Hz Geophone (Vertical – 714A4601, Horizontal – 714A4602)	inches/second (in/s)	millimeters/second (mm/s)
Bore Hole Transducer (714A3301)	inches/second (in/s)	millimeters/second (mm/s)
Hydrophone Sensor (718A0801)	pounds per square inch (V/psi)	kilopascal (V/KPa)

iv Sensitivity (Volts/Unit)

Enter the sensors sensitivity. The following table summarizes InstanTel sensor settings. Refer to the manufacturer's specifications for non InstanTel sensors.

InstanTel Sensor	Units	
	Imperial	Metric
Series III L Microphone (714A9801)	22.23 V/psi (0.0223 v/mpsi)	0.003223 V/Pa
Series III A Weight Microphone (714A2001)	0.0080565 V/dBA	0.0080565 V/dBA
Series III Standard Transducer (714A9701)	0.16113 V/in/s	0.006344V/mm/s
Series III High Frequency Uniaxial Geophone, Horizontal (718A0201), and Vertical (718A0202)	0.016113 V/in/s	0.0006344V/mm/s
Uniaxial 4.5 Hz Geophone (Vertical – 714A4601, Horizontal – 714A4602)	0.16113 V/in/s	0.006344 V/mm/s
Bore Hole Transducer (714A3301)	0.16113 V/in/s	0.006344V/mm/s
Hydrophone Sensor (714A0801)	0.034 V/psi	0.0049 V/KPa
Hydrophone with 100 psi adapter (714A8201)	0.017 V/psi	0.00244 V/KPa

v Gain

Choose the required range and resolution. Click on either button.

vi +/- Trigger

Enter a trigger level if using single shot or continuous record modes.

- **Level**

Enter the trigger level.

- **Enable**

These checkboxes enable the trigger on a particular channel. You can enable the triggers on any combination of channels. Recording begins when Event activity exceeds any single set trigger level.

vii +/- Resolution

The Blastware software automatically calculates the resolution based on the entered sensitivity and chosen gain.

viii +/- Range

The Blastware software automatically calculates the range based on the entered sensitivity and chosen gain. Refer to this value when setting a trigger level.

**(2) Instrument****i Record Mode**

Choose single shot, continuous, manual record mode, or histogram. Advanced histograms calculates only the peak particle velocity for each interval.

ii Storage Mode

Choose between full and summary storage modes. Full storage mode stores an Events waveforms and compliance report, summary storage mode does not.

iii Sample Rate

Advanced operations offer a range of sample rates. The following table summarizes the sample rates and the channels that may be used. Note that some sample rates operate on specific channels only, or with specific recording modes.

Note: Eight channel monitors have been optimized for sample rates up to 65536 samples per second. Four channel monitors may exhibit noise at sample rates greater than 16384 samples per second. Please contact the manufacturer for further information.

Monitor Sample Rates				
Sample Rate	Channel 1 Only	Channels 1 – 2	Channels 1 – 4	Channels 1 – 8
65536	available	–	–	–
32768	available	available	–	–
16384	available	available	available	–
8192	available	available	available	available
4096	available	available	available	available
2048	available	available	available	available
1024	available	available	available	available
512	available	available	available	available

“–” indicates not available

iv Interval

In histogram mode, the monitor stores summary information in intervals. The monitor continues to sample data continuously at the chosen sample rate but only stores the relevant peaks for the interval. Click on the **Interval** dropdown menu to select the duration of the interval.

v Record Time

Enter a fixed record time. The advanced module does not offer the auto record mode. Blastware calculates the maximum available record time based on the amount of installed memory in the monitor and chosen sample rate.

Monitor Recording Times				
Sample Rate	Channels			
	Channel 1 Only	Channels 1 – 2	Channels 1 – 4	Channels 1 – 8
1 Megabyte	(300 Event)			
65536	3 sec*	–	–	–
32768	13 sec	3 sec*	–	–
16384	26 sec	13 sec	3 sec*	–



8192	52 sec	26 sec	13 sec	3 sec*
4096	104 sec	52 sec	26 sec	13 sec
2048	208 sec	104 sec	52 sec	26 sec
1024	416 sec	208 sec	104 sec	52 sec
512	500 sec	416 sec	208 sec	104 sec
65536	20 sec	—	—	—
32768	60 sec	20 sec	—	—
16384	120 sec	60 sec	20 sec	—
8192	240 sec	120 sec	60 sec	20 sec
4096	480 sec	240 sec	120 sec	60 sec
2048	500 sec	480 sec	240 sec	120 sec
1024	500 sec	500 sec	480 sec	240 sec
512	500 sec	500 sec	500 sec	480 sec

“—” indicates not available * may only record 2.9 seconds

vi Auxiliary Trigger

The auxiliary trigger is an external triggering mechanism used to start monitor recording.

A variety of optional auxiliary triggers are available including the DS 20 Wire Trigger (677A3901), and the Blastmate Trigger Cable (712A3901) used to connect several monitors together for multiple point blast monitoring.

To use the auxiliary trigger, set the monitor in the single shot, continuous, histogram, or histogram combo record mode. Set a fixed record time. The auxiliary trigger does not operate in the auto record time setting. Click on the Auxiliary checkbox to display a check mark.

(3) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

i Send To Unit

Send the settings to the monitor and close the Advanced Setup dialog box.

ii Cancel

b. Notes

Refer to Section 3.2.2b for information about the **Notes** dialog tab.

c. Special Setups

Refer to Section 3.2.2c for information about the Printer Setup dialog tab.

d. Printer Setup

Refer to Section 3.2.2d for information about the **Special Setups** dialog tab.

e. Library Files

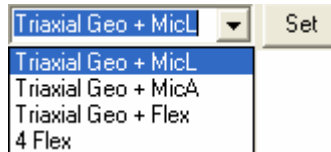
Refer to Section 3.2.2e for information about the **Library Files** dialog tab.



5.4 Flex™ Setup

Flex Setup is a feature for Series III monitors providing pre-defined setups for channels to operate with a combination of standard sensors and alternative sensors such as accelerometers, crack extensometers, temperature sensors, or humidity sensors.

Each set of four channels can be setup with one of the following predefined channel combinations:



Flex Setup can be accessed by either clicking on the **Flex Setup** icon in the Blastware Main Menu Icon Toolbar, or by clicking on **Unit, Setup, Flex Setup**.

To configure the monitor, select the appropriate settings within the Flex Setup tabbed dialogs of Recording Setup, Notes, Special Setups, and Library Files. After you have chosen the required settings, select **Send To Unit** to send the settings to the monitor. If you do not wish to accept the changes, or send them to your unit, then select **Cancel**.

a. Recording Setup

(1) Set Channels 1-4 (5-8)

Use the Set Channels drop down menus to select a predefined flex configuration. Click on **Set** to apply the channel settings to the 4 channels listed below the Set Channels dropdown menu.

(2) Channels

Configure the monitors channels using the following settings. These items can only be changed using the Blastware software (advanced module).

i Select

Choose the channels to be used during flex operations. Click on the checkbox to display a checkmark to enable the channel. Channels must be enabled or disabled according to the following restrictions; Channel 1 only, Channels 1 and 2, Channels 1 through 4, or Channels 1 through 8 (eight channel monitor required). The flex feature requires that the channels be selected in a sequential order; for example, you are not able to select channels 1-4, and then 6-8.

ii Name (5 char max)

Enter a name to refer to the channel name. The name can be a maximum of five characters long.



iii Units (6 char max)

Enter a name to refer to the measurement units for each channel. A summary table of the InstanTel sensor units is available in Section 5.3, Advanced Setup. Refer to the manufacturers specifications for non-InstanTel sensors.

iv Sensitivity (Volts/Unit)

A summary table of the InstanTel sensor units is available in Section 5.3, Advanced Setup. Refer to the manufacturer's specifications for non InstanTel sensors.

v Gain

Choose the required range and resolution. Click on either button.

vi +/- Trigger

Enter a trigger level if using single shot or continuous record modes.

• Level

Enter the trigger level.

• Enable

These checkboxes enable the trigger on a particular channel. You can enable the triggers on any combination of channels. Recording begins when Event activity exceeds any single set trigger level.

vii +/- Resolution

The Blastware software automatically calculates the resolution based on the entered sensitivity and chosen gain.

viii +/- Range

The Blastware software automatically calculates the range based on the entered sensitivity and chosen gain. Refer to this value when setting a trigger level.

(3) Instrument

i Record Mode

Choose single shot, continuous, manual record mode, histogram or histogram combo. Advanced histograms calculate only the peak particle velocity for each interval. Dependent on which **Record Mode** you select, subtle changes will occur in the **Instrument** area of the dialog box. See below for a description of these changes:

Single Shot and Continuous

The screenshot shows the 'Instrument' dialog box with the following settings:

- Channel 7:** Long2, mm/s, 0.00634382, 20.0, 0.127, 254
- Channel 8:** Mic2, 0.00322267, 10.00, 0.250, 500
- Instrument Section:**
 - Record Mode: Single Shot
 - Sample Rate: 2048
 - Record Stop Mode: Fixed Stop Mode
 - Aux Trigger: ☒
 - Storage Mode: ☒ Full, ☐ Summary
 - Record Time: 1
- Buttons:** Cancel, Send To Unit

Manual



Channel	Unit	Frequency	Gain	Filter	Level	Range
7	Long2	mm/s	0.00634382	20.0	0.127	254
8	Mic2		0.00322267	10.00	0.250	500

Instrument
Record Mode: **Manual** Sample Rate: **2048**
☒ Aux Trigger Storage Mode: ☒ Full
Record Time: **1** ☐ Summary
Cancel Send To Unit

Histogram

Channel	Unit	Frequency	Gain	Filter	Level	Range
7	Long2	mm/s	0.00634382	20.0	0.127	254
8	Mic2		0.00322267	10.00	0.250	500

Instrument
Record Mode: **Histogram** Sample Rate: **2048**
Interval: **2 seconds** ☒ Aux Trigger Storage Mode: ☒ Full
Record Time: **1** ☐ Summary
Cancel Send To Unit

Histogram Combo

Channel	Unit	Frequency	Gain	Filter	Level	Range
7	Long2	mm/s	0.00634382	20.0	0.127	254
8	Mic2		0.00322267	10.00	0.250	500

Instrument
Record Mode: **Histogram Combo** Sample Rate: **2048**
Interval: **2 seconds** ☒ Aux Trigger Storage Mode: ☒ Full
Record Time: **1** ☐ Summary
Cancel Send To Unit

ii Sample Rate

Advanced operations offer a range of sample rates. Refer to Section 5.5, Advanced Setup for a table summarizing the sample rates and channels that may be used. Note that some sample rates operate on specific channels only, or with specific recording modes.

Note: Eight channel monitors have been optimized for sample rates up to 65536 samples per second. Four channel monitors may exhibit noise at sample rates greater than 16384 samples per second. Please contact the manufacturer for further information.

iii Interval

In histogram and Histogram Combo modes, the monitor stores summary information in intervals. The monitor continues to sample data continuously at the chosen sample rate but only stores the relevant peaks for the interval. Click on the **Interval** dropdown menu to select the duration of the interval.



iv Record Time

Enter a fixed record time. The advanced module does not offer the auto record mode. Blastware calculates the maximum available record time based on the amount of installed memory in the monitor and chosen sample rate. Refer to Section 5.5, Advanced Setup, for more information on monitor recording times.

v Auxiliary Trigger

The auxiliary trigger is an external triggering mechanism used to start monitor recording.

A variety of optional auxiliary triggers are available including the DS 20 Wire Trigger (677A3901), and the Blastmate Trigger Cable (712A3901) used to connect several monitors together for multiple point blast monitoring.

To use the auxiliary trigger, set the monitor in the single shot, continuous, histogram, or histogram combo record mode. Set a fixed record time. The auxiliary trigger does not operate in the auto record time setting. Click on the Auxiliary checkbox to display a check mark.

vi Storage Mode

Choose between full and summary storage modes. Full storage mode stores an Events waveforms and compliance report, summary storage mode does not.

(4) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

i Send to Unit

Send the settings to the monitor.

ii Cancel

Cancel any changes you have made and exit the Recording Setup of Flex Mode.

b. Notes

Refer to Section 3.2.2b for information about the **Notes** dialog tab.

c. Printer Setup

Refer to Section 3.2.2c for information about the **Printer Setup** dialog tab.

d. Special Setups

Refer to Section 3.2.2d for information about the **Special Setups** dialog tab.

e. Library Files

Refer to Section 3.2.2e for information about the **Library Files** dialog tab.

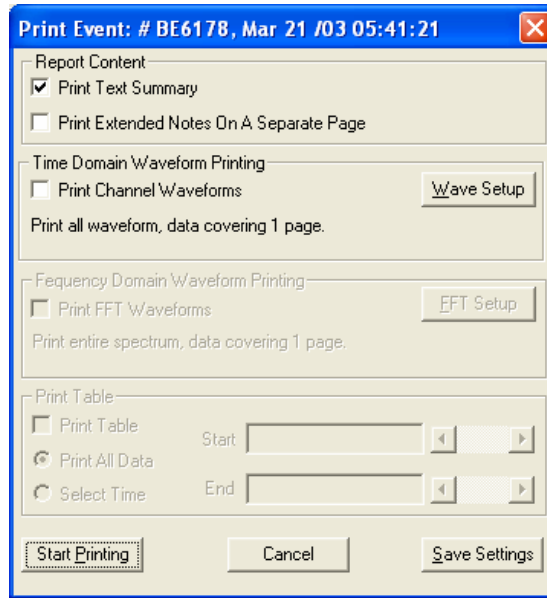
5.5 File Menu

The File Menu contains several commands; **Event Manager**, **Report Options**, **Close**, **Print**, **Print Preview**, **Print Setup**, and **Exit**. The commands, Close, Print, Print Preview, and Print Setup are only available if you have either an Event or FFT Report open. These commands are described in the Compliance Module section of this manual. An additional command, **Save Process File**, is only available when the Analysis feature is used.

5.5.1 File

a. Print

The following print dialog appears if the Analysis or FFT Analysis window is the current, active window:



(1) Report Content

This section determines items to be included in the advanced Event report.

i Print Text Summary

This command prints the text summary in the advanced Event report. The text summary includes the information displayed by choosing Quick View Text from the Analysis menu including the Events date and time, record time, sample rate, monitor serial number, channel name, peak, time, trigger level, and gain.

To include the text summary, click on the **Print Text Summary** to display a checkmark.

ii Print Extended Notes on a Separate Page

Considering the possible size of extended notes, this command lets you print the notes on a separate page as part of the advanced Event report.

To print the extended notes on separate page, click on the **Print Extended Notes On A Separate Page** checkbox to display a checkmark.

(2) Time Domain Waveform Printing

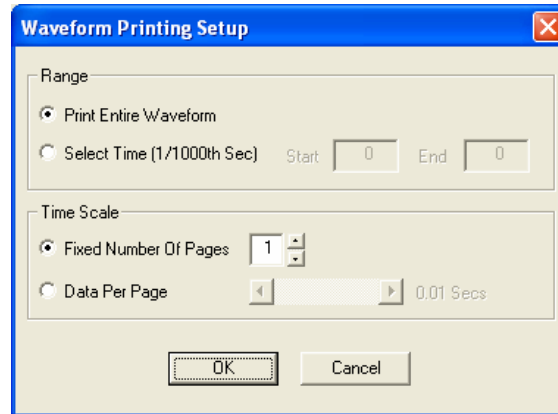
This section includes or excludes an advanced Events graphic waveforms and determines how the advanced Events graphic waveforms will be printed.

i Print Channel Waveforms

This command includes or excludes an Events graphic waveforms in the advanced Event report. Click on this checkbox to display a checkmark to print an Events graphic waveforms. Click on the checkbox to remove the checkmark and not print an Events waveforms.

ii Wave Setup

This command configures how an Events graphic waveforms will be printed. Click on **Wave Setup**. The Waveform Printing Setup dialog box appears.



- **Range**

This section determines the part of a waveform to be printed. You can choose to print the entire waveform or a section of the waveform.

Print Entire Waveform – choose this option to print the complete waveform.

Select Time (1/1000th Sec) – this command prints a section of the waveform. Enter a point of the waveform to start printing in the **Start** box. Enter a point of the waveform to finish printing in the **End** box.

- **Time Scale**

This section determines the time scale of the waveform.

Fixed Number Of Pages – this command changes the waveforms time scale to fit on a specific number of pages.

Data Per Page – this command changes the Events time scale to a specific value you require. Values range from 0.01 seconds to 5.00 seconds of Event data per page.

- **OK**– save the current settings and return to the Print dialog box.
- **Cancel** – return to the Print dialog box without changing the current settings.

(3) Frequency Domain Waveform Printing

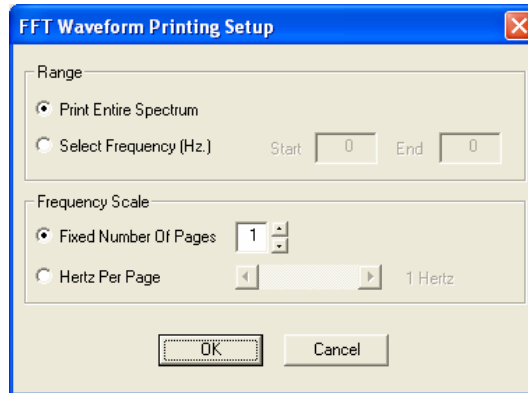
This section includes or excludes an advanced Events FFT analysis and configures how the FFT analysis will be printed.

i Print FFT Waveforms

This command includes or excludes an Events FFT analysis in the advanced Event report. Click on this checkbox to display a checkmark to print an Events FFT analysis. Click on the checkbox to remove the checkmark and not print an Events FFT analysis.

ii FFT Setup

This command configures how an Events FFT analysis will be printed. Click on **FFT Setup**. The FFT Waveform Printing Setup dialog box appears.



- **Range**

This section determines the part of an FFT analysis to be printed. You can choose to print the entire analysis or a section of the analysis.

Print Entire Spectrum – choose this option to print the complete FFT analysis.

Select Frequency (Hz) – this command prints a frequency range of the FFT analysis. Enter a frequency to start printing in the **Start** box. Enter a frequency to finish printing in the **End** box.

- **Frequency Scale**

This section determines the frequency scale of the FFT analysis.

Fixed Number Of Pages – this command changes the FFT analysis scale, measured in hertz, to fit on a specific number of pages.

Hertz Per Page – this command changes the FFT analysis hertz scale to a specific value you require. Values range from 1 hertz to 500 hertz of Event data per page.

- **OK**– save the current settings and return to the Print dialog box.

- **Cancel** – return to the Print dialog box without changing the current settings.

(4) Print Table

This section controls the appearance of tables when printing histogram Events.

- i **Print Table**

Choose this to print a table of the numerical coordinates of the graphical waveform . Click on the checkbox to display a checkmark.

- ii **Print All Data**

Choose this to have all data appear in the table. Click on the button.

- iii **Select**

Choose this to select which data will appear in the table. Click on the button, then enter the Start and End time.

(5) Command Buttons

To choose one of the following command buttons, click the mouse pointer on the button.

- **Start Printing**

Print the advanced Event report.

- **Cancel**

Return to the Analysis Window without changing the current print settings.

- **Save Settings**

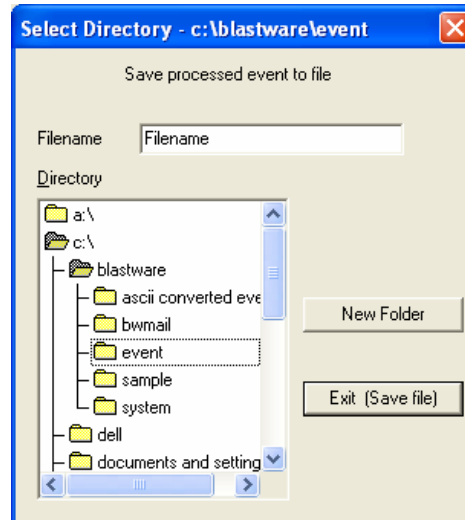
This command saves the current settings as defaults and will be displayed automatically the next time you display the Print dialog box.



b. Save Process File

The Save Process File command saves the current Event file being processed using the Analysis command. The Event file is saved as a new and separate Event file.

To save a process file, open the **File Menu** and select the **Save Process File** command. The Select Directory dialog box appears.



Enter a filename for the new Event file and click **Exit (Save file)**. To create a new folder, click on the **New Folder** button. Enter the name of your new directory and click **Exit (Save file)**.

Note:

Event Reports that are generated from processed Events will contain the original date of the Event and the date it was processed and saved.

5.6 Unit Menu

In addition to the Compliance menu options, the Advanced Setup menu is available in the Advanced Module. The Unit Menu is not available if you are using the Analysis command.

5.7 Analysis Menu

The Analysis Menu is only available when an Waveform Analysis Window is open. The Analysis Menu contains two commands, **Post Event Notes** and **Edit Timeline**.

5.7.1 Post Event Notes

Refer to Section 3.3.3 for information about **Post Event Notes**.

5.7.2 Edit Timeline

Refer to Section 5.9.7 for information about **Edit Timeline**.

5.8 Process Menu

The Process Menu only becomes available in the Blastware Main Menu when you are viewing the Analysis window. This menu lists commands to manipulate Events. As a safety measure, Blastware makes a copy of the original Event before performing process procedures. It is this file copy that is changed using the process commands.

The Process Menu contains the following commands.

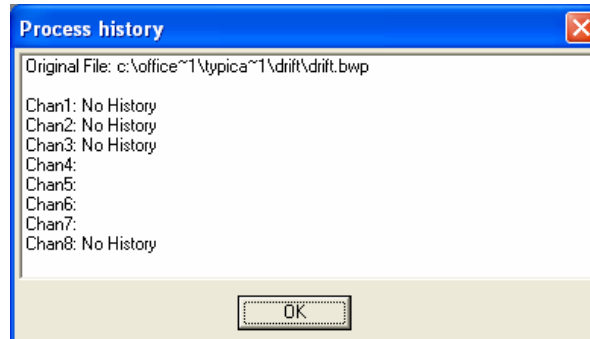


WARNING: Displaying the new waveform in an existing waveform window overwrites the waveform. This waveform will be lost for this process Event. To redisplay the original waveform, close this file, return to the Event Manager, and re-open the original Event file. The waveform reappears.

5.8.1 View History

All Event files changed using the processing commands contain a history of these changes. Using this history, you can retrace the waveform to its original form.

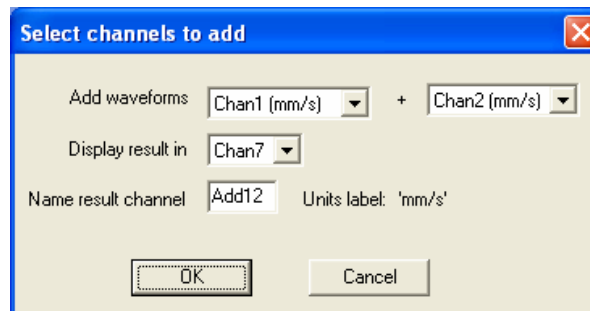
To view a files history of changes, open the **Process Menu** and choose the **View History** command.



5.8.2 Add

This command adds two waveforms together in one Event.

To add waveforms, open the **Process Menu** and select the **Add** command. The following dialog box appears.



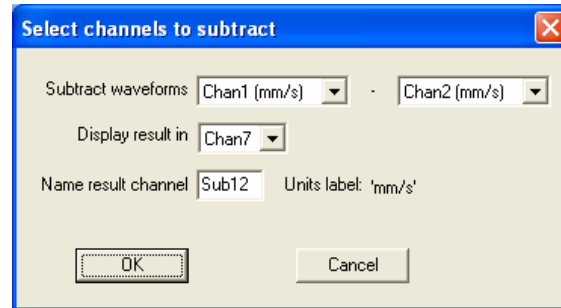
Select the two waveforms to add together in the first two drop-down menus. Choose where to display the newly created waveform in the Display result in drop-down menu. By default, Blastware creates a new waveform window to display the waveform. If you wish to choose another window, click on the Display result in drop-down menu.

Enter the name of the new waveform in the Name result drop-down menu. Click **OK** to display the new waveform.

5.8.3 Subtract

This command subtracts two waveforms.

To subtract waveforms, open the **Process Menu** and select the **Subtract** command. The following dialog box appears.



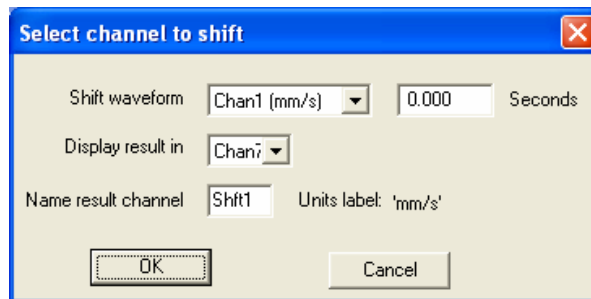
Select the two waveforms to subtract in the first two drop-down menus. Choose where to display the newly created waveform in the Display result in drop-down menu. By default, Blastware creates a new waveform window to display the waveform. If you wish to choose another window, click on the Display result in drop-down menu.

Enter the name of the new waveform in the Name result drop-down menu. Click **OK** to display the new waveform.

5.8.4 Shift

This command shifts the currently selected waveform forward or backward on the time axis. The waveforms absolute time does not change. This changes the waveforms trigger offset.

To shift waveforms, open the **Process Menu** and choose the **Shift** command. The Select channel to shift dialog box appears.



Select the waveform you wish to shift in the first drop-down menu. Enter the time to shift in seconds. To shift the waveform to the left, enter a minus sign (-) in front of the seconds input

Note: You can shift waveforms within the Events recorded time frame. You cannot shift the Event outside this time frame.

Enter the waveform window to display the result and name the result. Press **OK** to display the new waveform.

5.8.5 Truncate

This command truncates a waveform by removing unwanted sections.

To truncate a waveform, click on the **Process Menu** and select **Truncate**. The Select channel to truncate dialog box appears.



The dialog box titled "Select channel to truncate" has a blue header bar with a close button. It contains the following fields: "Truncate waveform" with a dropdown menu showing "Chan1 (mm/s)", "at" followed by a text box with "-0.250" and the label "Seconds", "Display result in" with a dropdown menu showing "Chan7", "and" followed by a text box with "12.000" and the label "Seconds", "Name result channel" with a text box containing "Trun1", and "Units label: 'mm/s'". At the bottom are "OK" and "Cancel" buttons.

Select a waveform in the Truncate waveform drop-down menu. Choose a channel to display the new waveform in and enter the name of the new waveform. Enter a time in the first seconds box. Waveform information **before** this time will be removed. Enter a time in the next seconds box. Waveform information **after** this time will be removed. Press **OK** to display the new waveform.

5.8.6 Vector Sum

The Vector Sum command performs a point by point vector addition of selected waveforms. Vector sums can be calculated for two or three waveforms.

To perform a vector sum, open the **Process Menu** and choose the **Vector Sum** command. The following dialog box appears.

The dialog box titled "Select channels used to generate vector sum" has a blue header bar with a close button. It contains the following fields: "Vector sum of" with three dropdown menus showing "Chan1 (mm/s)", "Chan2 (mm/s)", and "Chan3 (mm/s)", "Display result in" with a dropdown menu showing "Chan7", radio buttons for "2 Channels" and "3 Channels" (with "3 Channels" selected), "Name result channel" with a text box containing "VS123", and "Units label: 'mm/s'". At the bottom are "OK" and "Cancel" buttons.

Choose the waveforms to sum in the first three drop-down menus. Click on 2 Channels or 3 Channels, to correspond to the number of waveforms chosen. Choose a waveform window to display the result and name the result. Press **OK** to display the new waveform.

5.8.7 Integrate

This function integrates a velocity waveform to obtain displacement values along the entire waveform.

To integrate a waveform, open the **Process Menu**, and choose the **Integrate** command. The Select channel to integrate dialog box appears.

The dialog box titled "Select channel to integrate" has a blue header bar with a close button. It contains the following fields: "Integrate waveform" with a dropdown menu showing "Chan1 (mm/s)", "Display result in" with a dropdown menu showing "Chan7", "Name result channel" with a text box containing "Int1", and "Units label: 'mm'". At the bottom are "OK" and "Cancel" buttons.

Choose the waveform to integrate in the first drop-down menu. Select the waveform window to display the result and name the result. Press **OK** to complete the calculation.

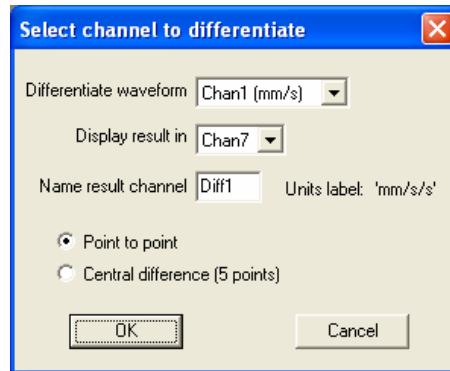
Note: Blastware automatically enters the units for the result channel. A maximum of six characters can appear. Process waveforms with units exceeding this number display an asterisk (*).



5.8.8 Differentiate

This function differentiates a velocity waveform to obtain the acceleration values along the entire waveform.

To differentiate a waveform, open the **Process Menu**, and choose the **Differentiate** command. The following dialog box appears.



Choose the waveform to be differentiated in the first drop-down menu. Select the waveform window to display the resulting waveform. Enter a name for the new waveform. Press **OK**.

a. Point to point

This option does a point to point differentiation of a waveform. Click in the radio button to enable this option.

b. Central difference (5 points)

This option differentiates a waveform to determine the velocity along the entire waveform. The five point central difference method uses a fourth degree polynomial to fit the waveform over five points then calculates the slope. This method proves less sensitive to high frequency noise and produces a smoother waveform. Click in the checkbox to display a checkmark to enable this option.

Note: Blastware automatically enters the units for the result channel. A maximum of six characters can appear. Process waveforms with units exceeding this number display an asterisk (*).

5.8.9 Filter

The filter command presents a series of functions to condition waveforms. Although a complete discussion of Digital Signal Processing is outside the purview of this manual, this section does describe the functions offered by the Blastware software.

To display the filter dialog box, open the **Process Menu** and choose **Filter**.



Select the waveform to filter in the first drop-down menu. Choose a channel to display the result in the second drop-down menu. In the Name result box, enter a name for the new waveform.

a. Window

The Blastware software offers the following windowing functions: Hanning window at cursors, Hamming window at cursors, Blackman window at cursors, Triangular window at cursors, Welch window at cursors, and Bartlett window at cursors.

b. Filter

Frequencies may be filtered out or removed from waveforms using the filter command. The available filters are low pass, high pass, band pass, Ponderation and Filter Weights from File.

The lowpass, highpass, and bandpass filters perform filtering on waveform data in the frequency domain. Lowpass filtering removes frequencies above the corner frequency. Highpass filtering removes frequencies below the corner frequency. The bandpass is a combination of highpass and lowpass filtering. It rejects both low and high frequencies and keeps all frequencies located in between.

The Ponderation filter is only used for compliance monitoring to French national standards, while Filter Weights from File performs frequency weighting from a file containing a weights table.

c. Corner

The corner frequency is the frequency at which the filter takes effect. This is the upper text box.

(1) Reject

The reject value is the frequency cutoff. Lowpass filters remove frequencies above this value. Highpass filters remove frequencies below this value. Bandpass filters remove frequencies indicated by both the lowpass and highpass filters. This is the lower text box.

(2) Taper

The type of taper selected determines the overall characteristics of the filtering which takes place. For linear taper, a fixed amount of attenuation per change in frequency occurs. For



cosine taper, a given percentage change in frequency does not produce a fixed amount of attenuation. It is determined by the frequency.

d. Frequency Weight File

This function performs frequency weighting of an Event based on a frequency weights table file (a .fwt file). To select an existing .fwt file, click on the Browse button and navigating through your directories. You can also edit an existing file by clicking the Edit button, or create a new file by clicking on New. The Edit dialog box appears:

The 'Edit Frequency Weights' dialog box contains a table with 10 rows. Each row has a 'Frequency' column and a 'Weight' column. To the right of the table is a 'Defaults' section with a list of buttons labeled 'BS6841 Wb' through 'BS6841 Wg'. At the bottom are 'Save and Exit' and 'Cancel' buttons.

	Frequency	Weight
1	0.5	0.4
2	0.63	0.4
3	0.8	0.4
4	1	0.4
5	1.25	0.4
6	1.6	0.4
7	2	0.4
8	2.5	0.5
9	3.15	0.63
10	4	0.8

Defaults:

- BS6841 Wb
- BS6841 Wc
- BS6841 Wd
- BS6841 We
- BS6841 Wf
- BS6841 Wg

Buttons: Save and Exit, Cancel

Blastware includes a number of built-in weight tables, which you may use as-is or customize. To save new weight tables, enter the desired Frequency and Weight values and click on Save and Exit. A dialog box will appear where you can enter the name for the .fwt file and select the destination directory.

5.8.10 Scale

This command changes the measurement units and offset value for a waveform.

To scale a waveform, choose **Scale** from the **Process Menu**. The following dialog box appears.

The 'Select channel to scale' dialog box has several input fields: a 'Scale waveform' dropdown menu (set to 'Chan1 (mm/s)'), a 'Scale factor' text box (set to '1.000'), a 'Display result in' dropdown menu (set to 'Nil'), an 'Offset' text box (set to '0.0'), a 'Name result channel' text box (set to 'Nil'), and a 'Result units' text box (set to 'mm/s'). At the bottom are 'OK' and 'Cancel' buttons.

Scale waveform: Chan1 (mm/s) | Scale factor: 1.000

Display result in: Nil | Offset: 0.0

Name result channel: Nil

Result units: mm/s

Buttons: OK, Cancel

Choose a waveform to scale in the first drop-down menu. Enter a scale factor to be applied to the waveform. Select a waveform window to display the new waveform. Enter an offset value, if required. Enter a name for the new waveform in the Name result box. Finally, enter the abbreviation to represent the measurement units of the resulting waveform.

WARNING: The Result units text box names units only. This text box does not check to ensure the actual waveform result units match the units named in this box.

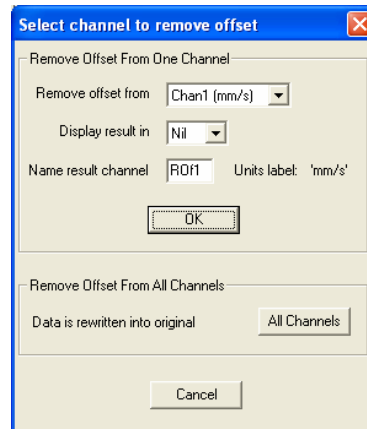


5.8.11 Remove Offset

Some recorded waveforms may contain a DC offset. Visually, a waveform containing an offset appears to be shifted a constant value above or below the X axis. The system does not automatically remove all offsets because a user may want to include them purposely. Using this command, you can remove the offset from a waveform. The Blastware program removes an offset by subtracting the average.

Note: You can manually adjust the offset using the scale command, see above.

To display the Remove Offset dialog box, open the **Process Menu** and choose the **Remove Offset** command.

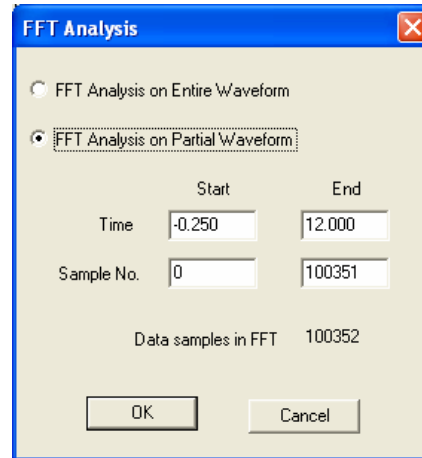


Choose a waveform to remove the offset in the first drop-down menu. In the second drop-down menu, choose a waveform window to display the new waveform. Lastly, name the new waveform. Press **OK** to create the new waveform. If you would like to remove the offset from all of the channels, click on the **All Channels** button.

5.8.12 FFT Analysis

The FFT Analysis command selects a portion of a waveform to perform an FFT calculation upon, or if desired, the complete waveform. For a partial FFT Analysis, select a waveform section by either specifying the time or the sample number. Select start and end points at zero crossings to reduce the high frequency component that may be introduced by truncating the waveform. When the FFT dialog box appears, the default start and end time correspond to the present cursor positions.

To perform an FFT, open the **Process Menu** and select the **FFT Analysis** command. For a Partial Waveform FFT Analysis, click on the second radio button (as shown below), and enter a Start and End time, or a sample number. You do not have to enter both. Click **OK**. The FFT appears within the Analysis Window. For a full analysis, click on the **FFT Analysis on Entire Waveform** radio button.



Note: FFT calculations may require a period of time to complete. The time required depends upon the size of the waveform and the speed of the computer.

a. FFT Analysis Limitations - Description

In simple waveforms, not composed of many different frequencies, the dominant frequency may be at the peak particle velocity of the waveform. In more complex waveforms, the dominant frequency is not necessarily the frequency at the peak particle velocity but at the frequency with the greatest amplitude. Whether or not this frequency actually contributed to the peak particle velocity value and by how much must be extrapolated by examining the original signal closely. The frequency at the peak of a complex wave is usually not a single frequency rather it is a series of waves of different frequencies superimposed. It is intended that the frequency spectrum data be used as a tool in conjunction with the velocity versus time waveform.

Due to the digital nature of the FFT process, some smearing or broadening of the spectrum may occur. The algorithm used to represent the original waveform with a series of weighted sine and cosine curves does so with discrete frequency increments. A 25.5 hertz signal, for example, may not be represented by one frequency category alone and may therefore be represented by the next closest frequencies, 25 and 26 hertz, with possibly some small residual leakage into neighboring frequency categories. This is referred to as the "Picket Fence Effect".

For further reading, please see the following references.

Burrus, C.S. and Parks, T.W., DFT/FFT AND CONVOLUTION ALGORITHMS. Rice University: John Wiley and Sons, 1985.

Lighthill, M.J., AN INTRODUCTION TO FOURIER ANALYSIS AND GENERALIZED FUNCTIONS. Cambridge, England: Cambridge University Press, 1980.

Oppenheim, A.V. and Schaffer, R.W., DIGITAL SIGNAL PROCESSING. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1975.

Rabiner, L.R. and Gold, B., THEORY AND APPLICATION OF DIGITAL SIGNAL PROCESSING. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1975.

Brigham, E.O., THE FAST FOURIER TRANSFORM. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1974.

5.8.13 Test Wave

This command creates a sine wave based on entered amplitude and frequency parameters.

To display the Test Wave dialog box, open the **Process Menu** and choose the **Test Wave** command.



The 'Generate test waveform' dialog box has a blue title bar with a close button. It contains three input fields for 'Sine wave: Amplitude' with values 2, 5, and 10. To the right, 'Frequency' has values 20, 50, and 100, followed by 'Hz.'. Below these is a 'Place waveform in' dropdown menu set to 'Nil'. At the bottom is a 'Name result channel' text box containing 'Test8'. 'OK' and 'Cancel' buttons are at the bottom.

Enter up to three amplitude and frequency components for the test wave. Select a waveform window to display the new waveform. Name the new waveform in the last box. Press **OK** to accept your settings.

5.8.14 Peak Hold

The Peak Hold command allows you to remove negative excursions from waveforms.

To display the Peak Hold dialog box, open the **Process Menu** and choose the **Peak Hold** command.

The 'Select channel to peak hold' dialog box has a blue title bar with a close button. It features a 'Peak hold waveform' dropdown menu set to 'Chan1 (mm/s)'. Below it is a 'Display result in' dropdown menu set to 'Nil'. At the bottom is a 'Name result channel' text box containing 'PH1'. 'OK' and 'Cancel' buttons are at the bottom.

Choose the waveform to apply the peak hold to within the first drop-down menu. Select the waveform window to display the result in and name the result. Press **OK** to perform the calculation.

5.8.15 Smooth

The Smooth process command is used to average consecutive data points of a waveform.

To display the Smooth dialog box, open the **Process Menu** and choose the **Smooth** command.

The 'Select channel to smooth via central average' dialog box has a blue title bar with a close button. It contains a 'Smooth waveform' dropdown menu set to 'Chan1 (mm/s)'. Below it is a 'Number of points' text box with the value 1. Then is a 'Display result in' dropdown menu set to 'Nil'. At the bottom is a 'Name result channel' text box containing 'Avg1' and a 'Units label: 'mm/s'' text box. 'OK' and 'Cancel' buttons are at the bottom.

Choose the waveform to smooth within the first drop-down menu. Enter a range of points to average within the Number of points window. Choose a waveform window to display the result in and name the result. Press **OK** to smooth the waveform.



5.9 Tools Menu

The tools available under the **Tools Menu** will vary; dependent on what type of window you have open, Analysis, Event Manager or a Report.

5.9.1 Scaled Distance

This tool is only available when the Event Manager is active, or when there are no windows open. The Scale Distance tool is available when the Blastware Event Manager is the only opened, active window. It also appears if there are no windows open within the Blastware program.

5.9.2 Post Event Notes

This tool is only available when the Event Manager is active. The Post Event Notes tool is available when the Blastware Event Manager and/or a Report window are open. Refer to Section 3.3.3 for more information about **Post Event Notes**.

5.9.3 ASCII Conversion

This tool is only available when the Event Manager is active. The ASCII Conversion tool is available when the Blastware Event Manager and/or a Report window are open. Refer to Section 3.3.4 for more information about **ASCII Conversion**.

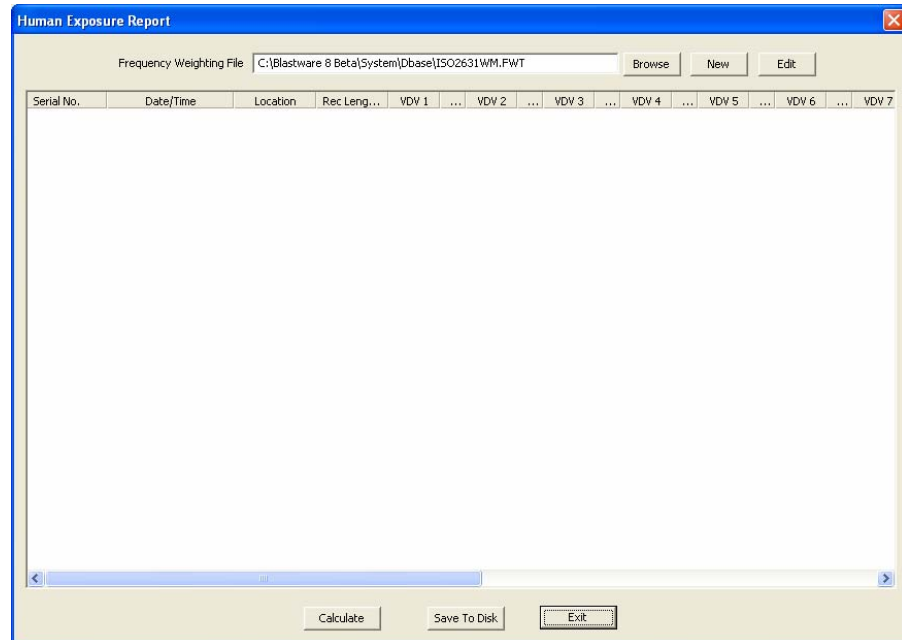
5.9.4 Human Exposure Report

The Human Exposure Report option enables you to calculate frequency-weighted Vibration Dosage Value (VDV) and Root Mean Square (RMS) on a series of Events selected in the Event Manager. Once you have selected or created a frequency weighting, click on the Calculate button. Results are shown in the Calculations area.

If the channel data is in Velocity, the data is differentiated to acceleration prior to the calculation. The acceleration data is then weighted as specified in the selected Frequency Weighting file. The available list of weightings includes the ISO 2631-2:2003 Wm weighting. The microphone channels (4 and 8) are not available if a compliance event has been loaded.

Refer to Section 5.8.11 for more information on the ISO Standard 2631-2:2003 and British Standard BS-6841.

To display the Human Exposure Report dialog, click on the **Tools** menu and select **Human Exposure Report**. The following dialog appears:

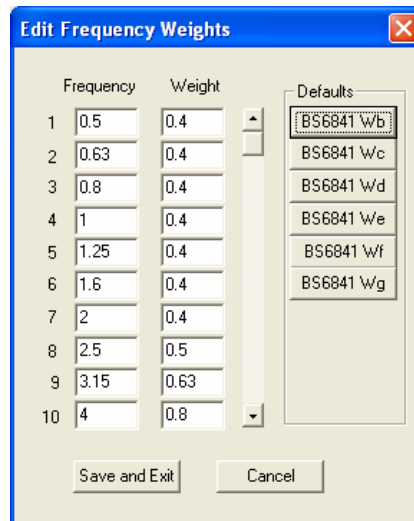


(1) Frequency Weighting File

Press the **Browse** button to navigate through your directories and load an existing frequency weight table (.fwt) file.

(2) New

Select **New** to create a frequency weight file. The following dialog appears:



Blastware includes a number of built-in weight tables, which you may use as-is or customize. To save new weight tables, enter the desired Frequency and Weight values and click on Save and Exit. A dialog box will appear where you can enter the name for the .fwt file and select the destination directory.

(3) Edit

Select **Edit** to modify an existing frequency weight file. The following dialog appears:



The 'Edit Frequency Weights' dialog box allows users to customize weight tables. It features two columns: 'Frequency' and 'Weight'. The 'Frequency' column contains values from 1 to 10. The 'Weight' column contains values from 0.4 to 0.8. A 'Defaults' list on the right shows the default weight table 'BS6841 Wb'. Buttons for 'Save and Exit' and 'Cancel' are at the bottom.

Frequency	Weight
1	0.5
2	0.63
3	0.8
4	1
5	1.25
6	1.6
7	2
8	2.5
9	3.15
10	4

Blastware includes a number of built-in weight tables, which you may use as-is or customize. To save new weight tables, enter the desired Frequency and Weight values and click on Save and Exit. A dialog box will appear where you can enter the name for the .fwt file and select the destination directory.

(4) Calculate

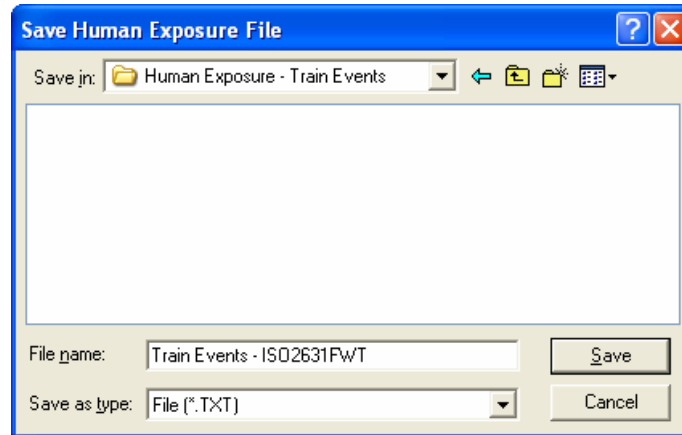
Click on **Calculate** to update or generate a new VDV and RMS calculation. Refer to the results in the image below:

The 'Human Exposure Report' window displays a table of exposure data. The table has columns for Serial No., Date/Time, Location, Rec Leng., VDV 1, VDV 2, VDV 3, and VDV 4. The data is sorted by Date/Time, showing a series of measurements for a specific location (Unit 3) over a period of time. The VDV values are calculated based on the frequency weights defined in the 'Edit Frequency Weights' dialog box.

Serial No.	Date/Time	Location	Rec Leng.	VDV 1	VDV 2	VDV 3	VDV 4
BC6681	Dec 1 /03 13:47:36	Unit 3	9.25	3.82	mm-s^-1.75	2.58	mm-s^-1.75
BC6681	Dec 1 /03 13:51:14	Unit 3	13.25	5.03	mm-s^-1.75	4.25	mm-s^-1.75
BC6681	Dec 1 /03 13:54:04	Unit 3	12.25	6.10	mm-s^-1.75	3.03	mm-s^-1.75
BC6681	Dec 1 /03 13:58:03	Unit 3	3.75	1.16	mm-s^-1.75	1.54	mm-s^-1.75
BC6681	Dec 1 /03 14:03:05	Unit 3	14.75	5.15	mm-s^-1.75	2.41	mm-s^-1.75
BC6681	Dec 1 /03 14:04:17	Unit 3	6.75	1.75	mm-s^-1.75	1.03	mm-s^-1.75
BC6681	Dec 1 /03 14:06:34	Unit 3	10.75	3.72	mm-s^-1.75	2.85	mm-s^-1.75
BC6681	Dec 1 /03 14:07:43	Unit 3	12.75	7.29	mm-s^-1.75	3.11	mm-s^-1.75
BC6681	Dec 1 /03 14:08:27	Unit 3	7.25	2.16	mm-s^-1.75	1.14	mm-s^-1.75
BC6681	Dec 1 /03 14:08:38	Unit 3	3.25	1.38	mm-s^-1.75	0.748	mm-s^-1.75
BC6681	Dec 1 /03 14:09:54	Unit 3	9.25	5.62	mm-s^-1.75	2.76	mm-s^-1.75
BC6681	Dec 1 /03 14:13:50	Unit 3	11.25	5.19	mm-s^-1.75	3.01	mm-s^-1.75
BC6681	Dec 1 /03 14:20:24	Unit 3	12.75	5.30	mm-s^-1.75	2.20	mm-s^-1.75
BC6681	Dec 1 /03 14:30:26	Unit 3	16.75	4.65	mm-s^-1.75	2.38	mm-s^-1.75
BC6681	Dec 1 /03 14:34:33	Unit 3	13.25	5.59	mm-s^-1.75	3.03	mm-s^-1.75
BC6681	Dec 1 /03 14:40:14	Unit 3	7.75	1.47	mm-s^-1.75	0.770	mm-s^-1.75
BC6681	Dec 1 /03 14:45:45	Unit 3	13.75	8.03	mm-s^-1.75	4.67	mm-s^-1.75
BC6681	Dec 1 /03 14:52:56	Unit 3	9.25	4.19	mm-s^-1.75	2.34	mm-s^-1.75
BC6681	Dec 1 /03 14:55:42	Unit 3	12.75	7.35	mm-s^-1.75	3.19	mm-s^-1.75
BC6681	Dec 1 /03 14:58:16	Unit 3	3.25	0.998	mm-s^-1.75	0.526	mm-s^-1.75
BC6681	Dec 1 /03 15:00:13	Unit 3	16.25	4.76	mm-s^-1.75	2.85	mm-s^-1.75
BC6681	Dec 1 /03 15:01:47	Unit 3	3.25	0.906	mm-s^-1.75	1.02	mm-s^-1.75
BC6681	Dec 1 /03 15:06:08	Unit 3	7.25	1.23	mm-s^-1.75	1.35	mm-s^-1.75
BC6681	Dec 1 /03 15:06:16	Unit 3	8.25	1.09	mm-s^-1.75	1.03	mm-s^-1.75
BC6681	Dec 1 /03 15:07:44	Unit 3	9.75	3.95	mm-s^-1.75	2.28	mm-s^-1.75
BC6681	Dec 1 /03 15:09:46	Unit 3	11.75	4.42	mm-s^-1.75	3.17	mm-s^-1.75
BC6681	Dec 1 /03 15:11:53	Unit 3	10.75	1.71	mm-s^-1.75	0.939	mm-s^-1.75
BC6681	Dec 1 /03 15:13:39	Unit 3	13.25	6.59	mm-s^-1.75	2.83	mm-s^-1.75
BC6681	Dec 1 /03 15:14:15	Unit 3	3.25	1.15	mm-s^-1.75	1.34	mm-s^-1.75
BC6681	Dec 1 /03 15:20:55	Unit 3	19.25	5.44	mm-s^-1.75	2.92	mm-s^-1.75
BC6681	Dec 1 /03 15:30:54	Unit 3	13.75	5.06	mm-s^-1.75	2.48	mm-s^-1.75
BC6681	Dec 1 /03 15:38:54	Unit 3	14.25	5.45	mm-s^-1.75	3.27	mm-s^-1.75

(5) Save to Disk

Save to Disk the resulting Human Exposure Report in a delimited text format.



You can then import and edit the file in a spreadsheet program, such as Microsoft Excel – refer to the image below:

Microsoft Excel - Train Events Spreadsheet

FileEditViewInsertFormatToolsDataWindowHelpAdobe PDF

Type a question for help

Arial10B

Reply with Changes...End Review...

A1

Serial No.

	A	B	C	D	E	F	G	H	I	J
1	Serial No.	Date/Time	Location	Rec Length (sec)	VDV 1	VDV 2	VDV 3	RMS 1	RMS 2	RMS 3
2	BC6681	Dec 1 /03 13:47:36	Unit 3	9.25	8.79	5.78	80.2	3.46	2.24	27.8
3	BC6681	Dec 1 /03 13:51:14	Unit 3	13.25	11.2	9.68	128	3.98	3.27	38.8
4	BC6681	Dec 1 /03 13:54:04	Unit 3	12.25	13.4	6.95	70.7	4.96	2.51	24.7
5	BC6681	Dec 1 /03 13:58:03	Unit 3	3.75	2.87	3.93	16.4	1.13	1.24	6.42
6	BC6681	Dec 1 /03 14:03:05	Unit 3	14.75	10.2	4.89	82.4	3.3	1.61	26.5
7	BC6681	Dec 1 /03 14:04:17	Unit 3	6.75	3.66	2.24	21	1.73	1.03	9.26
8	BC6681	Dec 1 /03 14:06:34	Unit 3	10.75	8.41	6.63	41.2	3.4	2.68	16.2
9	BC6681	Dec 1 /03 14:07:43	Unit 3	12.75	16.3	7.45	85.2	5.66	2.59	29.5
10	BC6681	Dec 1 /03 14:08:27	Unit 3	7.25	4.1	2.5	14.4	1.91	1.16	6.89
11	BC6681	Dec 1 /03 14:08:38	Unit 3	3.25	2.68	1.72	9.59	1.46	0.914	5.36
12	BC6681	Dec 1 /03 14:09:54	Unit 3	9.25	13.2	6.89	67.4	5.5	2.79	26.2
13	BC6681	Dec 1 /03 14:13:50	Unit 3	11.25	11.7	6.94	81	4.25	2.73	29.4
14	BC6681	Dec 1 /03 14:20:24	Unit 3	12.75	11.8	4.95	44.6	4.18	1.84	15.5
15	BC6681	Dec 1 /03 14:30:26	Unit 3	16.75	10.2	5.41	69	3.61	1.95	24.1
16	BC6681	Dec 1 /03 14:34:33	Unit 3	13.25	13	7.11	104	4.36	2.45	33.3
17	BC6681	Dec 1 /03 14:40:14	Unit 3	7.75	3.09	1.63	17.6	1.39	0.725	7.78
18	BC6681	Dec 1 /03 14:45:45	Unit 3	13.75	18.2	10.9	145	5.84	3.62	42

Human Exposure - Train Events/

ReadyNUM

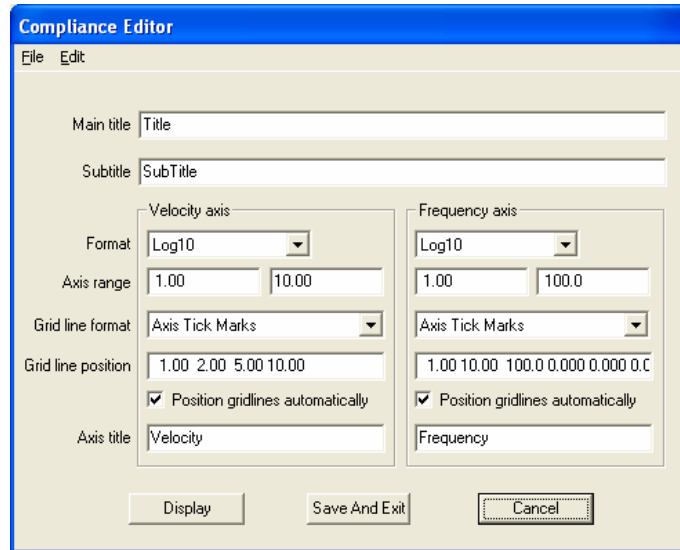
(6) Exit

This command **Exits** the Human Exposure Report tool.

5.9.5 Compliance Graph Editor

This tool is only available when the Event Manager is active, or when there are no windows open. The Compliance Graph Editor tool is available when the Blastware Event Manager is the only opened, active window. It also appears if there are no windows open within the Blastware program. The compliance graph editor customizes compliance graphs to your requirements.

To open the compliance graph editor, click on the **Tools Menu** and choose the **Compliance Graph Editor** command. The following dialog box appears.



Blastware displays a generic compliance graph. To create a new compliance graph, change the generic graph accordingly then save it. Instantel does not recommend changing the compliance graphs included with the Blastware program. If you change a graph inadvertently, you can replace the graph with the original by installing Blastware again. After editing a compliance graph, transfer it to the monitor and check its printout.

a. File Menu

The file menu contains the following commands.

(1) Load

This command loads an existing compliance graph into the compliance graph editor. You could load an existing graph and change some aspects without having to create the entire graph.

(2) Save

After changing a compliance graph, choose this command to save the new graph. Remember to enter a new name for the graph to avoid overwriting the graph supplied with Blastware.

(3) Exit

This command closes the dialog box and returns to the Blastware main menu. You may be prompted to save the existing file. Enter a new name and click on **OK**. If you do not want to save the changes, click on **Cancel**.

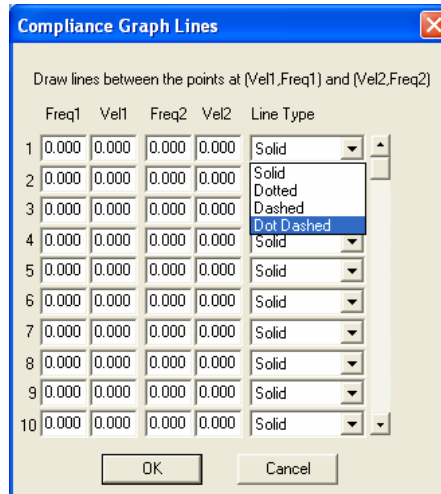
b. Edit Menu

The following commands appear in the Edit Menu.

(1) Lines

Use this command to draw lines on the graph. For example, the USBM R18507 and OSMRE compliance graph displays OSMRE, USBM drywall or plaster, and USBM plaster lines.

To draw lines on the graph, open the **Edit Menu** and choose the **Lines** command. The Compliance Graph Lines dialog box appears.



Compliance Graph Lines

Draw lines between the points at (Vel1,Freq1) and (Vel2,Freq2)

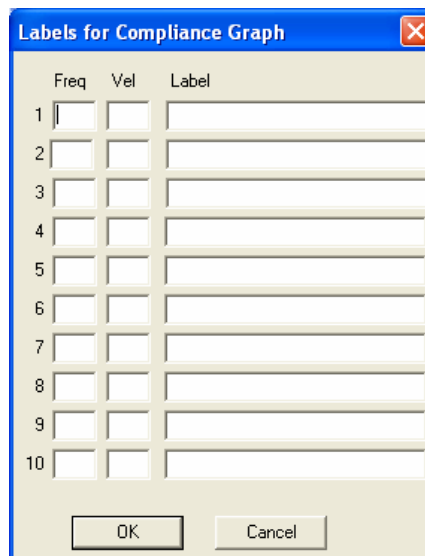
	Freq1	Vel1	Freq2	Vel2	Line Type
1	0.000	0.000	0.000	0.000	Solid
2	0.000	0.000	0.000	0.000	Solid
3	0.000	0.000	0.000	0.000	Dotted
4	0.000	0.000	0.000	0.000	Dot Dashed
5	0.000	0.000	0.000	0.000	Solid
6	0.000	0.000	0.000	0.000	Solid
7	0.000	0.000	0.000	0.000	Solid
8	0.000	0.000	0.000	0.000	Solid
9	0.000	0.000	0.000	0.000	Solid
10	0.000	0.000	0.000	0.000	Solid

OK Cancel

To draw a line, enter the lines start (X,Y) and end (X1,Y1) points using X and Y coordinates. Choose a line type. Lines can be solid, dotted, dashed, or dot dashed. Up to forty lines can be drawn on a compliance graph. Click **OK** when done. To view the lines, click the **Display** button. The compliance graph appears. To make additional changes, close the displayed graph, make the changes, then click on the **Display** button again to see your changes.

(2) Labels

You can add text labels to the graph using the this command. Labels can appear anywhere on the graph. Each label can be up to twenty five characters in length including spaces. You can enter up to ten labels onto a graph. To position a label, enter the X and Y coordinates of the first character in the label. The entire label positions itself in a straight line to the right of this coordinate.



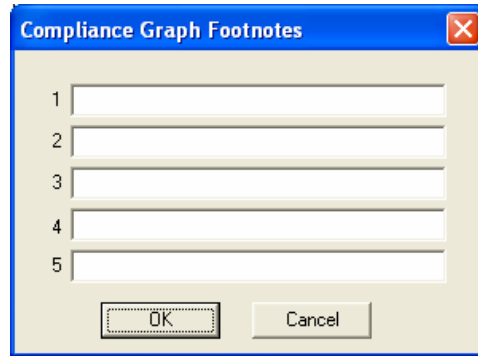
Labels for Compliance Graph

	Freq	Vel	Label
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

OK Cancel

(3) Footnotes

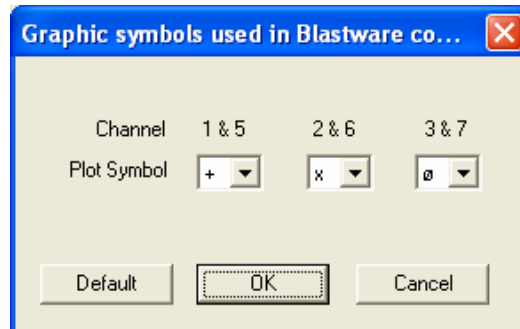
You can add comments to a graph using the footnotes command. These footnotes appear at the bottom of the graph under the X – axis title. Up to four footnotes of forty characters in length can be added to a compliance graph.



Note: An asterisk (*) appears to the left of the last footnote indicating the graph was not created by Instantel Inc. The asterisk cannot be edited or removed.

(4) Plot Symbols

This command chooses the plot symbols that appear on the compliance graph. You have a choice for channels one and five, two and six, three and seven. If you wish to use the same symbols used in other Instantel Inc. compliance graphs, click on the Default button.



(5) Lower Limit Message

This command displays a message if no velocities were recorded. The value appearing in the message changes according to the minimum value of the Y axis. The message can be up to thirty characters in length including spaces. Choose a number of significant digits to appear after the decimal point. If you do not require this value to appear, enter zero for the number of significant digits.

c. Main Title

Enter the title of the compliance graph to appear in this dialog box. Titles can be up to forty characters in length including spaces.

d. Subtitle

A subtitle can appear under the main title. Subtitles can be up to forty characters in length including spaces.

e. Velocity Axis and Frequency Axis

The following commands configure the graphs velocity and frequency axes.

f. Format

This command defines the scale for the velocity and frequency axes. You can choose either Log 10 or Linear scales.



g. Axis range

These text boxes define the axes range. Enter the minimum value in the left hand text box followed by the maximum value in the right hand text box. For Log10 axes, the minimum value must be greater than zero. Also, for all ranges, the maximum value must be greater than the minimum value.

h. Grid line Format

Graphs can be displayed with axes tick marks and without grid lines, with grid lines appearing as solid lines, or dotted grid lines. The velocity and frequency grid lines can be different, as required.

i. Grid line Position

To position the grid lines on your graph, enter the numerical X or Y values in these text boxes. Separate each coordinate with a space. A maximum of fifteen gridlines can appear for each axis.

j. Position gridlines automatically

Click on this checkbox to have Blastware position the grid lines automatically.

k. Axis title

This command displays a title for each axis. Titles can be up to twenty five characters in length including spaces. The measurement units for the velocity and frequency appear automatically.

I. Command Buttons

The following command buttons appear at the bottom of the dialog box.

(1) Display

This command opens a window and displays the compliance graph you are editing. You can press this button at anytime to display the compliance graph and check your settings. To continue with your changes, close the window to display the compliance graph editor.

(2) Save and Exit

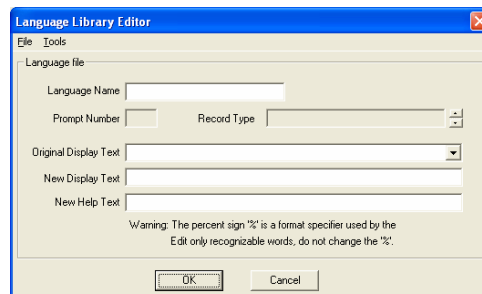
This command saves the compliance graphs changes and closes the compliance graph editor. You are prompted to enter a name for the new compliance graph. Enter a name and click the **OK** button.

(3) Cancel

Click on this command to close the compliance graph editor without changing the compliance graph.

5.9.6 Language Editor

This tool is only available when the Event Manager is active, or when there are no windows open. Using the language editor, you can change the messages appearing in the Blastware reports and in the Series III monitor displays. You can change the messages currently displayed or translate the messages to a different language.





a. File Menu

The file menu contains the following commands.

(1) Load

This command loads an existing language file into the language library editor. You must first load a language file before you can begin editing or translating the file.

(2) Save

After changing a language file, choose this command to save the new file. Remember to enter a new name for the file to avoid overwriting the existing language file.

(3) Exit

This command closes the dialog box and returns to the Blastware main menu. You are prompted to save the existing file. Enter a new name and click **OK**. If you do not want to save the changes, click **Cancel**.

b. Tools Menu

The following commands appear in the Tools Menu.

(1) Print All Text

This command prints the entire contents of the loaded language file. Before you can proceed to edit the contents of a language file, you should choose this command and print the file for your reference.

(2) Show text with library id on Event report

This command displays an Event report showing the library id or addresses of all the language text. These addresses direct you to the location within the language file where the language text can be found. Click **Yes** to enable this feature or **No** to disable it.

For example, select this command and click on **Yes**. Next, display a Quick View report of an Event. Notice that all language text entries that can be edited appear with two numbers. Entries that appear without these numbers can be edited elsewhere in the Blastware program; channel names for example. The two numbers refer to the record type and the prompt number. On the copy of the language file you have printed, the record types appear in ascending order. Within each record type, the prompt numbers appear in ascending order. Print an example Quick Report for your reference when using the language editor.

(3) Upgrade

This command updates your current language library to include additions from an upgrade to the Blastware program.

To upgrade the language library, check that the required library is currently loaded. Select the upgrade file. Upgrade files have a .upg extension on the file name. Save the library file. The upgrade is complete. Send the new file to the monitor using either the **Reload OS and Library Components** or the **Reload Library Components Only**.

c. Language Name

Enter a name to describe this version of the language file. For example, if this file contains a language translation, enter the name of the translated language.

(1) Prompt Number

The prompt number identifies the Original Display Text entry located within the language file. Prompt numbers appear down the left hand side of the language file. The values cannot be changed. The prompt number changes automatically when selecting text from within the Original Display Text drop-down list.



(2) Record Type

The record type identifies each section of text within the language file. For example, the Record Setup is record type number four of the language file. This value cannot be changed. It changes automatically when selecting text within the Record Type drop-down list.

(3) Original Display Text

This drop-down list displays the text in the current language file. The text corresponds to the text appearing at the Record Type number and the Prompt Number. This text cannot be changed. To change the text, enter the required text in the New Display Text field, see below.

(4) New Display Text

Enter the new text, as required.

(5) New Help Text

Enter the new help text to describe the function.

(6) Command Buttons

The following command buttons appear at the bottom of the dialog box.

i OK

This command saves the language file changes and closes the language library editor. You are prompted to enter a name for the new language library file. Enter the name and click on the **OK** button.

ii Cancel

Click on this command to close the language library editor without changing the settings of the loaded language file.

d. Selecting a Language File for Operations

Language files must be selected for use in the Blastware reports and in the monitor displays. To select a language file for the Blastware reports, open the PC Reports Option dialog box found in the **Report Options** icon and choose the **Language** drop-down menu. To select the language file click on the **Unit** menu and choose the **Reload Operating System** command. Select a language file then click the Reload Library Components Only command to transfer the new language to the monitor.

e. Changing the Date Format Using the Language Editor

The language editor can be used to change the Blastware date format. Blastware uses two formats; Month/Day/Year (September 15, 1997) and an abbreviated Month/Day/Year (Sep 15/97). We can change both the order and content of the dates. We can, for example, change the date ordering to Day/Month/Year (15 September, 1997). We could also change the order and content to the Continental date convention of 15.ix.97.

Note: Dates displayed in the Blastware program can be changed. Dates displayed in the monitor cannot be changed.

To change the date format from September 15, 1997 to 15 September 1997, complete the following steps.

1. Open the **Tools Menu** and select the **Language Editor** command.
2. Check the Language Name field to ensure the required library is loaded.
3. Click on the Record Type drop-down menu and select the 155 - Date Format record.
4. In the Original Display Text drop-down menu, select the %M %D, %Y entry. Notice the Prompt Number window displays the number one.



5. In the New Display Text window, change the text to the following; %D %M, %Y and click **OK**. The date format is now changed.
6. To change the second abbreviated date format, display the Prompt Number two in step four then complete the remaining steps.

To change the date format to the Continental date convention, 15.ix.97, complete the following steps.

1. Open the **Tools Menu** and select the **Language Editor** command.
2. Check the Language Name field to ensure the required library is loaded.
3. Click on the Record Type drop-down menu and select the 155 - Date Format record.
4. In the Original Display Text drop-down menu, select the %M %D, %Y entry. Notice the Prompt Number window displays the number one.
5. In the New Display Text window, change the text to the following; %D. %M. %Y . Do not forget the periods in-between. Click **OK**. The date format is now changed.
6. In this step, we change each calendar month to display a roman numeral rather than the months name. Click on the Original Display Text drop-down menu and choose the January entry at Prompt Number 34. In the New Display Text enter the roman numeral I. Continue with the remaining months.

To change the second abbreviated date format, display the Prompt Number two in step four then complete the remaining steps.

5.9.7 Edit Timeline

This tool is available when the Event Manager is active (Tools Menu), or when the Waveform Analysis Window is open (Analysis Menu). The Edit Timeline command configures timelines to appear in the Wave Analysis Window or for use within the Linear Superposition tool . Timelines indicate the timing of sequences throughout an event. The timelines indicate delays according to the manufacturer's specifications. By overlaying the timelines on the event's waveforms, it is possible to compare stated performance to actual performance. To apply a timeline, open an Event in the Waveform Analysis Window. Display the Edit Timeline dialog box by clicking on the **Analysis Menu** and select the **Edit Timeline** command. The Edit Timeline dialog box appears, as shown below:

Charge Num	Row Num	Hole Num	Deck Num	Initiation Time (ms)	Travel Time (ms)	Arrival Time (ms)	Scale Factor
1	1	1	1	0	0	0	1.00
2	1	1	2	17	0	17	1.00
3	1	2	1	23	0	23	1.00
4	1	2	2	40	0	40	1.00
5	1	3	1	46	0	46	1.00
6	1	3	2	63	0	63	1.00
7	1	4	1	69	0	69	1.00
8	1	4	2	86	0	86	1.00
9	1	5	1	92	0	92	1.00
10	1	5	2	109	0	109	1.00
11	1	6	1	115	0	115	1.00
12	1	6	2	132	0	132	1.00
13	1	7	1	138	0	138	1.00
14	1	7	2	155	0	155	1.00
15	1	8	1	161	0	161	1.00
16	1	8	2	178	0	178	1.00
17	1	9	1	184	0	184	1.00
18	1	9	2	201	0	201	1.00
19	1	10	1	207	0	207	1.00
20	1	10	2	224	0	224	1.00
21	1	11	1	230	0	230	1.00
22	1	11	2	247	0	247	1.00
23	1	12	1	253	0	253	1.00
24	1	12	2	270	0	270	1.00
25	1	13	1	276	0	276	1.00
26	1	13	2	293	0	293	1.00
27	1	14	1	299	0	299	1.00
28	1	14	2	316	0	316	1.00
29	1	15	1	322	0	322	1.00

Below is a description of each column.



Charge Number:

This column is automatically generated.

Initiation Time

This column is user-defined information created from input located in the **Automatic Timeline Generation** section of the **Edit Timeline** dialog window:

$$\begin{aligned} \text{Initiation Time} = & (\text{Charge Num} - 1) \times \text{Inter-deck Delay} + \\ & (\text{Hole Num} - 1) \times \text{Inter-hole Delay} + \\ & (\text{Row Num} - 1) \times \text{Inter-row Delay} \end{aligned}$$

Travel Time:

User defined column representing the time in milliseconds that a vibration takes from the hole to the sensor.

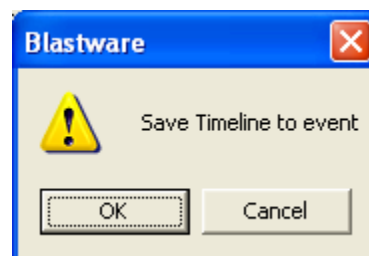
Arrival Time:

This column represents the arrival time in ms at the sensor relative to the first arrival. Initiation Time + Travel Time

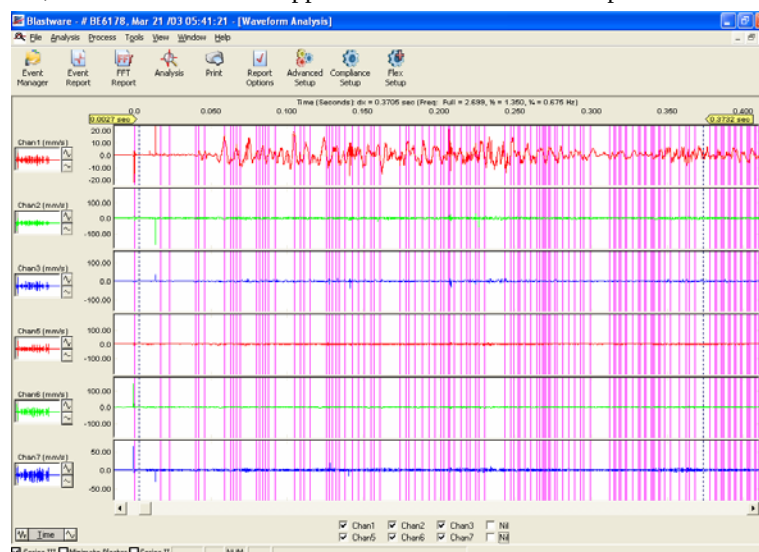
Scale Factor:

This column represents the range, from .1 to 2, and is used to scale the amplitude of the signature waveform, if necessary.

If you need to view the resultant data that is not shown in the window, use the **Page Down** key on your keyboard to scroll through the entire timeline. After you have configured the timelines, choose **Exit** and the following message is displayed:



By selecting **OK**, the Timeline will be applied to the event. An example is shown below:



**a. Automatic Timeline Generation**

For each charge in the right hand column, enter the parameters for the timeline you want to create.

(1) Number of Decks per Hole

Enter the number of decks per hole.

(2) Inter-deck Delay

Enter the delay between decks.

(3) Number of Holes per Row

Enter the number of holes per row.

(4) Inter-hole Delay

Enter the delay between holes.

(5) Number of Rows

Enter the number of rows.

(6) Inter-row Delay

Enter the delay between rows.

b. Generate

This selection creates the timelines that will appear in the Analysis Window.

c. Append

This command adds a timeline to a timeline already appearing in the dialog box. Edit the current timeline by changing the Automatic Timeline Generation parameters, or repeat the current timeline and select **Append**.

d. Save Timeline

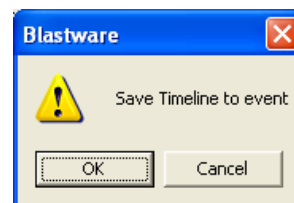
This command saves the currently displayed timeline to a file. This is useful if you have several recorded Events based on the same timeline. Simply load the saved timeline for each Event and continue with your analysis.

e. Load Timeline

This command loads a saved timeline. Timelines created in versions previous to Blastware 8.0 can not be loaded.

f. Exit

Finish editing timelines and return to the Analysis Window. You will be prompted with the following:

**g. Cancel**

Close the Edit Timeline dialog box and return to the Analysis Window without changing the current settings.



h. Import 2DBench Text File

If you have a 2DBench blast design file (*.mic.txt file extension) created with JKTech Pty. Ltd., JKSimBlast software, you can import the file and edit or apply the resulting timeline to an analysis event or Superposition synthetic waveform.

Edit Timeline

Import

Default File: C:\BLASTWARE 8 BETA\SYSTEM\DATABASE\2DBENCH\TIMELINE.TM8

Automatic Timeline Generation:

- ☐ Number of decks per hole
- ☐ Inter-deck delay
- ☐ Number of holes per row
- ☐ Inter-hole delay
- ☐ Number of rows
- ☐ Inter-row delay

Generate Append

Save Timeline Load Timeline

Exit Cancel

Charge Num	Row Num	Hole Num	Deck Num	Initiation Time (ms)	Travel Time (ms)	Arrival Time (ms)	Scale Factor
1	0	0	0	632	916	1548	1.00
2	0	0	0	705	919	1624	1.00
3	0	0	0	775	921	1696	1.00
4	0	0	0	846	924	1770	1.00
5	0	0	0	917	927	1844	1.00
6	0	0	0	989	929	1918	1.00
7	0	0	0	1059	932	1991	1.00
8	0	0	0	1305	931	2236	1.00
9	0	0	0	1234	928	2162	1.00
10	0	0	0	1164	926	2090	1.00
11	0	0	0	1093	923	2016	1.00
12	0	0	0	1022	920	1942	1.00
13	0	0	0	949	918	1867	1.00
14	0	0	0	880	915	1795	1.00
15	0	0	0	809	912	1721	1.00
16	0	0	0	737	910	1647	1.00
17	0	0	0	988	912	1900	1.00
18	0	0	0	1058	914	1972	1.00
19	0	0	0	1130	917	2047	1.00
20	0	0	0	1200	919	2119	1.00
21	0	0	0	1272	922	2194	1.00
22	0	0	0	1344	925	2269	1.00
23	0	0	0	1415	927	2342	1.00
24	0	0	0	1485	930	2415	1.00
25	0	0	0	1556	933	2489	1.00
26	0	0	0	1734	932	2666	1.00
27	0	0	0	1663	929	2592	1.00
28	0	0	0	1593	926	2519	1.00
29	0	0	0	1522	924	2446	1.00

5.9.8 Scale Graphs

This tool is only available when an Analysis window is open. This command is used to manually scale plots for waveform and histogram graphs. You can enter both the maximum and minimum peak for each channel, or use the Normalize and Symmetric buttons to impose a pattern. The customized scale will also be used when you print using the Print Button in the Analysis window.

To display the Scale Graphs dialog, click on the **Tools** menu and select **Scale Graph**.

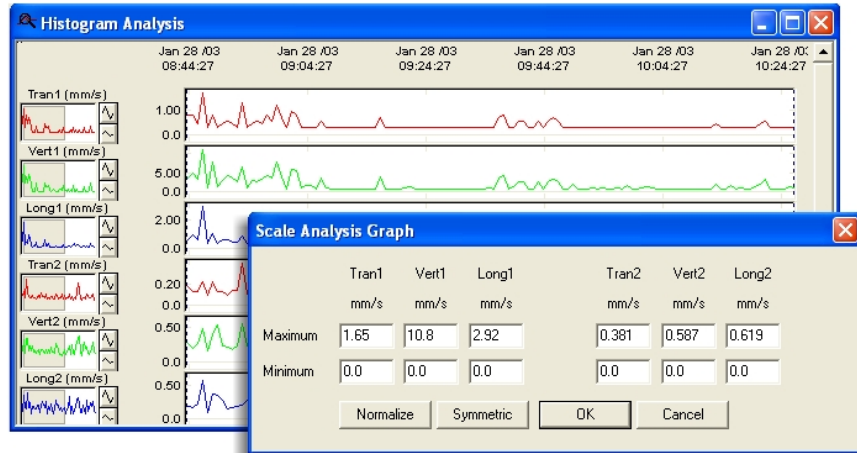
Scale Analysis Graph

	Chan1	Chan2	Chan3	Nil	Chan5	Chan6	Chan7	Nil
	mm/s	mm/s	mm/s	mm/s	mm/s	mm/s	mm/s	mm/s
Maximum	115	177	149	2.36	198	169	74.2	3.32
Minimum	-115	-177	-149	-2.36	-198	-169	-74.2	-3.32

Normalize Symmetric OK Cancel

To change the maximum and minimum peak for a channel, click on the box and enter the new value. Click OK to save your changes.

The Scale Analysis Graph for the Histogram Analysis window appears as follows:



(1) Normalize

Press this button to have the maximum and minimum peaks for all channels recorded in the same units. The software selects the largest peak among all channels as the scale peak.

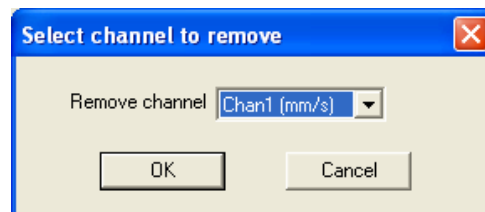
(2) Symmetric

This button makes the maximum and minimum peaks for each channel symmetrical, using the larger peak as the standard. For example, if the maximum peak is 7.2 and the minimum peak is -2.45, the Symmetric command would change the minimum peak to -7.2, while leaving the maximum peak unchanged.

5.9.9 Remove Channel

This tool is only available when an Analysis window is open. Use this command to remove a channel from an Event.

To display the Remove Channel dialog, click on the **Tools** menu and select **Remove Channel**.



Select the channel you wish to remove from the drop-down list, and click OK. The channel will be removed from the Event.

5.9.10 Ponderation

This tool is only available when an Analysis window is open, and is specifically used for the French National Compliance standard. Ponderation is a weighting of waveform frequencies. This tool is used to ponderate waveforms.

To display the Ponderation dialog, click on the **Tools** menu and select **Ponderation (France)**.

5.9.11 Human Exposure

This tool is only available when an Analysis window is open. The Human Exposure option enables you to calculate frequency-weighted Vibration Dosage Value (VDV) and Root Mean



Square (RMS) on the entire or partially selected waveform. Once you have selected a frequency weighting, click on the Calculate button. Results are shown in the Calculations area.

To display the Human Exposure dialog, click on the **Tools** menu and select **Human Exposure**.

If the channel data is in Velocity, the data is differentiated to acceleration prior to the calculation. The acceleration data is then weighted as specified in the selected Frequency Weighting file. The available list of weightings includes the ISO 2631-2:2003 Wm weighting. The microphone channels (4 and 8) are not available if a compliance event has been loaded.

Refer to the following for more information on Human Exposure:

ISO Standard 2631-2:2003

“Mechanical Vibration and Shock – Evaluation of Human Exposure to Whole-Body Vibration.”

Abstract:

ISO 2631-2:2003 concerns human exposure to whole-body vibration and shock in buildings with respect to the comfort and annoyance of the occupants. It specifies a method for measurement and evaluation, comprising the determination of the measurement direction and measurement location. It defines the frequency weighting Wm which is applicable in the frequency range 1 Hz to 80 Hz where the posture of an occupant does not need to be defined.

Whilst it is often the case that a building will be available for experimental investigation, many of the concepts contained within ISO 2631-2 would apply equally to a building in the design process or where it will not be possible to gain access to an existing building. In these cases, reliance will have to be placed on the prediction of the building response by some means.

ISO 2631-2 does not provide guidance on the likelihood of structural damage, which is discussed in ISO 4866. Further, it is not applicable to the evaluation of effects on human health and safety.

Acceptable magnitudes of vibration are not stated in ISO 2631-2.

The mathematical definition of the frequency weighting Wm is given in Annex A. Guidelines for collecting data concerning complaints about building vibration are given in Annex B.

British Standard BS-6841

“Measurement and Evaluation of Human Exposure to Whole-Body Vibration.”

Abstract:

The BS-6841 standard reviews methods of quantifying vibration and shock in relation to human health, interference with activities, discomfort, the probability of vibration perception and the incidence of motion sickness. Tentative guidance is given on the possible effects of vibration.

Human Exposure: Calculate Frequency-weighted VDV and RMS

Calculations			
	VDV (Acc)	RMS (Acc)	
Chan1	109	mm·s ^{-1.75}	25.5
Chan2	63.3	mm·s ^{-1.75}	11.5
Chan3	77.1	mm·s ^{-1.75}	13.7
Chan5	83.2	mm·s ^{-1.75}	13.4

Calculations			
	VDV (Acc)	RMS (Acc)	
Chan6	90.4	mm·s ^{-1.75}	13.4
Chan7	58.1	mm·s ^{-1.75}	9.73

Frequency Weighting File: C:\Blastware 8 Beta\System\Ibase\Iest.FwT
[Browse] [New] [Edit]

Data Selection:
☒ All Waveform
☐ Partial Waveform From -0.25 To 7.452 Sec.

Notes:
VDV is the fourth root of the integral raised to the fourth power of the frequency weighted acceleration.
Velocity channels, with 's' units, are automatically differentiated to acceleration before the calculations.
Offsets are removed from data before calculations are made.
Only velocity and acceleration data produce a VDV, the results of calculations on other data are unknown.

[Calculate] [Exit]



(1) Frequency Weighting File

Press the **Browse** button to navigate through your directories and load an existing frequency weight table (.fwt) file. You can also **Edit** an existing file by clicking the **Edit** button, or create a new file by clicking on **New**.

(2) Data Selection

To generate VDV for the entire waveform select **All Waveform**. You may also specify only a part of the waveform. Click on **Partial Waveform**, and then enter the **From** and **To** time values.

(3) Calculate

Click on **Calculate** to update or generate a new VDV and RMS calculation.

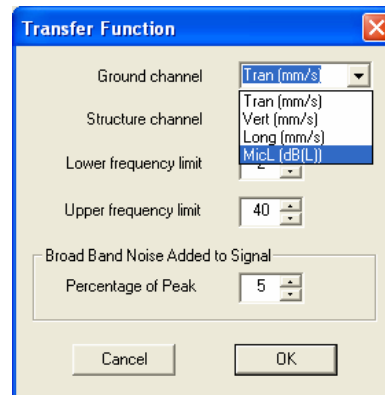
(4) Exit

This command **Exits** the Human Exposure tool.

5.9.12 Transfer Function

This tool is only available when an Analysis window is open. Use the Transfer Function tool to determine structural response. The Transfer Function is the result of calculating the ratio of two frequency spectras. One spectrum, the driving function, is computed from a waveform recorded with a transducer located outside a building or structure; the second spectrum, the response spectrum, is recorded with a transducer mounted inside the building or structure. The ratio of the response function to the driving function is the resultant Transfer Function. The Transfer Function can also be used to help determine the Natural Frequency of a building or structure.

You can only use the Transfer Function within one Event and it must be a Compliance Event (**Example:** With a 4 channel Event, you will need two channels in the same orientation; if you are using a triaxial sensor, you will need an 8 channel unit). To access the Transfer Function, click once on the natural frequency event within the Event Manager, and then select the **Analysis** icon. From the Tools menu, select the **Transfer Function** feature. The Transfer Function menu will appear.



(1) Ground Channel

Select the appropriate **Ground Channel** from the drop down list. The Ground channel represents the driving function.

(2) Structure Channel

Select the appropriate **Structure Channel** from the drop down list. The Structure Channel represents the response to the Ground Channel vibration.



(3) Lower Frequency Limit

Use the up and down arrow keys to define the **Lower Frequency Limit** you want to process. The allowable limit is 2 – 300.

(4) Upper Frequency Limit

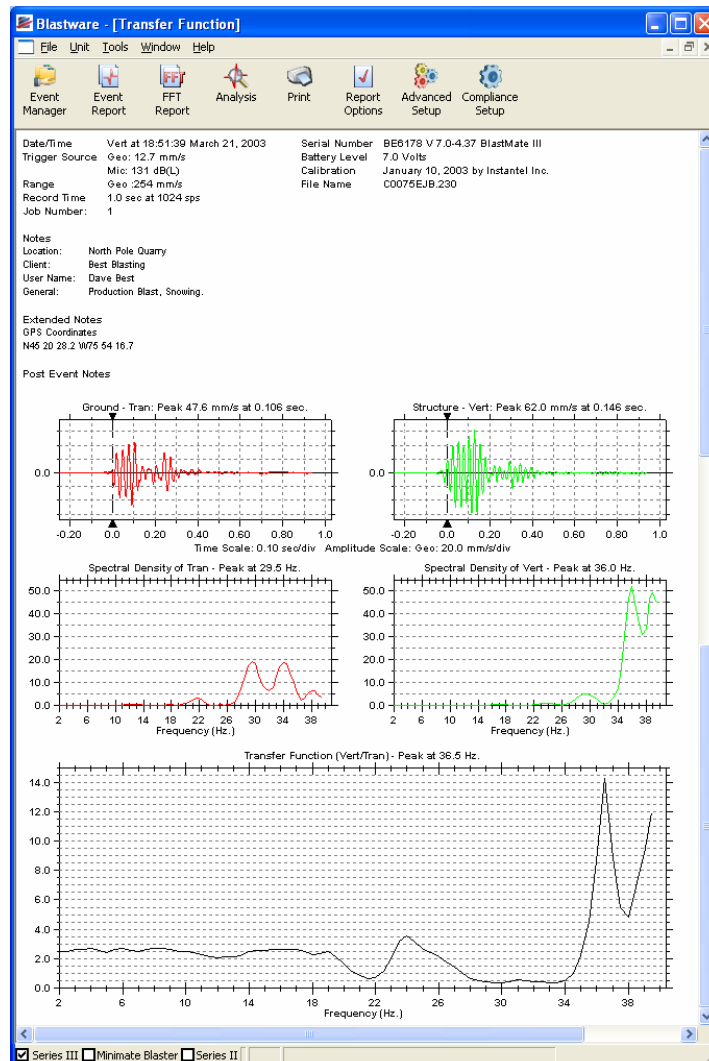
Use the up and down arrow keys to define the **Upper Frequency Limit** you want to process. The allowable limit is 2 – 300.

(5) Broad Band Noise Added to Signal

i Percentage of Peak

Define the **Percentage of Peak** (from 0 to 100) to be added to the signal to prevent low level noise from creating false peaks – the default five percent is a nominal number. Increasing this number will lower the sharp peaks, especially if they are produced by the division of two small numbers, which is how the final Transfer Function frequency is calculated.

A report will appear containing the standard event information, the two time-based recordings, the Spectral Density of the recordings, the Transfer Function, and the Peak Frequency:





For more information, refer to the following publications for a complete explanation of natural frequencies and related calculations.

Dowding, C.H., 1985, "Blast Vibration Monitoring and Control," chapters 5 and 7, Prentice-Hall, Inc., Englewood Cliffs, N.J.

Siskind, D.E., Stagg, M.S., Kopp, J.W., and Dowding, C.H., 1980, "Structure Response and Damage Produced by Ground Vibrations from Surface Blasting," U.S. Bureau of Mines, Report of Investigations 8506.

Thompson, W.T., 1965, "Vibration Theory and Applications," pages 43 and 45, Prentice-Hall, Inc., Englewood Cliffs, N.J.

5.9.13 Export Data

This tool is only available when an Analysis window is open. Access this tool by selecting **Export Channel Data** from the Tools menu. Use the Export Channel Data tool to copy data from each channel of the Event to another program, such as Microsoft Excel (refer to the sample below for more information). The information copied includes a column header name for each channel.

(1) Copy All

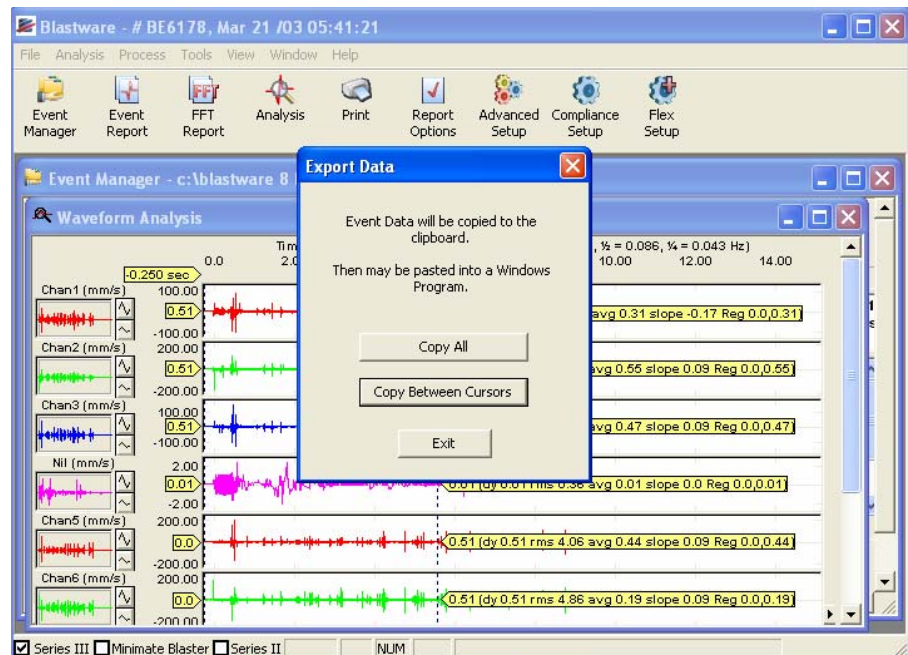
Open an Event within the Waveform Analysis window, open the Export Channel Data tool, and click on the **Copy All** button. A message will appear briefly afterwards indicating that the data has been saved to your computers temporary memory, the clipboard. You can now open another program, such as Microsoft Excel, and paste the copied information into that program.

(2) Copy Between Cursors

Open an Event within the Waveform Analysis window. Slide the perpendicular cursors within the Waveform Analysis window to select the data that you are interested in viewing within a different program, and then select the **Export Channel Data** tool from the Tools Menu. Click on the **Copy Between Cursors** button – a message will appear briefly afterwards indicating that the data has been saved to your computers temporary memory, the clipboard. You can now open another program, such as Microsoft Excel, and paste the copied information into that program.

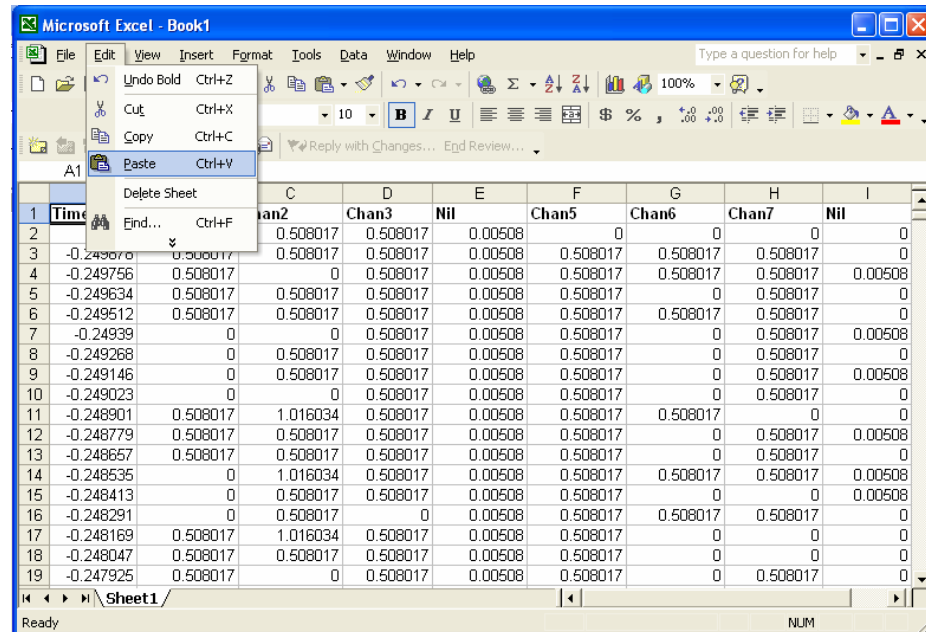
(3) Exit

Closes the Export Data dialog box.





Sample of channel data pasted into a Microsoft Excel document:



5.10 Synthetic Waveform

The two commands available in the Tools menu under Synthetic Waveform, Interval Analysis and Linear Superposition Analysis, are for modeling the influence of initiation timing on blast-induced vibration. These are modeling tools to assist you in developing blast design, and should be used with caution, as actual results will vary depending upon site particularities including geology, and explosives type, among other factors.

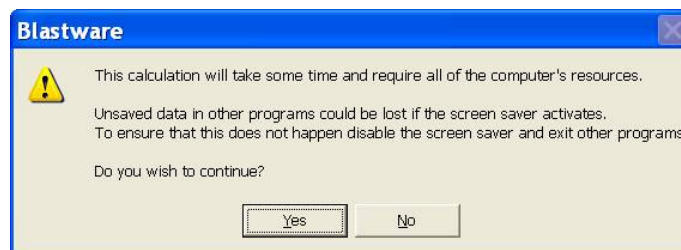
5.10.1 Interval Analysis

This tool is only available when a Waveform Analysis window is open. The tool produces a color plot with the frequency displayed on the x-axis, delay interval on the y-axis, and a measure of the energy content (y-axis value of a standard FFT plot) represented using different color bands. The recorded signals must be the same length as the desired resultant signal or larger.

The contour plot outputs to a separate window that can be printed or saved to disk as a metafile.

WARNING: This is a modeling tool only. Actual results will vary depending upon site particularities including geology, and explosives type, among other factors.

NOTE: If the result of the entries for the **Number of Delays** X **Delay Range** (ms) is greater than 40, the following dialog will appear:





Click on the Tools menu in the Event Manager and select Synthetic Waveform – select the **Interval Analysis** tool from the fly-out menu. A dialog box is displayed:

The Interval Analysis dialog box contains the following fields and controls:

- Waveform:** A dropdown menu set to "Tran (mm/s)".
- Number of delays:** A text input field containing "10", with a range indicator "1 - 1000" to its right.
- Frequency range (Hz):** Two text input fields, the first containing "2" and the second containing "60", with a range indicator "1 - 1024 Hz" to the right of the second field.
- Delay range (ms):** Two text input fields, the first containing "5" and the second containing "30". Above each field is a label "Prev Calc" and below each field is the text "(none)".
- Buttons:** "Calculate" and "Exit" buttons at the bottom.

a. Waveform

Select the waveform channel that you would like to process with the Interval Analysis tool.

b. Number of Delays

Enter the number of delays by inputting a number between 1 and 1000. This setting delimits the number of times the waveform will be linearly offset by the delay interval and superpositioned.

c. Frequency Range (Hz)

Input a frequency range, from 1 to 1024 Hz, that you would like to plot.

d. Delay Range (ms)

Input the delay range. This range can be from 1 to 500 milliseconds. The delay range that was previously calculated is shown to the right of each entry. If you input a new delay range that is within the previously calculated range, the Interval Analysis will not need to be recalculated.

e. Calculate

Click on the **Calculate** button to perform the Interval Analysis. A brief message dialog will appear, as shown below:

The Interval Analysis dialog box is shown with a sub-dialog box titled "Interval Analysis" overlaid on top. The sub-dialog box contains the text "Generating Interval Analysis Data" and a progress bar. The "Calculate" button in the main dialog box is disabled. The "Exit" button is also visible.

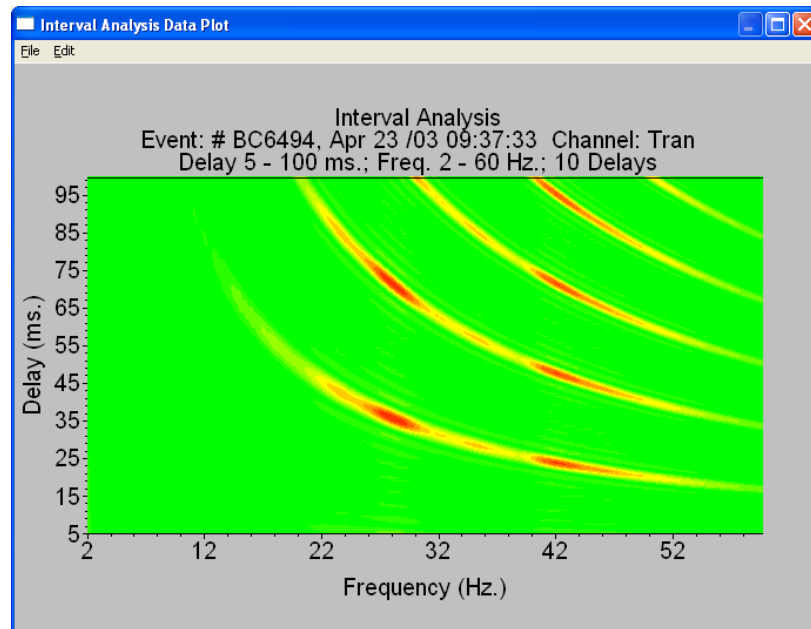
f. Exit

Exit the program without performing an Interval Analysis or saving any changes that you have made in each input box.



g. Interval Analysis Data Plot Window

View the results from the Interval Analysis settings within the Interval Analysis Data Plot Window. You can save this view as a metafile, copy it to the clipboard for use in a graphics program, print, or add notes.



(1) File

i Save to Metafile

Save the Interval Analysis as a metafile, which can then be inserted into a Microsoft Word document.

ii Copy Graph to Clipboard

A bitmap image of the Interval Analysis Data Plot window is copied to your computer's temporary memory. Open another Windows program that supports graphics and use the paste command, or simultaneously press *CTRL-V*, to place the bitmap image into the file.

iii Printer Setup

This command specifies the type of printer connected to the computer and configures the printer settings.

iv Print

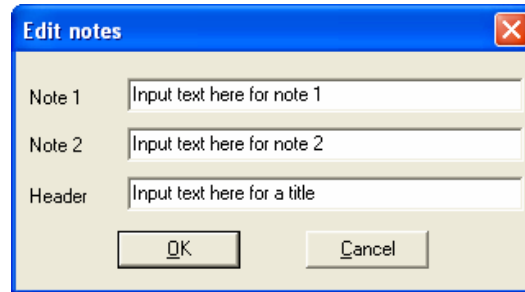
Use this command to print the Interval Analysis Data Plot window to your personal computer's default printer.

(2) Edit

i Notes

The Edit Menu contains the Notes command. The notes command is used to append a header centered at the top of the Scaled Distance Data Plot window, and two notes that appear in the lower left-hand corner. This feature allows you to customize your graph for printing.

To open the Edit notes dialog box, select Notes from the Edit menu.

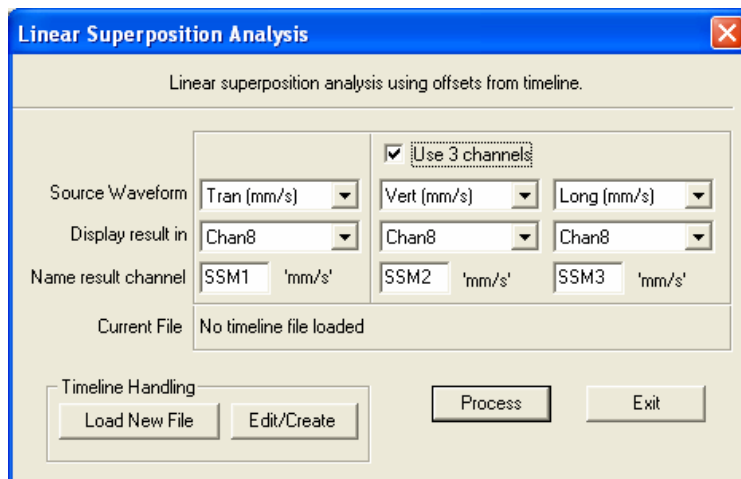


To enter notes or a header, click on the appropriate text box and type in the desired contents, to a maximum of 40 characters. Click on **OK** to save your notes. Click **Cancel (Esc)** to close the Edit notes dialog box without adding notes.

5.10.2 Linear Superposition

This feature will linearly shift and superimpose a source waveform event according to the arrival times present in a timeline file. A synthetic waveform is produced.

WARNING: This is a modeling tool only. Actual results will vary depending upon site particularities including geology, and explosives type, among other factors.



a. Use 3 channels

To use three waveforms in your calculation, click on this checkbox to display a checkmark.

b. Source Waveform

Choose the waveform to be used in the analysis.

c. Display result in

Choose a waveform window to display the analysis result in. You can replace the source waveform with the resulting waveform.

d. Name result

Enter a name for the new waveform. By default, Blastware names the Linear Superposition Analysis waveforms beginning with SSM1. The number changes incrementally for additional waveforms.



e. Timeline Handling

(1) Load New File

You must choose and load a timeline file before calculating the Linear Superposition Analysis waveform. The timelines represent the number of shots and the delays.

(2) Edit/Create

Refer to section 5.9.7 for more information about the Edit Timeline feature.

f. Command Buttons

(1) Process

Click on this command to generate the Linear Superposition Analysis waveform.

(2) Exit

Close the Linear Superposition Analysis waveform dialog box without generating a waveform.

5.10.3 View Menu

The View Menu contains the grid lines, colors, and timelines commands.

a. Grid Lines

Choose this command to display grid lines behind each waveform appearing in the Analysis Window. Open the **View Menu** and choose **Grid Lines** to display a check mark.

b. Colors

Choose this command to display an Events waveforms in different colors. Open the **View Menu** and choose **Colors** to display a check mark.

c. Timelines

This command displays timelines on an Events waveforms. Open the **View Menu** and choose **Timelines** to display a check mark.

Note: Timelines must first be configured before they can appear.

d. Cursor Data

The following commands appear at the right Analysis Cursor within the Analysis Window, with the exception of Y value, which is displayed at both cursors.

(1) DY

The DY calculation indicates the Y value difference between the position of the first cursor and the position of the second cursor.

To display the DY calculation, open the **View Menu** and select the **Cursor Data** command. Select DY to display a check mark. Move the Analysis cursors to the point of interest on the waveform. The DY value appears at the right Analysis Cursor.

(2) RMS

The RMS (Root Mean Square) value provides an easy spot calculation of RMS values, especially useful for environmental monitoring. The RMS calculation formula is Square Root of [(Sum of all N*N between the cursors) / (number of samples between cursors)] where N is a data value.

To display the RMS calculation, open the **View Menu** and select the **Cursor Data** command. Select **RMS** to display a check mark. Move the Analysis Cursors to the points of interest on the waveform. The RMS value appears at the right Analysis Cursor.



(3) Average

The Average value calculates and displays the average value between the two Analysis Cursors.

To display the Average calculation, open the **View Menu** and select the **Cursor Data** command. Select Average to display a check mark. Move the Analysis Cursors to the points of interest on the waveform. The Average value appears at the right Analysis Cursor.

(4) Slope

The slope between two cursor points within the Analysis Window can be selected to appear automatically. The slope is the difference between the two Y-axis cursor point values divided by the difference between the two X-axis cursor point values.

To display the slope calculation, open the **View Menu** and select the **Cursor Data** command. Select Slope to display a check mark. Move the Analysis Cursors to the points of interest on a waveform. The slope value appears at the right Analysis Cursor.

(5) Y Value

This command displays the Y value at both cursors.

To display the Y value, open the **View Menu** and select the **Cursor Data** command. Select Y Value to display a check mark. Move the Analysis Cursors to the points of interest on a waveform. The Y values appear at both cursors.

(6) Linear Regression

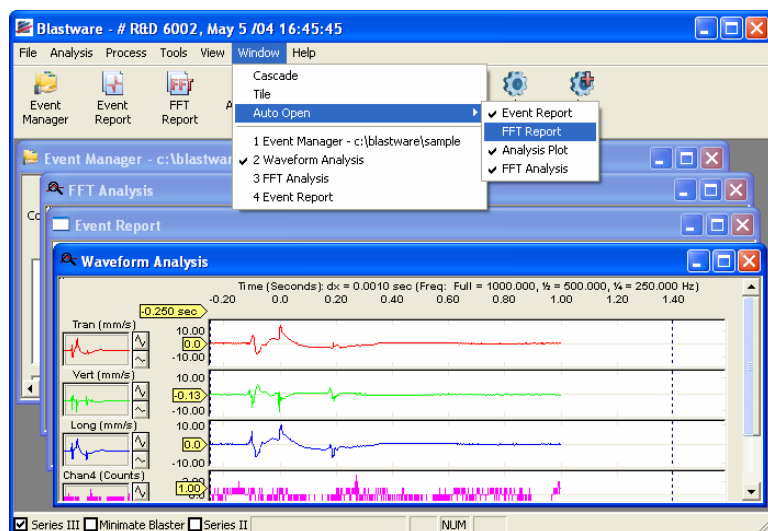
This command displays the slope and intercept results of a linear regression between the two cursors.

5.11 Window

5.11.1 Auto Open

Use Auto Open to indicate which reports you want displayed when you double click on an event.

Blastware will open the associated Event and/or FFT Reports that were pre-selected under the Main Menu, Window, Auto Open list. Within the Blastware Advanced Module, two additional options are available – **Analysis Plot** and **FFT Analysis**.



Double click on the Event for which you would like to view the associated windows. Each selection is generated in a new window.



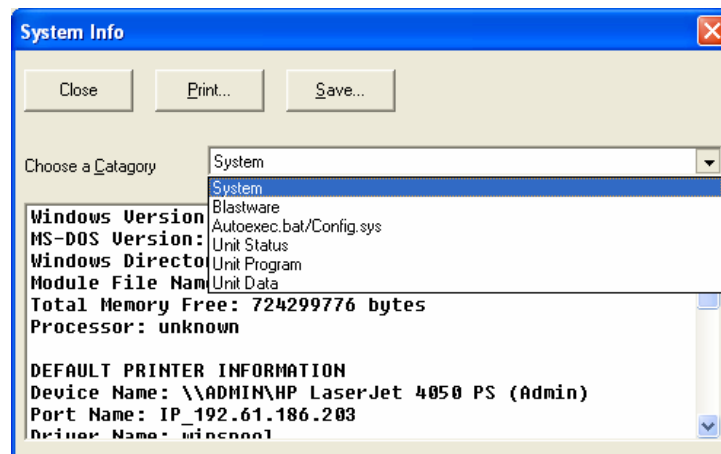
5.12 Help

Blastware offers an extensive on-line help information system. You can access the system by choosing this menu item or by pressing the **F1** key when the Event Manager or any dialog box or window is open. The Blastware Help Window appears.

5.12.1 System Info

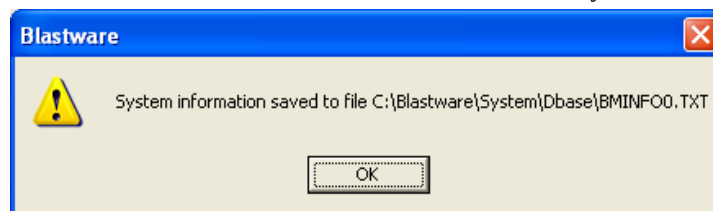
The System Info dialog provides specific information about your computer and the software it is using. This information is used by Instantel Service Technicians when diagnosing computer problems.

To help in diagnosing your software or unit, an Instantel Service Technician may ask you to select a specific category from the drop down menu:



After selecting the appropriate category, print the information by clicking on the **Print** button.

Click on the **Save** button to save the information, click on the **Save** button. The information is saved to a text file called BMINFO0.TXT located in a default directory, as shown below:





Notes:



6. MODEM OPERATION

The following instructions outline how to connect to a Series III or Series II monitor located in the field using either a telephone and modem or a cellular telephone and modem.

6.1 Using a Telephone and Modem

This section discusses the procedures required to configure modems, connect a modem to your computer, connect a modem to your monitor, and use the Blastware software to connect to a remote monitor.

Before attempting to use a Blastmate III or Minimate Plus with a modem, change the Serial Communications within the monitor to operate with the modems. In the Blastmate III, press the **Setups Special** key. Press the **Enter** key repeatedly to display the Serial Connection Window. Press the **Up** or **Down Arrow** key to display the Via Modem option. Press the **Enter** key to select this option.

If using a Minimate Plus, press the **Right Arrow** key and the **Setups** key together. Press the **Enter** key to scroll through the windows until the Serial Connection Window appears. Press the **Right Arrow** key to display the Via Modem option. Press the **Enter** key to select this choice when it appears on the display.

When you have finished using the modems, change the Serial Communications setting within the monitors to the Direct option. This allows the monitors to communicate with a computer.

Note: The above procedures are not required for users of the Blastmate II 677, 477 or Minimate.

6.1.1 Materials Required

- Blastmate PC Connecting Cable (712A2301)
- Minimate Adapter Cable (715A1501) (Minimate users only)
- Standard RS-232 Cable
- Null Modem Cable (714A7501)
- External or Internal Modem to Connect to the Computer
- External Modem to Connect to the Remote Monitor
(US Robotics® Sportster® modem recommended)
- Telephone line (not required for RF modems)

6.1.2 Configuring the Modems

Your modems may require the configuring of dip switches or software commands to operate with the Blastware software. Refer to your modem manufacturers operating instructions.

A wide variety of modems can be used to connect between your monitor and the computer running modem software. Script files allow you to use command sets other than the AT command set (e.g., RF modems have their own). In general, compression should be turned off since it interferes with our handshaking protocol. Table 1 lists some common script file commands.



6.1.3 Modem Settings

Configure your modems to the following settings:

Setting	PC Modem	Remote Modem
Data Terminal Ready (DTR) Override	OFF	ON
Result Codes	VERBAL	VERBAL OR NUMERIC
Result Code Display	ON	OFF
Command Mode Local Echo Suppression	OFF	ON
Auto Answer Suppression	ON or OFF	OFF
Carrier Detect Override (CD)	OFF	OFF
Power on and ATZ Reset Software Defaults – Load user defined defaults at power up.	OFF	OFF
AT Command Set Recognition	ON	ON

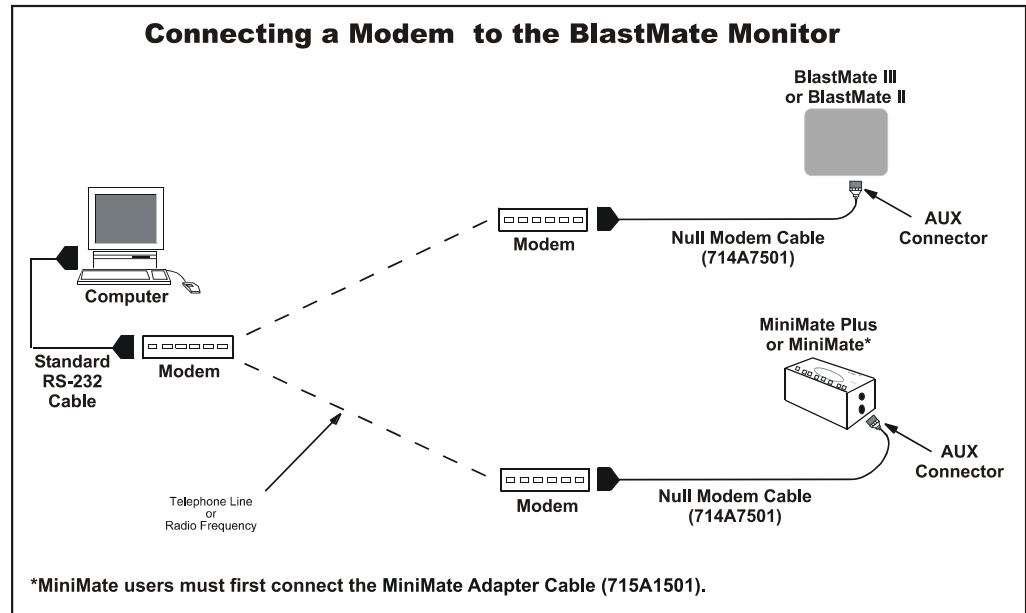
6.1.4 Connecting a Modem to a Computer

This section applies to external modems. We assume internal modems have already been installed in your computer. Connect the modem to your computer using the serial cable supplied with your modem. Connect the telephone modular-to-modular cable into the modem "line" outlet located on your modem. Plug the other end into a telephone outlet. RF modems do not require telephone lines. Supply power to the modem.

WARNING: Radio Frequency (RF) modems are transmitters. Do not use radio frequency modems near blasting operations susceptible to transmitter interference.

6.1.5 Connecting a Modem to a Remote Monitor

Connect the modem to your monitor according to the figure below. Connect the telephone modular-to-modular cable into the modem "line" outlet located on your modem. Plug the other end into a telephone outlet. RF modems do not require telephone lines. Connect the Blastmate Null Modem Cable (714A7501) to the unit. DS-077 Minimate users must first connect the Minimate Adapter Cable (715A1501). Connect the other end to the modem and turn on the monitor. Supply power to the modem.

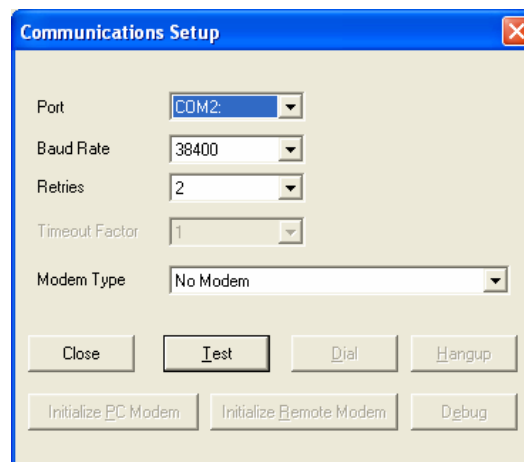


6.1.6 How to Connect to a Remote Monitor Using Modems

To connect to a remote monitor using modems, first configure your modems to operate on your computer. See the instructions that came with the modems. Before you connect the remote modem to a remote monitor, initialize the modem by connecting it to the computer running the Blastware program. Press the **Initialize Remote Modem** button in the Communications Setup dialog box. Remove the remote modem. Connect the PC Modem and initialize it. Press the **Initialize PC Modem** button. Connect the modems to a telephone line. From the Communications Setup dialog box, choose **Dial**. Select the telephone number of the remote modem from the dialing list. Connect to the remote modem. Change the settings on the remote monitor. Re-enter the monitor mode, if required. Choose **Hangup**. Your modem session is complete.

6.1.7 Communications Setup

Open the Communications Setup dialog box. From the Blastware Main Menu, click on the **Unit Menu** and select **Communications**.



a. Port

Port refers to your computer's serial port where you plug in the Blastmate III PC connecting cable. The serial port allows the monitor to communicate with your computer. Set the **Port** drop-down



menu to match the number of the serial port. You have a choice between Com 1 to Com 20: Identify the serial port on your computer and choose the same number in the Port box. See your computers manual for information on how to identify serial ports. To test your selection, press the **Test** button. Blastware will indicate if your selection is correct – if the communication link is not successful, systematically select the next Communications Port from the drop down menu, and use the **Test** function until you have made a successful connection to the monitor.

Note: The Test button does not apply to Blastmate II or Minimate units.

b. Baud Rate

The baud rate refers to the rate at which both the PC Modem and the Remote Modem will communicate. Check that each modem supports the designated baud rate. Modems have maximum baud rates at which they can communicate. Modems can communicate with other modems of lower baud rates but cannot communicate with modems with baud rates higher than their maximum rate. The baud rate you choose will depend on your modem and the quality of your telephone line. A lower baud rate results in slower but more reliable communication. The default rate is 9600 baud.

Note: This setting does not apply to Blastmate II or Minimate units. Blastware sets the baud rate automatically for communication with Series II units.

c. Retries

Set the number of retries the computer will attempt when connecting to the Blastmate III or Minimate Plus. Retries range from zero to ten. A typical setting is three.

d. Modem Type

Choose a modem type for both the PC Modem and the Remote Modem. Choose a modem type from the list of supported modems. If your modem type does not appear then select the Generic modem type.

e. Close

This command closes the Communications Setup dialog box and returns to the Main Menu.

f. Test

This checks the communications between the computer and the monitor. The communications can be either direct, over the Blastmate PC connecting cable, or over modems. If testing communications when using modems, press the **Test** button after you have established a connection. The message “Communications OK” confirms a proper connection.

Note: The Test button does not apply to Blastmate II or Minimate units.

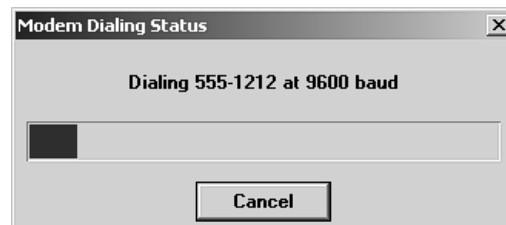
g. Dial

Press the **Dial** button to display the Modem Dial List dialog box. With this box you can store up to 100 names, telephone numbers, and baud rate settings for your remote monitors.



(1) Dial

To dial a number and connect to a remote modem, double click on top of the number. The Modem Dialing Status Window appears to inform you of the progress of your call.



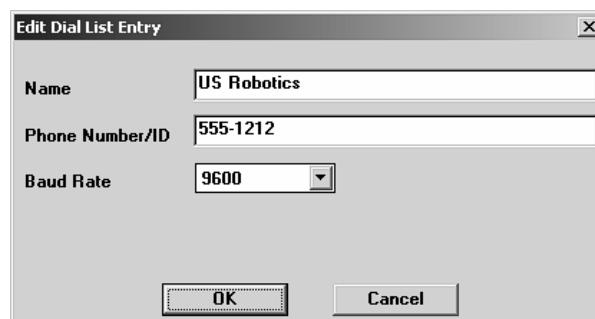
When a connection is made between the PC Modem and the Remote Modem, the following message appears on your computer display. Click on **OK**. The message “modem” appears on the side of your computer screen. This message remains until you end the modem session.

Note: When you connect to a remote monitor, the Blastware program causes the remote monitor to exit the monitor mode. Plan your remote access so it does not interfere with monitoring operations. Always remember to enter the remote monitor into the monitor mode before you end the monitor session.

At this point, you can control the monitor as if it was connected directly to your computer.

(2) Edit

This command adds additional dialing entries or changes existing entries. To add an entry or change an existing entry click on an available position or move to the entry to be changed. Press the Edit button. The Edit Dial Entry Window appears.





Click on a text box and enter the new information. If you are changing an existing entry, double click on the text box to highlight the existing information. Enter the new information. Enter a name for the remote modem and a telephone number. You can include dashes or spaces between the dialing codes to make the number easier to read. The Blastware program ignores these dashes and spaces.

Hint: You can add the number 9 if your office telephone system requires you to dial 9 before accessing an external line. Add commas between the dialing codes. The commas pause the modem connection allowing time for the telephone switching to occur.

The baud rate to the rate at which both the PC Modem and the Remote Modem will communicate at. Check that each modem supports the designated baud rate. Modems have maximum baud rates at which they can communicate. Modems can communicate with other modems of lower baud rates but cannot communicate with modems with baud rates higher than their maximum rate. The baud rate you choose will depend on your modem and the quality of your telephone line. A lower baud rate results in slower but more reliable communication. The default rate is 9600 baud.

(3) Print List

This prints the dialing list and serves as a useful reference.

(4) Close

This closes the dialing window and returns to the Communications Setup dialog box.

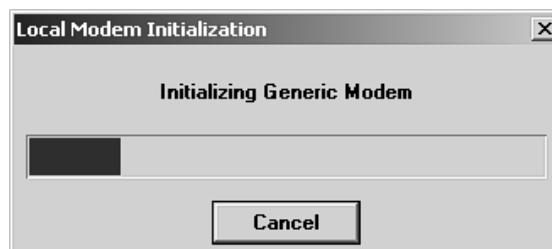
h. Hangup

When you have completed your session with the remote monitor and want to end the modem session, press the **Hangup** button. The Modem Disconnect Status Window appears informing you that you have disconnected the communications link and ended the modem session. The status bar indicates the progress of the disconnect.

i. Initialize PC Modem

The Blastware requires two modems, one connected to the computer and one connected to the remote monitor. Before the two modems can connect and “talk” to each other, they must be initialized. Initializing the modems programs each to speak the same language. You must initialize the modems before you use the Blastware modem feature for the first time and always after a modem has been used with any other type of modem communications software. We assume you have connected either the PC Modem or the Remote Modem to your computer and it is operating properly.

To initialize the modem to be used by your computer, connect the modem to your computer. Press the **PC Modem Initialization** button.



j. Initialize Remote Modem

Initializing the Remote Modem programs it to communicate with the PC Modem. You must always initialize the Remote Modem BEFORE you bring it out in the field and connect it to the remote monitor.

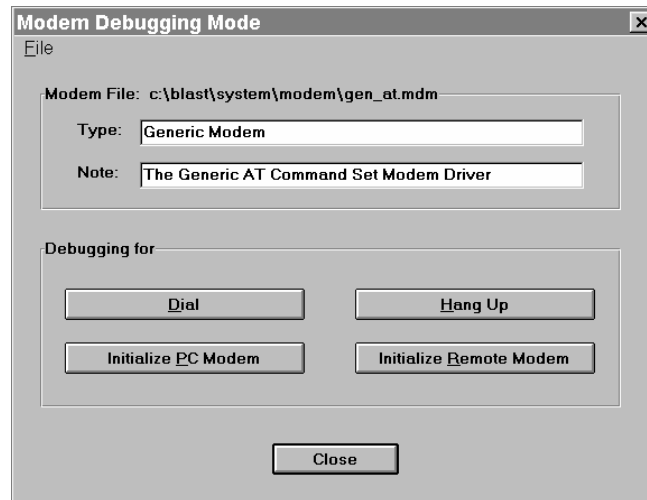
To initialize the Remote Modem to be used by your remote monitor, connect the modem to your computer. Press the **Initialize Remote Modem** button. After the modem has been initialized, disconnect it from the computer. It can now be transported to the field and connected to the remote monitor.



k. Debug

This command creates or modifies a modem script file. Modems require script files to operate with the Blastware software. Blastware includes modem script files for various modems. If the list does not include the modem you use or if you need to modify a script file, use this command.

To create or modify a modem script file, open the **Unit Menu** and select the **Communications Setup** command. Select a modem within the Modem Type Window. Click on the **Debug** button. The Modem Debugging Mode dialog box appears. Before editing an existing script file, make a copy of it to maintain a complete set of unaltered script files.



(1) File

The file menu contains the following commands.

i Load

This command selects a script file for editing. Select the script file corresponding to the modem type being used. Choose the Generic Modem script file if adding a new type of modem for use with Blastware.

ii Save

This command saves the script file currently being changed.

iii Save As

This command saves the current script file to a different name than the name displayed within the Type: window. Use this command to create a new script file for a new type of modem.

iv Close

This closes the dialog box.

(2) Modem File Section

This section displays the location and filename of the modem script file currently being changed.

i Type

Enter the modems name. Be specific if creating a script file for a new type of modem.

ii Note:

Use this box to add a further description about the modem.

(3) Debugging for

Each of the following commands corresponds to a different section within a modem script file.



i Dial

This command enters a telephone number and baud rate for the debugging mode. The debugging mode requires a second modem to connect to and test the script file during its development. Click on the **Dial** command to display the following dialog box.

A dialog box titled "Phone Number for Modem Debugging Mode". It contains two input fields: "Phone Number" (a text box) and "Baud Rate" (a dropdown menu showing "38400"). At the bottom are "OK" and "Cancel" buttons.

Enter the telephone number for the second modem. Enter a baud rate to use when communicating with this modem.

Note: Ensure both your PC and Remote modems were properly initialized and connected.

ii Hang Up

The Hang Up section contains the commands to hang up a modem and end a modem session.

iii Initialize PC Modem

The Initialize PC Modem section initializes a modem to act as the modem connected to your PC.

iv Initialize Remote Modem

The Initialize Remote Modem section initializes a modem to act as the remote modem connected to a remote monitor in the field.

(4) Hangup, Initialize PC and Initialize Remote Sections

A script file contains a section for each of these commands. To edit these sections, click on the appropriate button. A dialog box appears for the section. The commands, within these each dialog box perform the same function.

A dialog box titled "Debugging Hang Up Section Commands". It has an "Execute" section with three buttons: "All", "Current to End", and "Current Only". To the right of these are "OK" and "Cancel" buttons. Below is a "Commands:" text area containing the following text:
Pause= 1
String= +++
Pause= 1
String_CR= ATH0
CheckResponse= 2 OK
At the bottom is an "Execution Output:" section with a large text area and three buttons: "Save Output", "Print Output", and "Clear Output".



i All, Current to End, Current Only

These commands determine which part of the script file to execute. **All** executes all the commands within the displayed section of the script file. **Current to End** executes the commands from the line displaying the cursor to the end of the displayed section of the script file. **Current Only** executes the line with the cursor displayed.

If the command is followed by the CHECKRESPONSE, SHOWRESPONSE or PAUSE command, then that command will also be executed. The cursor advances automatically to the next line after the execution. The execution ends by clicking the **Cancel** button. The execution also ends if it encounters an error or when it reaches the end of the displayed section of the script file.

ii Commands

This window displays the commands within the specified section. Lines beginning with a "*" will be ignored during execution. Commands can be added, modified, or deleted. For a complete command set and a detailed description of each command, please refer to the Modem Script File section appearing at the end of this chapter.

iii Execution Output

The Execution Output window displays the results for each executed command including the command line number, the command itself, time spent executing the command, and the response string received from the modem. To save the output, click the **Save Output** button. To print the output, click the **Print Output** button. To clear the window, click the **Clear Output** button.

iv Close

This command closes the dialog box.

6.2 Setting Up a Cellular Telephone and Modem

Cellular modem phone support connects a computer to a remote monitor without the requirement of a telephone land line. Consult your local cellular telephone service provider for information on compatible equipment and services in your area.

6.3 Modem Script File

A script file contains commands to control and identify a programmable modem. The commands are grouped into 5 procedure blocks and one file terminator. Each procedure block name is enclosed in square brackets []. When a procedure is run, all commands between the procedure block title and the next procedure block title are run. The procedures are:

Identification	Modem identification that helps you choose a driver.
Connect	Commands to make a connection with a remote modem.
Disconnect	Commands to break a connection or hang-up the line.
Initialize_PC	Contains commands to initialize the modem that will be attached to the PC at the time of making a connection.
Initialize_Remote	Contains commands to initialize the modem that will be attached to the monitor.
End	This procedure block has no body and is used to identify the end of the script file.

Each procedure block can consist of one or more commands. The commands are in the form "Command= %d" or "Command= %s" where %d is an integer number and %s is an alphanumeric text string. There must be a space <space> after the equal sign. All unrecognized commands are ignored so you can easily add documentation to your file by starting the line with a



"*" as we have done in our drivers. Commands are recognized as part of the programming language used to set up modems and are described in the table below. An example of each command as it would appear in a typical script file is also shown.

Typical procedures used to program a Generic Modem as found in Gen_AT.MDM follow the table below.

COMMAND	DESCRIPTION	EXAMPLE
Title= %s	Placed in the Initialization procedure to provide the PC user with some additional information with which to identify the modem driver. The text is truncated to 25 characters.	Title= Generic Modem
UserNotes= %s	Placed in the initialization procedure to provide additional help information to the PC user. This text string can be up to 78 characters long. It is shown at the bottom of the screen when selecting a new modem driver from a list.	Usernotes= The Generic AT Command Set Modem Driver
Dial= %s	This command does the actual dialing. The telephone number or remote modem ID number is appended to the command string specified by the %s parameter.	Dial= ATD
CheckResponse= %d %s	This command instructs the program to look for the text response specified by the %s parameter for up to the number of seconds specified by the %d parameter.	Checkresponse= 40 CONNECT

COMMAND	DESCRIPTION	EXAMPLE
Byte= %d	Sends the byte specified by the %d parameter to the modem. This is required to send special control characters that cannot be embedded in a text string.	Byte= 13
Pause= %d	Causes the modem program to pause the number of seconds specified by the %d parameter before executing the next command.	Pause= 1
ShowResponse= %d	Shows the modem response over the number of seconds specified by the %d parameter.	ShowResponse= 1
String_CR= %s	Same as the String command, but it also sends a carriage return (13) to the modem after the text string. Many modems use the CR as a delimiter.	String_cr= ATH0
Modem_ID_Number= %s	This command causes the program to prompt the user for an ID text string and sends the text string specified by the %s parameter followed by the ID text to the modem.	Modem_ID_Number= ID

6.4 Example Modem Script File

```
*****
*
* This file contains commands to control and identify a modem. The commands
* are grouped into 5 procedure blocks and one file terminator. Each procedure
* block name is enclosed in square [] brackets. When a procedure is run, all
* commands between the procedure block title and the next procedure block
* title are run. The possible procedures are:
*
```



```

* Identification  –Modem identification that helps you choose a driver.
* Connect        –Commands to make a connection with a remote modem.
* Disconnect     –Commands to break a connection or hangup the line.
* Initialize_PC  –Contains commands to initialize the modem that will
*                be attached to the PC at the time of making a connection.
* Initialize_Remote –Contains commands to initialize the modem that will be
*                attached to the monitor.
* End            – This procedure block has no body and is used to identify
*                the end of the script file.
*
* Each procedure block can consist of one or more commands. The commands are
* in the form "Command= %d" or "Command=%s" where %d is an integer number and
* %s is an alphanumeric text string. All unrecognized commands are ignored so
* you can easily add documentation to your file by starting the line with
* a "*" as we have done here. The following commands are recognized:
*
* Title= %s      – Placed in the Initialization procedure to provide
*                the PC user with some additional information with which
*                to identify the modem driver. The text is truncated to
*                25 characters.
* UserNotes= %s  placed in the initialization procedure to provide
*                additional help information to the PC user. This text
*                string can be up to 78 characters long. It is shown
*                at the bottom of the screen when selecting a new modem
*                driver from a list.
* Dial= %s       this command does the actual dialing. The telephone
*                number or remote modem ID number is appended to the
*                command string specified by the %s parameter.
* CheckResponse= %d %s this command instructs the program to look for the
*                text response specified by the %s parameter for up to
*                the number of seconds specified by the %d parameter.
* Byte= %d       – Sends the byte specified by the %d parameter to the
*                modem. This is required to send special control
*                characters that cannot be embedded in a text string.
* Pause= %d      – Causes the modem program to pause the number of
*                seconds specified by the %d parameter before executing
*                the next command.
* ShowResponse= %d – Shows the modem response over the number of seconds
*                specified by the %d parameter.
* String= %s     sends the text string specified by %s to the modem.
*
* String_CR= %s  – Same as the String command, but it also sends a
*                carriage return (13) to the modem after the text
*                string. Many modems use the CR as a delimiter.
* Modem_ID_Number= %s this command causes the program to prompt the user
*                for an ID text string and sends the text string
*                specified by the %s parameter followed by the ID
*                text to the modem.
*
*****

```

[Identification]

***** The Title will be displayed with the file list

Title= Generic Modem

*****This is user note. This note will be displayed with the modem name

Usernotes= The Generic AT Command Set Modem Driver

***** The following commands are required to connect to modem

[Connect]

Dial= ATDT

***** Wait for the "CONNECT" response for up to 40 seconds *****

CheckResponse= 40 CONNECT



```
[Disconnect]
Pause= 1
String= +++
Pause= 1
String_CR= ATH0
CheckResponse= 3 OK
```

****INITIALIZE LOCAL PC MODEM (The one attached to your PC at the office) *****

***Note:**

- * The main problems encountered, have to do with Flow Control and
- * compression. The existing serial protocol will only work properly if
- * compression is turned off. Modem connection to the monitor is with a
- * simple 3 wire connection and therefore the hardware flow control must be
- * disabled.
- * In addition, the monitor will echo characters and therefore it is
- * important that the modem connected at the monitor does not also echo
- * (ATE0) and does not try to send result codes to the monitor(ATQ1).
- *
- * Some settings are set via Dip Switches on the Modem. Some modems do not
- * allow you to save some of the parameters that are normally controlled
- * with the Dip Switches. Always try to set the Dip Switches to the desired
- * operation since they may not be fully controllable via software.

[Initialize_PC]

******* Initialize to Factory Defaults *******

- * This should disable flow control, compression and error control.
- * Enable the default result codes so that 'OK' is returned.

String_CR= AT&F

Pause= 2

******* Display Result Codes *****+**

String_CR= ATQ0

CheckResponse= 3 OK

******* Turn local echo on *******

String_CR= ATE1

CheckResponse= 3 OK

**** Write these settings to memory. These settings will be recalled when the**

**** Modem is powered up in the future.**

String_CR= AT&W

CheckResponse= 3 OK

INITIALIZE REMOTE MODEM (the one that is attached to the monitor) **

[Initialize_Remote]

******* Initialize to Factory Defaults *******

- * This should disable flow control, compression and error control.
- * Enable the default result codes so that 'OK' is returned.

String_CR= AT&F

Pause= 2

******* Display Result Codes *****+**

String_CR= ATQ0

CheckResponse= 3 OK

******* Auto answer after 1 ring *******

String_CR= ATS0=1

CheckResponse= 3 OK

******* Disable Display of Result Codes *******

String_CR= ATQ1

Pause= 3

******* Turn local echo off *******

String_CR= ATE0

Pause= 2

**** Write these settings to memory. These settings will be recalled when the**



** Modem is powered up in the future.
String_CR= AT&W
[End]



Notes:



Notes:



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