



**GEOSONICS INC.
.NET ANALYSIS
COMPLIANCE SOFTWARE
MANUAL**

GeoSonics Inc
Warrendale, PA, USA
Software Version 8.1.40
Manual Release Date 10.29.2011

This manual has been designed for use with GeoSonics' Inc. Analysis .NET Software version 8.1.40 and above. Changes to the software implemented in subsequent releases will be documented in the "Software Manual Addendums". These addendums, if necessary, are found in the appendix of this manual. Additional addendums as they become available are also found at our website - <http://www.geosonics.com>.

DISCLAIMER OF WARRANTY:

GeoSonics software is sold "as is" and without warranties as to the performance of merchantability or any other warranties whether expressed or implied. Because of various hardware and software environments into which the software may be put, no warranty of fitness for a particular platform is offered. Good data processing procedure dictates that any program be thoroughly tested with non-critical data before relying upon it. The user must assume the entire risk associated with the use of this program. Any liabilities of the sellers will be limited exclusively to product replacement or refund of the purchase price.

TABLE OF CONTENTS:

Introduction.....04

Basic System Requirements.....05

Installation of Software.....05

Main Menu Overview.....07

Internet Menu.....11

Other Utilities.....13

Working With Waveform Events..... 18

Working With Histogram Events.....22

Downloading & Configuring Seismographs.....29

Introduction:

The Analysis .NET software package has been developed for use with data recorded with the GeoSonics Safeguard Seismic Unit System (SSU). It contains powerful tools for analyzing, graphing, printing, storing, and comparing data to various mandated, recommended or international limits.

Basic options for trigger (waveform) and sustained trigger events include velocity, acceleration, displacement, and resultant or Peak Vector Sum (PVS) reports. Office of Surface Mining (OSM), United State Bureau of Mines (USBM) compliance graphs, Fast Fourier Transform (FFT) analyses, or any other available compliance report can be combined with a basic waveform report listed above.

Advanced options for scaling, labeling data points, graph customization, and text annotation is also available. When viewing triggered, histogram, and A-weighted events the user can easily view the data in both graphical and/or numerical formats.

Data can also be saved in a variety of formats including the popular PDF format for easy sharing of data regardless of platform.

* The Enhanced Analysis Software Package (requires special registration code) provides options for advanced frequency analysis, regression analysis, and other data management tools. Also included in the Enhanced Package are custom -graphing options allowing the design of project specific graphs tailored to the user's specific vibration specifications. For purchase information, contact your local GeoSonics representative or visit our website at <http://www.geosonics.com>

SYSTEM REQUIREMENTS:

The system requirements listed below are not intended to be an all-inclusive list of compatible hardware and software. While compatibility with as many configurations as possible is our goal, your system is unique. The following list is a guide for minimum and recommended system requirements.

Minimum Requirements:

- IBM compatible (x86) PC – 500 Mhz - Pentium III Processor
- 128 MB of System RAM
- Microsoft Windows 98, Windows 98 Second Edition, Windows ME, Windows server 2003, Windows 2000 (SP3), Windows XP (SP2), Windows Vista , Windows Vista 64-bit, Windows 7
- Microsoft .NET framework 2.0
- 30 MB of Hard Disk Space*
- Minimum display resolution of 1024 x 768 (For best results a display capable of 1680 x 1050)

Recommended Requirements:

- IBM compatible (x86) PC – 1.5 GHz – PentiumCore 2 Duo/i3/i5/i7 Processor
- 1024 MB of System RAM
- Windows XP/Vista/7
- Widescreen display
- Internet Connection

*This is the minimum requirement for the program only. You may require more space depending on installed components.

INSTALLING THE SOFTWARE:

If installing the application from a CD:

1. Insert the installation disk into your CD-ROM drive.
2. Follow the auto-install directions on screen.

If the auto-installation program does not start:

1. Open “My Computer”
2. Click on the letter corresponding to your CD-ROM drive
3. Click the “setup.exe” file to begin the installation process

If installing from a website download simply open the archive and click the “setup.exe” file.

If you require further assistance please contact our technical support center at (724) - 934-2900.

GeoSonics .NET Analysis software package contains numerous analysis options for processing triggered, histogram, A-weight, and sustained trigger events. The following table lists the types of events that can be processed with the .NET Analysis package.

SSU MODEL	EVENT TYPE	FILENAME EXTENSION
SSU 2000DK ¹	Trigger	.evt
	Histogram ²	.hst
	A-Weight	.awt
	Sustained Trigger	Not Available
Micro-seis ¹	Trigger	.evt
	Histogram ²	.hst
	A-Weight	Not Available
	Sustained Trigger	Not Available
SSU 3000 Series (LC,EZ+,LCP, LCP+)	Trigger	.ev3
	Histogram ³	.hx3
	A-Weight	Not Available
	Sustained Trigger ⁴	.ex3
SSU 5500	Trigger	.g3k
	Histogram ³	.g3k
	A-Weight	Not Available
	Sustained Trigger ⁴	.g3k

¹ 2000DK and Micro-seis units refer to the histogram mode as the continuous monitor mode.

² Data expressed as the Peak Particle Velocity (PPV) for a given interval only.

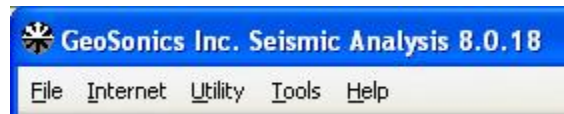
³ Data expressed as PPV and frequency.

⁴ Feature available in units with firmware 2.xx and above.

Typically, the event number assigned by the seismograph is incorporated into the filename. The date and time of the event is also automatically assigned to the file. For more information on file types and extensions, refer to the help menu of the software under *Seismograph File Types*.

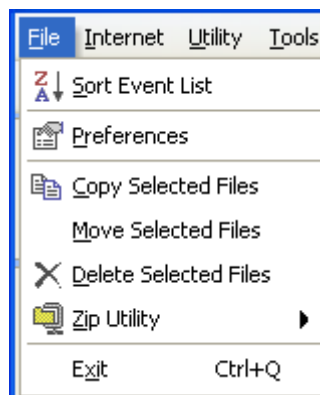
MAIN MENU OVERVIEW:

After starting the .NET Analysis program , the default screen will be blank. Here you can access the main menu and the majority of basic functions. Their functions are detailed below:



FILE MENU:

The **File** menu allows you to access event sorting utility, preferences menu, file management utilities, and zip (file compression) utility. The function of each is listed below:



The **Sort Event List** utility allows you to set the default way that the .NET Analysis program will sort events. You can perform two sorts, a primary and secondary sort. Each sort can be set to organize the data either ascending or descending.

Options for sorting include: description, filename, extension, date, time, serial number, event number, seq #, record time, L channel PPV, T channel PPV, V channel PPV, resultant PPV, dB, client, operation, location, distance, operator, comments, filename, type, or index.

The **Preferences** utility is used to setup the application preferences for the .NET Analysis program. Applications preferences such as your company name, date format, internet options, default report options, FFT options and units (imperial or metric) can be accessed via this menu. Their options are detailed below:

Preference

Application Preference

Parent Company	GeoSonics Inc.
Company Name	GeoSonics Inc.
Date Order	mm/dd/yyyy
Units	Imperial
Internet Options	
SMTP Server	mail.yourservername.com
From eMail Address	you@youremail.com
From eMail Display Name	Your Name Here
To eMail Address	Intended Recipient
To eMail Display Name	Intended Recipient's Name
Subject	PDF Report
Message Body	see Attached PDF Report
Sender Info	Sender Contact Information Here
Support eMail Address	support@geosonics.com
Miscellaneous	
Layout Style	Report Style
UI Style	Windows XP
UI Dock Style	Office 2003
AutoHideOnMouseLeave	False
No Confirm	True

Application Preference

Application preferences are set by clicking on the box to the right of the parameter being set. Either direct entry of text or a drop down selection arrow will appear when clicking on the field.

Internet options including email settings for SMTP (simple mail transfer protocol) are available here SMTP server settings will vary; please contact your network administrator for more information.

Examples of each setting are demonstrated in the attached diagram.

Miscellaneous settings are also available. Default layout styles for reports and data analysis are selectable. The User Interface (UI) is also customizable as well as the docking style. Auto-hide on mouse leave will cause windows to return to a hidden dock position when set to true. When No Confirm is set to true, you will not be prompted when moving or copying files.

Copy, Move, and Delete selected file utilities used to manage your files as they are stored on your hard drive. Events to be modified need to be highlighted in your event list prior to accessing any of these utilities. Options for creating new folders are also included. Selected events are highlighted in blue.

GeoSonics Inc. Seismic Analysis 8.0.18

File Internet Utility Tools Help

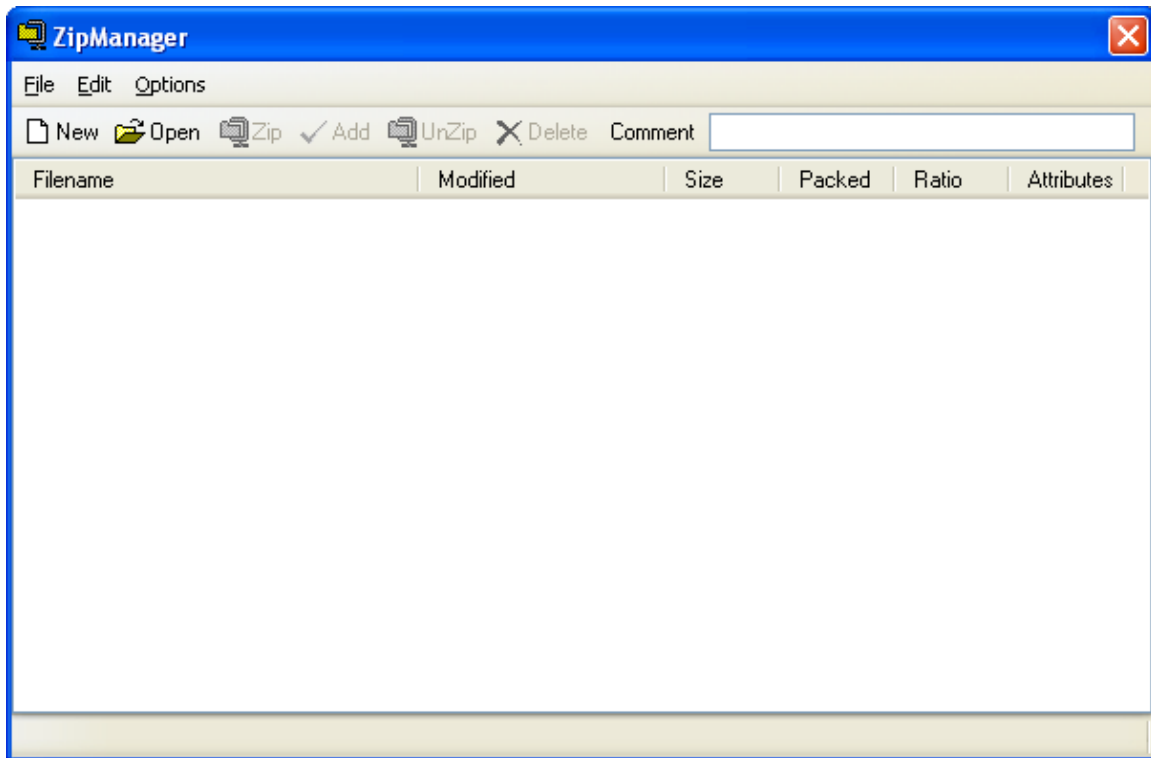
Device Manager Data Manager

Event List

Filter All Events

	Description	File Name	Extension	Date	Time	Serial No	Event No	Seq #	Record Time	L PPV
1	Trigger	EVENL001	EV3	04/11/2007	14:34:33	3310	1		5.0	0.030
2	Stop Event	EV14L000	ST3	04/02/2007	20:00:00	3310				
3	Stop Event	EV13L000	ST3	04/03/2007	20:00:00	3310				
4	Stop Event	EV12L000	ST3	04/04/2007	20:00:00	3310				
5	Stop Event	EV11L000	ST3	04/05/2007	20:00:00	3310				
6	Stop Event	EV10L000	ST3	04/06/2007	20:00:00	3310				
7	Stop Event	EVE9L000	ST3	04/07/2007	20:00:00	3310				
8	Stop Event	EVE8L000	ST3	04/08/2007	20:00:00	3310				
9	Stop Event	EVE7L000	ST3	04/09/2007	20:00:00	3310				
10	Stop Event	EVE6L000	ST3	04/10/2007	20:00:00	3310				
11	Stop Event	EVE5L000	ST3	04/11/2007	20:00:00	3310				
12	Stop Event	EVE4L000	ST3	04/12/2007	20:00:00	3310				
13	Stop Event	EVE3L000	ST3	04/13/2007	20:00:00	3310				
14	Stop Event	EVE2L000	ST3	04/14/2007	20:00:00	3310				
15	Stop Event	EVE1L000	ST3	04/15/2007	20:00:00	3310				
16	Stop Event	EVENL000	ST3	04/16/2007	16:02:47	3310				
17	Template	EVENL000	TP3	09/26/2006	14:50:00	3310				

The **Zip Utility** is included as a convenient way to store and email a large amount of event data. The Zip utility accomplishes this by compressing numerous files into one larger file called an archive. Archives are easy to copy and send via email to other recipients. These actions are done with the Zip Manager. First select the events to add to the archive. Then select either a new archive or open an existing one. Finally add the selected events to the archive by selecting the “add” button.

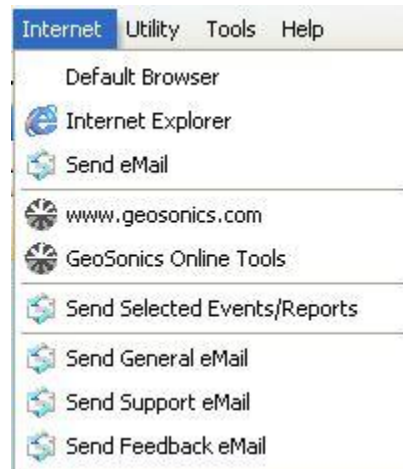


Unzipping or decompressing an archive is accomplished by opening the archive and following the prompts on screen. Here you can save the archive to the directory of your choice. Comments can also be attached to each archive. Encryption is also available under the options menu of the zip manager. Several methods of file encryption are available including 256-bit high strength AES encryption*. Files encrypted with the zip manager **cannot** be unzipped with a conventional compression utility.

*Once encrypted, files cannot be recovered without the password you enter. Do **not** lose your password.

INTERNET MENU:

The **Internet** menu allows you to access your default Internet browser, GeoSonics Inc's online tool library, and email utilities. Their functions are detailed below:



The **Default Browser** (if not using Internet Explorer) and **Internet Explorer** can be accessed with the Internet menu. They are available for quickly accessing online tools that you might need to use without exiting the program.

The **Send eMail** utility is used to access your default email client. (Microsoft's Outlook, or Mozilla's Thunderbird etc.) This will not function unless you have properly setup the default email client on your computer.

Direct links to GeoSonics' web page and online tools are also provided for your convenience.

The **Send Selected Events/Reports** utility is provided to easily email reports. Reports can be attached in the PDF format for reading on any type of computer platform, regardless of operating system. If the intended recipient of the event has GeoSonics analysis software installed on their computer, events can then be attached as the original data file for further analysis. Options are available for saving a copy of the report to your local hard drive.

To email an event, first highlight the file in the event list. Select the **Send Selected Events/Reports** utility from the Internet menu. Examples of the required fields are shown below. After filling in the fields you can select which kind of attachment that you would like to generate. Click on **Selected** to attach the original digital file. Click on **PDF** to generate a PDF file for viewing on any computer platform*. A list of attached events in either format will be displayed in the message body. You can edit the message body to include any text you wish. When all events are processed you can send your message with the **Send** button. A confirmation dialogue will be displayed if you have successfully sent your message. An **Address** book has been added for your convenience. It can be added to manually by adding names and addresses to the spreadsheet. To access a saved address press the address button and highlight the name of the recipient(s). Finally, press the "To" button to add the e-mail address to the list.

The screenshot shows a dialog box titled "GeoSonics eMail". It has several input fields and buttons. The "From:" field contains "patrick@geosonics.com". The "To:" field is empty, with an "Address..." button to its right. The "Subject:" field contains "Selected Events PDF Reports". The "Attachment:" field is empty. The "Message:" field contains "Selected Events PDF Reports" and has a scroll bar. To the right of the message field are two buttons: "Selected.." and "PDF..". At the bottom of the dialog, there is a "Save Report" checkbox which is checked, a "Send" button, and a file path "C:\Documents and Settings\Patrick\Desktop" with a "Browse..." button to its right.

*The PDF format cannot do any further work with the analysis software. It is a read only format. You must use the digital file for further data analysis.

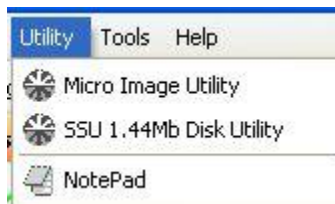
The **Send General Email** GeoSonics email client is used to send email and attach any other type of file to your message. Your SMTP server may limit your attachment file size.

The **Send Support Email** utility is available if you have a technical support question relating to the software. Support emails are general answered in 1 -2 business days.

The **Send Feedback Email** utility is available if you wish to comment on the software or give suggestions for other features.

UTILITY MENU:

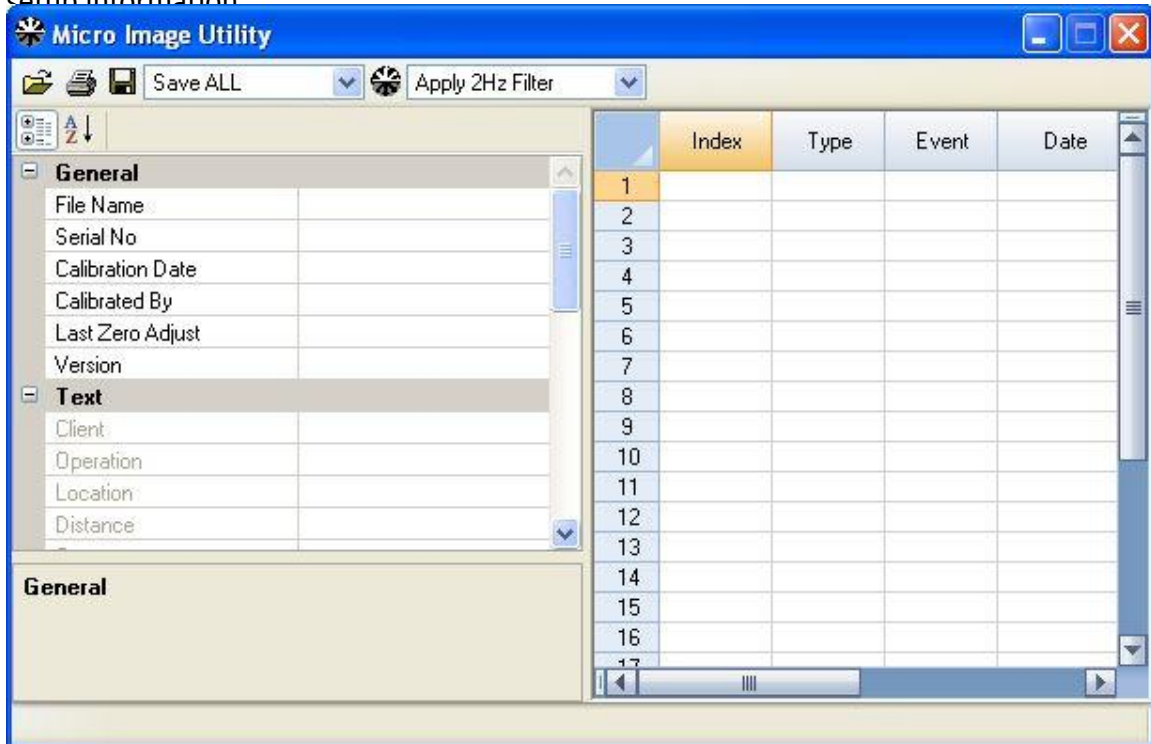
The utility menu gives access to GeoSonic's Micro Image Utility, the SSU Disk Utility , and NotePad. Their functions are detailed below:



The **SSU Disk Utility** is used to read and store events written to floppy disks (720K B and 1.44MB) recorded with the SSU2000DK seismograph. After inserting a disk with 2000DK events on it into your computer's 3.5in floppy drive (if equipped) pressing the "Get" button will read the disk's contents and display appropriate information. The event number, file name, extension, date, time and file size will be available. You can select "Save All" or you can highlight one or more events and only "Save Selected".



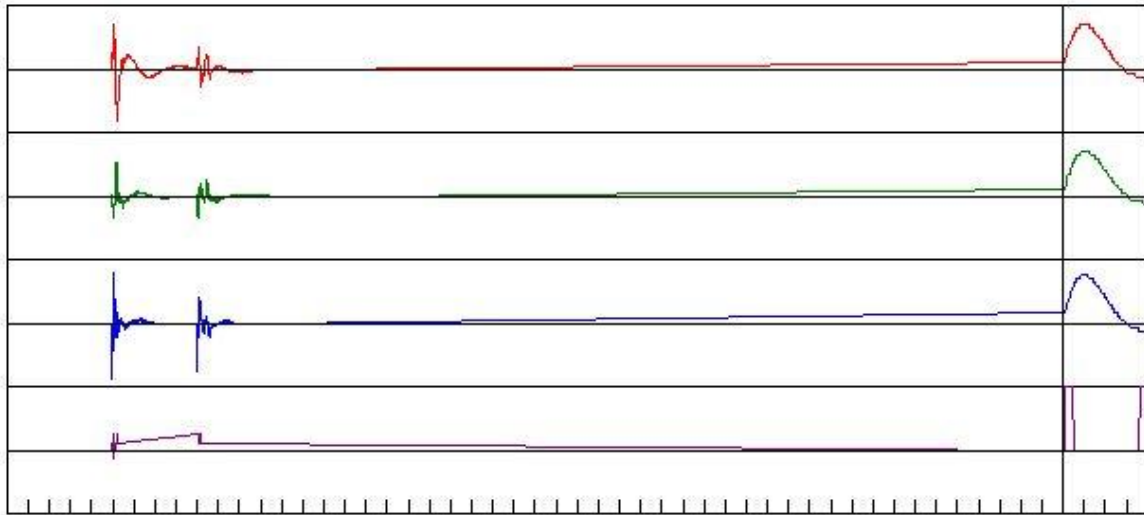
The **Micro Image Utility** is used to manage events recorded using the SSU MicroSeis System. The utility can only be used after you have properly downloaded an image file from a MicroSeis unit. Pressing the “open folder” button will allow you to search for the location of the image file. This file has the extension .img. After loading an image file all events recorded with that unit will be listed in the event list to the right. All file information will also be available for each individual event as well as any associated setup information.



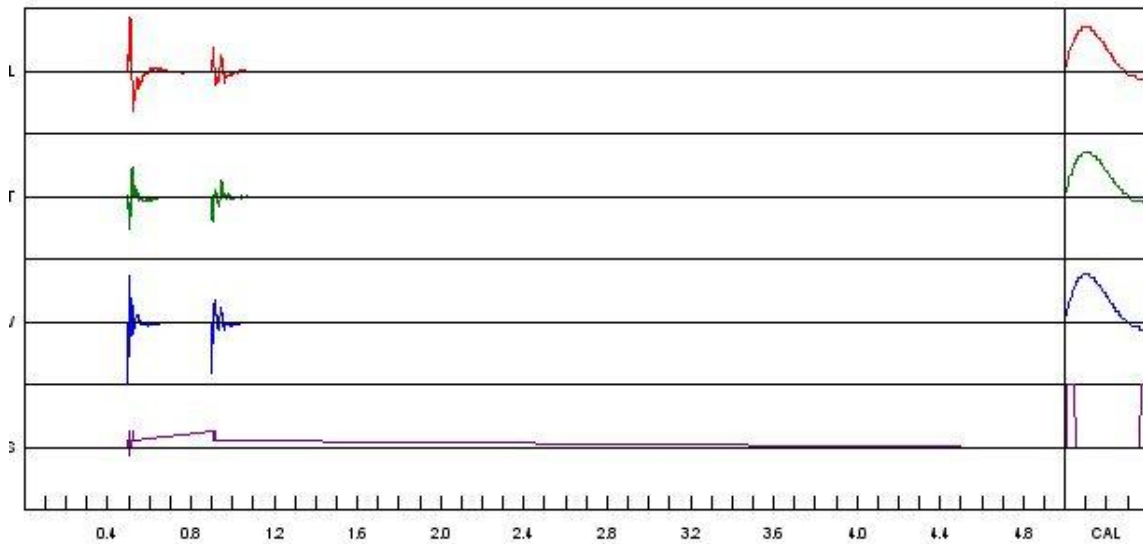
The Micro Image Utility has several options for post processing. The default option for events is to perform **no post processing** and leave the image exactly as it was recorded. The **Baseline Correct** option is used to remove any offset that might be present on the zero crossing line.



The **Baseline Correct** option is used to remove any offset that might be present on the zero crossing line. The figure below shows an **uncorrected** baseline offset:



The figure below shows a **corrected** baseline offset:



The **Apply 2-Hz Filter** is used for the purpose of complying with ISEE recommended response parameters. The basic micro records data with a 5-hertz response. The software uses a complex filter that would be unobtainable in the field with portable components. The effects of the 2-Hz filter are highlighted on the following page. Similar results are obtained using the 1-Hz filter. The use of a filter shows up in the Comment field on a printed record. *** You must use the 2-hertz filter to maintain ISEE compliance.**

Uncorrected record:



GeoSonic Inc. Seismic Analysis
Combined Custom Graph/Velocity Waveform Report

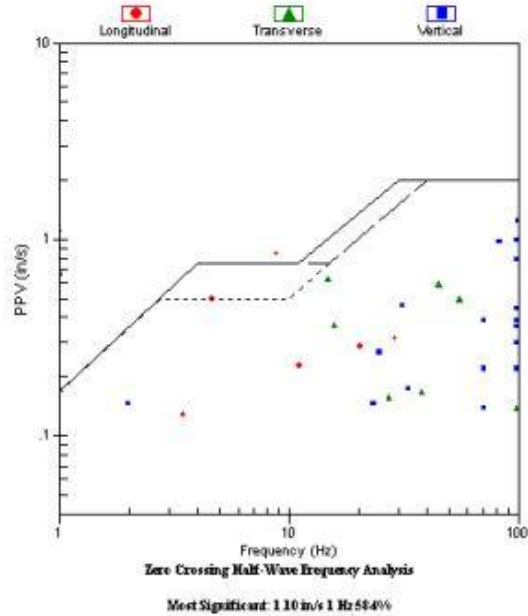
Serial No: 4801
Date: 05/23/2002 11:11:22
Event No: 001
Record Time: 5 s
Client: GeoSonic
Operations: Test
Location: Kennebunkport
Distance: 99
Operator: Rick
Comment: NOF.DLL 19
Seismic Trigger: 0.05 in/s
Sound Trigger: 120

	Summary Data		
	L	T	V
PPV (in/s)	1.10	0.63	1.24
PD (in x.001)	9.0	3.9	3.0
PPA (g)	1.04	1.09	2.91
FREQ (Hz)	1.0	14.7	100.0
Resultant PPV:	1.45 in/s		
Peak Air Pressure:	106 db		
	0.00058 PSI		

Shaletable Calibrated: 08/08/1999
By: GeoSonic Inc.
356 Northgate Drive
Warendale, PA 15086 U.S.A.
TEL: 724.934.2900 FAX: 724.934.2999

Velocity Waveform Graph Scale
Time Scale: 0.100 s
Seismic Scale: +/- 1.28 in/s
Sound Scale: +/- 0.00232 PSI

OSM-USBM Safe Blasting Levels
SN: 4801 Event: 001



Corrected record:



GeoSonic Inc. Seismic Analysis
Combined Custom Graph/Velocity Waveform Report

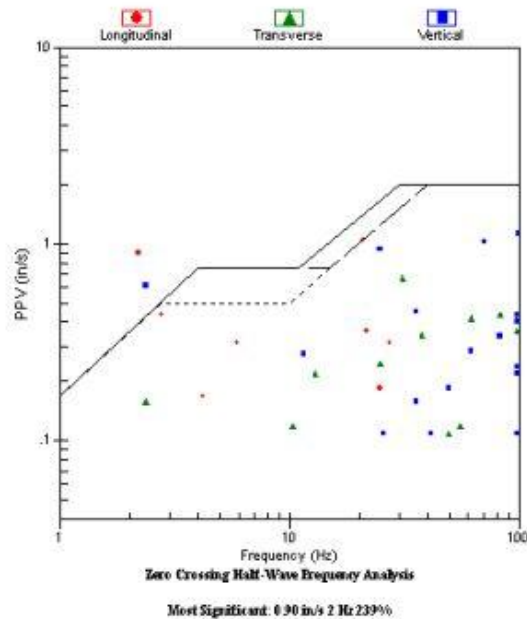
Serial No: 4801
Date: 05/23/2002 11:11:22
Event No: 001
Record Time: 5 s
Client: GeoSonic
Operations: Test
Location: Kennebunkport
Distance: 99
Operator: Rick
Comment: 2HZ.DLL 19
Seismic Trigger: 0.05 in/s
Sound Trigger: 120

	Summary Data		
	L	T	V
PPV (in/s)	1.04	0.67	1.13
PD (in x.001)	7.1	4.2	4.1
PPA (g)	0.96	1.09	2.91
FREQ (Hz)	20.8	31.2	100.0
Resultant PPV:	1.26 in/s		
Peak Air Pressure:	106 db		
	0.00058 PSI		

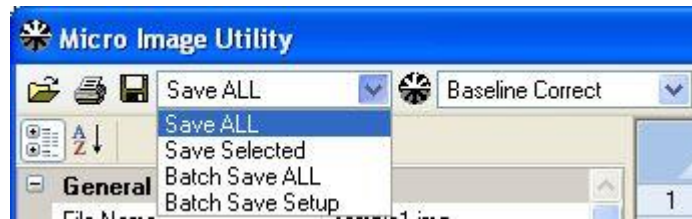
Shaletable Calibrated: 08/08/1999
By: GeoSonic Inc.
356 Northgate Drive
Warendale, PA 15086 U.S.A.
TEL: 724.934.2900 FAX: 724.934.2999

Velocity Waveform Graph Scale
Time Scale: 0.100 s
Seismic Scale: +/- 1.28 in/s
Sound Scale: +/- 0.00232 PSI

OSM-USBM Safe Blasting Levels
SN: 4801 Event: 001



Saving of individual parsed events can be accomplished using the save options drop down menu. Options are available to save all events, save selected events, to batch save events from multiple image files, or batch save multiple setup files from multiple images. This menu can be found in the figure shown below:



Help Menu:

The Help menu is available to assist you. Categorized indices are available by **contents** as well as a **searchable** index. The **Register** option is also available if you have an upgraded copy of Analysis .NET. For normal compliance installations, this is not used. In the event that you have purchased an Advanced Analysis Package, please call the GeoSonics service center for technical support. Version information can be found in the **About** section.



Working With Waveform Events :

The default display settings are shown below. The event list, summary data, and report are all viewable. Several viewing options are available from the main window. After selecting an event from the Explorer and Event List you will be able to view summary data of a waveform event. It is important to note that individual user preferences will have a significant effect on displayed output. Default report types can be set in the preferences section of any report. Waveforms, also known as triggered, events have the extensions .evt, .ev3, .ex3, or .g3k. A stop event report generated in trigger mode will have a .st3 extension. This information will be present in the “extension column” of the event list.

The screenshot displays the GeoSonic's Seismic Analysis software interface. The main window is divided into several panes:

- Event List:** A table listing 15 events with columns for Description, File Name, Extension, Date, Time, Serial No, and Event No.
- Summary Data:** A detailed view for the selected event (Serial No: 8518 v2.69), including Date, Event No, Record Time, Client, Operations, Location, Distance, Operators, Comment, Seismic Trigger, and Sound Trigger.
- Report:** A window titled "GeoSonic's Seismic Analysis Custom Graph/Velocity Waveform Report" for "USBM Safe Blasting L". It includes a table of Summary Data and a graph of PPV (in/s) vs. Frequency (Hz).

Description	File Name	Extension	Date	Time	Serial No	Event No
1 Trigger	EVENL001	EV3	08/13/2002	10:28:02	8518	1
2 Trigger	EVENL002	EV3	08/13/2002	10:45:05	8518	2
3 Trigger	EVENL003	EV3	08/14/2002	10:29:03	8518	3
4 Trigger	EVENL004	EV3	08/15/2002	10:27:11	8518	4
5 Trigger	EVENL005	EV3	08/16/2002	10:39:20	8518	5
6 Trigger	EVENL006	EV3	08/20/2002	10:27:03	8518	6
7 Trigger	EVENL007	EV3	08/21/2002	10:26:03	8518	7
8 Trigger	EVENL008	EV3	08/22/2002	10:29:46	8518	8
9 Stop Event	EVI7L000	ST3	08/13/2002	10:45:01	8518	
10 Stop Event	EVI6L000	ST3	08/13/2002	20:00:00	8518	
11 Stop Event	EVI5L000	ST3	08/14/2002	10:45:50	8518	
12 Stop Event	EVI4L000	ST3	08/14/2002	20:00:00	8518	
13 Stop Event	EVI3L000	ST3	08/15/2002	10:45:16	8518	
14 Stop Event	EVI2L000	ST3	08/15/2002	20:00:00	8518	
15 Stop Event	EVI1L000	ST3	08/16/2002	10:55:21	8518	

	L	T	V
PPV (in/s)	0.230	0.170	0.273
FREQ (Hz)	16.1	19.2	17.2
PD (in/F)	3.20	1.36	2.46
PPA (g)	0.051	0.065	0.078

	L	T	V
PPV (in/s)	0.230	0.170	0.273
FREQ (Hz)	16.1	19.2	17.2
PD (in/F)	3.20	1.36	2.46
PPA (g)	0.051	0.065	0.078

Customization of waveform/report compliance graphs is accomplished using the preferences button located in the data screen shown on the page below. (The button is just to the right of the monitor tab). The details of each option is outlined below.

Options	
General	
Default Report Title	GeoSonics Inc. Seismic Analysis
Default Report SubTitle	
Print Preview	False
Print Logo	True
Logo Filename	geologo.bmp
Footer Location	Left Justify
Short Summary	False
Default Trigger Report Type	Combined
HighLight HotSpot Data	True
Combined Waveform Report	
Default Combined Waveform Rep...	Type I
Show Post Event Note	True
Waveform Report	
Default Waveform Report	Velocity
Line Type	Extra Thin
Cursor Tracking	False
EvenOdd Color	False
<input type="checkbox"/> User Defined	
Use User Defined	False
Compliance Report	
Cursor Tracking	False
EvenOdd Color	True
Show Most Significant	True
Show All PV vs Frq Data	True
Baseline Normalization	False
<input type="checkbox"/> User Defined	
Use User Defined	False
Minimum PPV	0.04
Use Custom Graph	True
Custom Graph Filename	
<input type="checkbox"/> Power Report	
FFT Size	2048
FFT Window	None
General	

General Options

Default Report

Title – Used to set the default report title that appears on each report.

Default Report

SubTitle – Used to set the default subtitle that appears on each report.

Print Preview – When set to true, you are able to see a print preview before printing a selected event.

Print Logo - When set to true, printing of the customizable logo is permitted. Examples of these logos are included with the program.

Logo Filename - Specifies the directory location on the hard drive for the customizable logo. (Logos must be saved in .jpg or .bmp format.)

Footer Location - Specifies the location of the footer information.

Short Summary - When set to true, prints only short summary information.

Default Trigger

Report Type - This sets the default report generated when you select an event from the event list. Options include waveform only, compliance only, and a combined report.

Highlight HotSpot

Data - When set to true, clicking on any point in the waveform will cause the spreadsheet below it to highlight its location.

Combined Waveform Report

Default Combined

Waveform Report - When a combined report type is selected, this option will select the default report type. Type I - standard compliance/waveform report. Type II - OSM/USBM comparative combined report. Type III - OSM/USBM comparative combined report with CAL pulse.

Show Post Event

Notes - When set to true, this option will allow the printing of any post event note that has been saved with an event.

Waveform Report

Default Waveform Report -

Sets the default waveform report type. Options include velocity acceleration, displacement, and peak vector summation.

Line Type -

Sets the default line style for graphing the waveform.

Cursor Tracking -

When set to true, the position of the cursor will be tracked on the waveform graph.

EvenOdd Color -

When set to true, the spreadsheet rows will be colored depending on if they are even or odd for enhanced visibility.

Use User Defined Settings -

When set to true, all user defined waveform display options will be utilized.

Compliance Report

Cursor Tracking -

When set to true, the position of the cursor will be tracked on the compliance graph.

EvenOff Color -

When set to true, the spreadsheet rows will be colored depending on if they are even or odd for enhanced visibility.

Show Most Significant -

When set to true the program will calculate and display the most significant USMB particle velocity / frequency relationship.

Show All PV vs Frequency Data -

When set to true, all particle velocity frequency relationships are displayed not just the most critical for each frequency.

Baseline Normalization -

When set to true, a filter is enabled that is used to eliminate baseline offsets in the pre-trigger data. Default setting for this parameter is false.

Use User Defined Settings -

When set to true, all user defined compliance display options will be utilized.

Working With Histogram Events:

The default display settings are shown below. The event list, summary data, and report are all viewable. Several viewing options are available from the main window. After selecting an event from the Explorer and Event List you will be able to view summary data of a histogram event. It is important to note that individual user preferences will have a significant effect on displayed output. Default report types can be set in the preferences section of any report. Histograms, also known as continuous monitor reports, events have the extensions hx3 or g3k. The record type can be seen in the “extension” column of the event list. Stop event reports are not generated in histogram mode. Start and stop time information is encoded with the histogram file. Histograms can also be identified by .

Default Layout:

The screenshot displays the GeoSonic's Seismic Analysis 8.1.78 software interface. The main window is divided into several sections:

- Event List:** A table listing events with columns for Description, File Name, Extension, Date, Time, Serial No, and Event No.

Description	File Name	Extension	Date	Time	Serial No	Event No
1 Histogram	EVENL001	HX3	04/12/2004	07:14:00	5042	1
2 Histogram	EVENL002	HX3	04/14/2004	08:14:00	5042	2
3 Template	EVENL000	TP3	12/05/2002	14:23:29	5042	
- Summary Data:** A detailed view of the selected event (Serial No: 5042 #047).

Continuous Monitor Recording		Summary Data		
		L	T	V
Serial No:	5042 #047			
Date:	04/12/2004 07:14:00			
Event No:	1			
Record Time:	25890 seconds	PPV (in/s)	0.065	0.033
Client:		FREE Q (Hz)	15.2	300.0
Operator:		Peak Air Pressure:		90 db
Location:		Sample Size:		1440
Distance:	170	Interval Size:		30 seconds
Operator:	Vibra-Tech			
Comment:				
Additional Info:				
- Continuous Monitor Analysis:** A report window showing the same summary data as above, along with a waveform plot titled "Continuous Monitor Analysis SN: 5042 Item: 1". The plot shows a red waveform on a black background with a vertical axis ranging from -0.50 to 0.50.

The status bar at the bottom indicates "0 of 3 Selected", the file path "C:\Patrick's Stuff\DATA backup\EVENT\Tedco\04-14-04\5042", and the date "Monday, March 08, 2010 9:32AM".

Customization of histogram/continuous monitor reports is accomplished using the preferences button located in the data screen shown on the page below. The details of each option is outlined below.

Monitor Report	
Show Record Statistics	True
Show Interval Statistics	True
Cursor Tracking	False
EvenOdd Color	True
Analysis Criteria	
Reset Defaults	
Start Date/Time	04/12/2004 07:14:00
Stop Interval	0
Interval Size	0
User Defined	
Use User Defined	False
Graph Data	Seismic
Maximum PPV	0.05
Minimum PPV	0
PPV Limit	0
PPV Ticks	4
Maximum DB	150
Minimum DB	0
DB Limit	0
DB Ticks	4
Plot Style	Bar
Multi-Axis Style	Grouped
Multi-Axis Separator	None

Monitor Report Options:

Show Record Statistics: - This option will show the results of record statistics (i.e. min, max, average) compiled for the entire record at the bottom of the summary data tool window.

Show Interval Statistics: - This option will show the results of record statistics (i.e. min, max, average) compiled for the analysis criteria interval selected at the bottom of the summary data tool window.

Cursor Tracking: - Cursor tracking is used when working on a histogram in the data tab. The cursor's position on the report will tell the user the position on the graph and the corresponding X/Y values that it represents. Example: (100.00, 0.350)

EvenOdd Color: - This option is available to enable colors in spreadsheets for tracking long rows of data.

Analysis Criteria:

Reset Defaults: - Results all monitor criteria back to the record defaults.

Start Date/Time: - Sets the start date and time for histogram record analysis.

Stop Interval: - Sets the number of intervals after the start date/time to end the analysis of the record.

Interval Size: - Sets the interval size to analyze when using custom criteria. If you set the interval size to one (1) the software will analyze each data point and display a bar on the graph for each point. If you set the interval size to five (5) then every 5 data points will be represented on the graph as a single bar with a corresponding record in the spreadsheet.

User Defined:

Use User Defined: - Used to select default of user defined criteria set in the options menu.

Graph Data: - Allows the user to set the which channels are graphed on the screen. Three types are available. Ground, graphs only the 3 ground channels. Sound, graphs only the sound channel. All, graphs all 4 channels together.

Maximum PPV: - Specifies the maximum particle velocity on the X axis that will be graphed. It should be noted that data points above the specified limit will be clipped when this option is enabled.

Minimum PPV: - Specifies the minimum particle velocity on the X axis that will be graphed. It should be noted that data points below the specified limit will not be displayed.

Maximum DB: - Specifies the maximum decibel level on the X axis that will be graphed. It should be noted that data points above the specified limit will be clipped when this option is enabled.

Minimum DB: - Specifies the minimum decibel level on the X axis that will be graphed. It should be noted that data points that are below the specified limit will not be graphed.

Plot Style: - Determines the graph style (Bar, Points, Lines...etc)

Multi-Axis Style: - Determines how the axes are graphed on the screen. They can be grouped or separated. Grouped axes will have no space between them.

Multi-Axis Separator: - Determines what kind of marking will separate ungrouped axes. Examples include lines, bar, thick bars, etc.

Overview of Monitor Data:

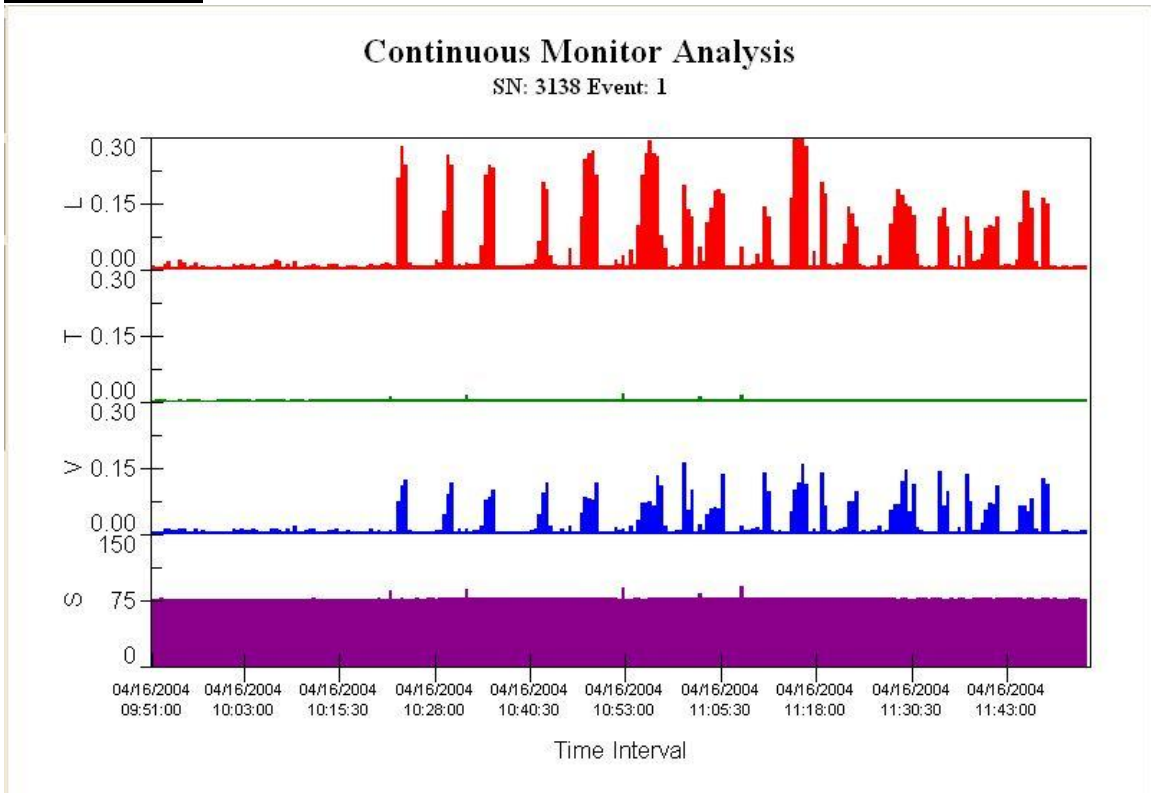
Continuous monitor data can be accessed by viewing the Continuous Monitor Report on the vertical toolbar at the left of the screen. You can select the data, graphics, or a combination of both to accomplish more detailed analysis.

Data Mode:

Continuous Monitor Analysis											
SN: 5042 Event: 1											
	Report Interval			Longitudinal		Transverse		Vertical			
	Date	From	To	PPV in/s	Hz	PPV in/s	Hz	PPV in/s	Hz	DB	
1	04/19/2004	07:33:00	07:33:30	0.008	8.6	0.008	1.1	0.013	35.7	76	
2	04/19/2004	07:33:30	07:34:00	0.005	83.3	0.010	500.0	0.008	33.3	81	
3	04/19/2004	07:34:00	07:34:30	0.005	250.0	0.005	250.0	0.008	45.5	78	
4	04/19/2004	07:34:30	07:35:00	0.005	100.0	0.013	500.0	0.013	500.0	81	
5	04/19/2004	07:35:00	07:35:30	0.005	45.5	0.013	500.0	0.010	500.0	81	
6	04/19/2004	07:35:30	07:36:00	0.013	27.8	0.013	23.8	0.028	38.5	86	
7	04/19/2004	07:36:00	07:36:30	0.018	31.3	0.025	22.7	0.048	31.3	82	
8	04/19/2004	07:36:30	07:37:00	0.040	27.8	0.033	23.8	0.110	31.3	84	
9	04/19/2004	07:37:00	07:37:30	0.043	31.3	0.030	20.0	0.133	33.3	86	
10	04/19/2004	07:37:30	07:38:00	0.038	13.9	0.035	22.7	0.108	27.8	82	
11	04/19/2004	07:38:00	07:38:30	0.013	55.6	0.018	500.0	0.010	500.0	82	
12	04/19/2004	07:38:30	07:39:00	0.013	500.0	0.018	250.0	0.020	250.0	87	
13	04/19/2004	07:39:00	07:39:30	0.015	250.0	0.023	250.0	0.015	500.0	82	

Data mode allows you to view the peak for each channel for all recorded intervals. Each interval also displays the corresponding zero-crossing frequency for each peak. Peak decibel levels for each interval are also displayed.

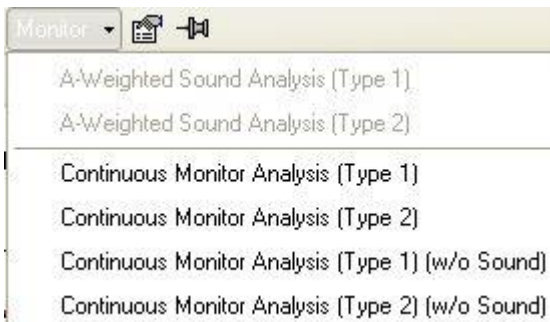
Graphic Mode:



Graphic mode displays each channel graphically. This graph is clickable and will allow you to highlight the clicked point in data mode. This feature can be accessed in the options under "highlight hot-spot data". Changes made to this screen will be amended to the final report.

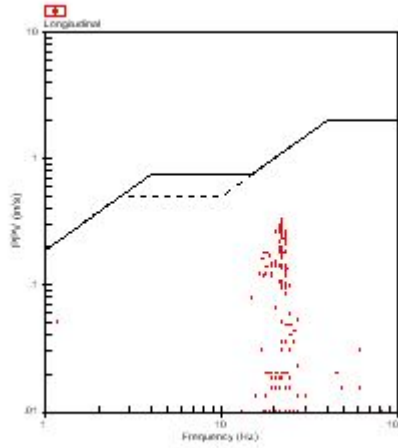
Monitor Report Types:

There are two report types available in the compliance package. Type I and Type II are highlighted below. You can also remove the sound channel from both reports.



Type I Reports:

Type one reports compare the peak for each interval to the limits recommended by the USBM for the protection of structures. Each channel has its own comparison chart. An example of this comparison is show below.



Type II Reports:

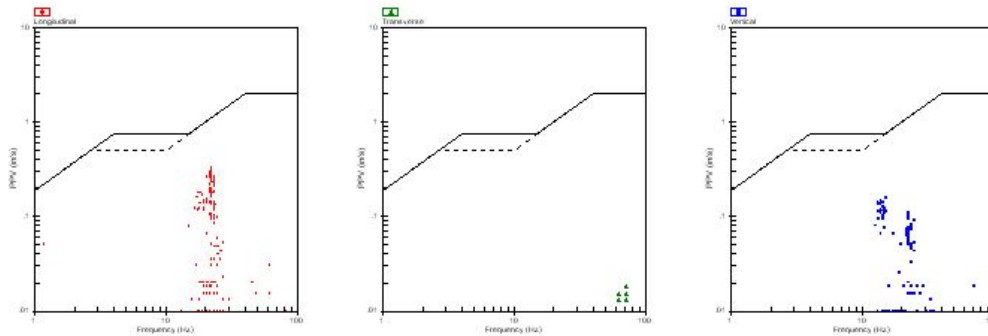
Type two reports do not compare the peak for each channel and interval to any known standards. This report type only displays the graphical data for the entire record combined with summary data. An example is show below.



GeoSonic Inc. Seismic Analysis Continuous Monitor Analysis

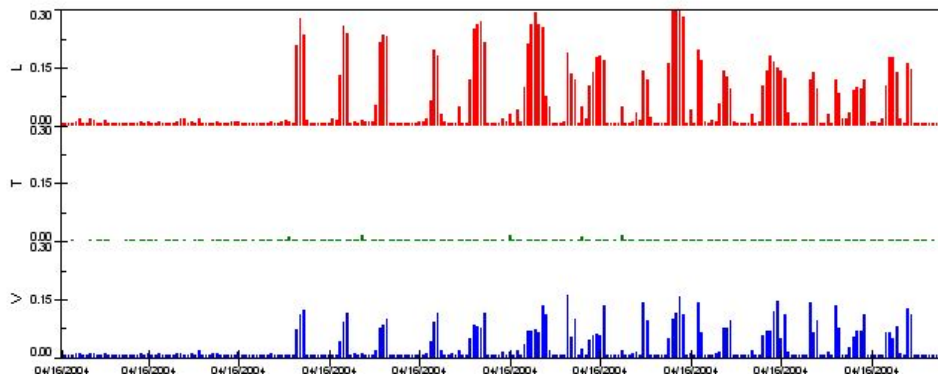
Recording	Serial No:	3138 v2.71	Continuous Monitor		
Date:	04/16/2004 09:51:00		Summary Data		
Event No:	1		L	T	V
Record Time:	7380 seconds		PPV (in/s)	0.323	0.018
Client:	Tedco		FREQ (Hz)	22.7	71.4
Operation:	Rand Building		Peak Air Pressure:	90 db	
Location:	ST PAULS		Sample Size:	1440	
Distance:	99		Interval Size:	30 seconds	
Operator:	Vibra-Tech				
Comment:					
Additional Info:			Shaketable Calibrated:	03/19/2004	
			By:	Vibra-Tech, Inc.	
				2700 Holloway Road - Suite 113	
				Louisville, KY 40299 U.S.A.	
				TEL: 502.240.9900 FAX: 502.240.9902	

USBM Safe Blasting Levels



Continuous Monitor Analysis

SE 3138Evec 1



Downloading and Configuring Seismographs:

Starting the device manager is accomplished by clicking on the “ **Device Manager**” button located below the main menu:

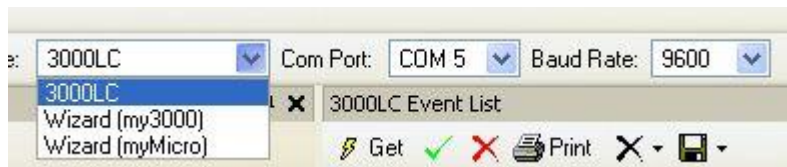


The .NET Analysis software contains utilities for downloading and configuring SSU 3000 series seismographs. Connection to your computer is accomplished using the 3000 series null modem cable (Part# 3039MM) included with your instrumentation. The standard cable is 9-pin for use with most computers’ standard serial port configurations. However, with the proliferation of USB (universal serial bus) connections some computers do not have a standard 9-pin serial port. In this case, a USB to serial converter can be used. Please contact the GeoSonics Service Center for a list of approved devices to support your application.

In order to communicate with your 3000 series instrument you must have your port setting property configured. There are two ways to setup your communication protocols. You can ask the program to do a search for the unit. Please be advised that this process can take a few minutes. You can also set the configuration manually. Details of this menu are highlighted below:



The device type that is selected, COM (communications) port number and baud rate can be selected here. The default setting for most serial ports is COM 1. Active COM ports are highlighted in red. If you cannot establish communication, check your system information to determine the proper COM port number. The default setting for the Baud Rate is 9600 bps (bits per second). It is not recommended that you exceed this port speed. However, if persistent errors occur with communication, you can turn the port speed down to 2400 bps. These parameters, including support for *Wizards* and *Micros* can also be found here. An example of the drop down menu is shown below:



3000 Series Setup:

After opening the device manager you can access fields for each of the seismographs settings. They include the following fields:

Date/Time
Additional Info
Alarm 2 Setup
Options

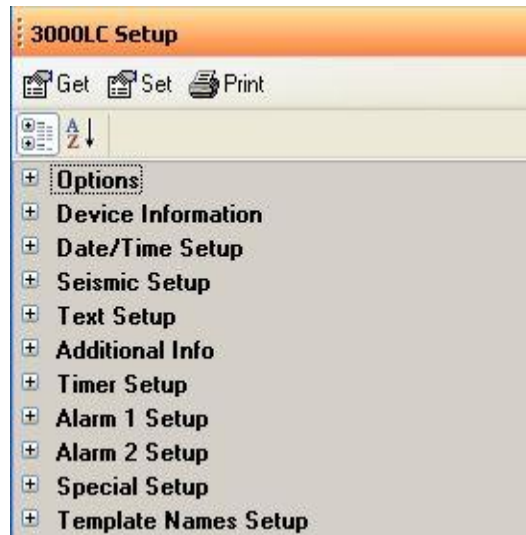
Seismic Setup
Timer Setup
Special Setup
Device Info.

Text Setup
Alarm 1 Setup
Templates

Each field can be collapsed into itself. The details of each option are detailed below:

The screenshot shows the '3000LC Setup' application window. It features a toolbar with 'Get', 'Set', and 'Print' icons, and a search bar. The main content area is organized into several expandable sections:

- Options**:
 - Batch Setup: False
 - Suppress Login: True
 - Show Com Activity: True
- Device Information**:
 - Device Info
 - Serial No.
 - Firmware
 - Battery Level
 - Product ID: 2
 - Product Description
- Date/Time Setup**:
 - Sync Clock: True
 - Date
 - Time
 - Date Order: mm/dd/yyyy
- Seismic Setup**:
 - Record Mode: Histogram
 - Seismic Trigger: 0.5
 - Sound Trigger: 0
 - Record Time: 5
 - Records/Trigger: 0
 - Histogram Record Time Interval: 30 seconds
- Text Setup**:
 - Client
 - Operation
 - Location
 - Distance: 0
 - Operator
 - Comment
- Additional Info**:
 - Line 1
 - Line 2
 - Line 3
- Timer Setup**:
 - Timer Mode
 - Timer Type
 - Timer Sleep Time
 - Timer Wake Time
- Alarm 1 Setup**
- Alarm 2 Setup**



Options:

- Batch Setup – Determines if each setup property is set at once or individually.
- Suppress Login – If set to True, the program will NOT log in before setting each field.
- Show Com Activity – If the COM dialogue window is visible, all communication information will be displayed.

Device Information:

- Device Info - Lists the device serial number, firmware version, battery level, event number, and percent of memory available.
- Firmware - Lists the current firmware in the connected seismograph.
- Battery Level - Lists the battery voltage of the connected seismograph.
- Product ID - Lists the unit ID number.
- Product Des. - Lists any additional information.

Date/Time Setup:

- Sync Clock - If set to True, the program will sync the seismo graph clock to the PC's internal clock with each batch setup.
- Date - Allows you to manually enter a date (date should match the date order listed below this field)
- Time - Allows you to manually enter a time (hh:mm:ss). Please note that all time is kept in the 24hr format.
- Date Order - Specifies the date format.

Seismic Setup:

- Record Mode - Allows you to select and set the record mode. Options for

record mode are Trigger mode (for waveform recording), Histogram mode, and Sustained Trigger mode (for multi-waveform events).

- Seismic Trigger - Allows you to set the seismic trigger level. Trigger levels are selectable from 0.005 in/sec to 5.000 in/sec.
- Sound Trigger - Allows you to set the microphone trigger level. Trigger levels are selectable from 81 to 142 dB with 0 = OFF.
- Record Time - Allows you to set the record time in seconds. Record times can be set from 1 to 15.
- Records/Trigger - Allows you to set the number of records that are used in a sustained trigger event. To achieve a 20 second record time, a 5.0 second record time would be selected with 4 records per trigger.
- Histogram Interval - Allows you to set the histogram record interval. Intervals are selectable are 1 sec, 2 sec, 5 sec, 15 sec, 30 sec, and 1 min.

Text Setup:

Text Setup fields are available for “Client”, “Operation”, “Location”, “Distance”, “Operator”, and “Comment”. Lengths are limited to 26 characters per field.

Additional Info:

Additional information reserves three lines for text entry. This text information is anything you deem relevant to your recording. Character limits are the same.

Timer Setup:

- Timer Mode - Allows you to set the timer on or off.
- Timer Type - Allows you to set the timer type. You can set the type to either once or daily.
- Timer Sleep Time - Allows you to set the time which the unit goes into standby. Time format is mm/dd/yy hh:mm:ss Scanning is stopped at the time specified.
- Timer Wake Time - Allows you to set the time which the unit activates out of standby or the off state. Time format: mm/dd/yy hh:mm:ss

*Note that daily timers can be set to activate regardless of date. To set a daily timer from 6 AM to 8:00 PM you can use the following format:

00/00/00 06:00:00 – wake time

00/00/00 20:00:00 – sleep time

Alarm 1/2 Setup:

Alarms are used to activate another device. These devices can include visual or audible external alarm systems, dialers, or other devices. Contact the GeoSonics support center to find the application that best fits your needs. Alarm trigger levels operate independently of seismic trigger levels. There are two alarms available so you can set either two thresholds for one type of alarm i.e. seismic only, or you can set an independent alarm for both the seismic and sound channels. Hold time is the number of seconds the alarm is active before it is reset.

Special Setup:

- Event No. - Allows you to set the current event number.
- Recording Units - Allows you to set the current recording unit to either imperial or metric. Default setting is imperial.
- Display Timeout - Allows you to set the display timeout feature on or off. The default setting is ON causing the display to automatically go blank after 1 minute in scan mode. This feature is used to conserve power for long term monitoring.
- Password Protect - Allows you to require the use of the unit's unlock code to operate the seismograph. Its default setting is OFF.
- Language - Allows you to select the operating language on the unit. The default setting is English.

Template Name Setup:



Templates are a tool available to save and reload 3000 series seismograph setup up data without having to reprogram each field. There are 6 template fields that can be accessed and modified with the software. They also can be renamed and saved for use in the field.



Downloading Events:

Downloading events is part of the device manager component of .NET Analysis. After being sure that your COM port settings are correct you can access event data that has been recorded with any 3000 series instrument. The 3000LC Event List tool bar is used to access these records. The function of each button is listed below:



- Clear - The **Clear** function is used to clear the active event list on the screen. It will **not** clear any information from the seismograph (if connected).
- Get - The **Get** feature will login to the instrument (if you haven't already) and automatically retrieve any event list data that is present. It will not download anything to your PC at that time.
-   - These buttons are used to **Select** and **Deselect** all events.
- Print - The **Print** button is used to print the event list. It is not used to print the

selected event(s).



- The **Delete** button is used to delete events from the seismograph memory.

After selecting this button, a drop down menu will prompt you to remove all events or selected events.

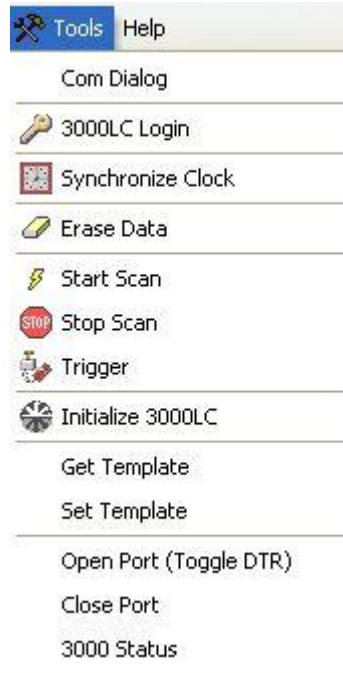


- The **Save** button is used to save event files to the local or network drive you specify. After selecting this button, a drop down menu will prompt you to save all events or selected events.

3000LC Event List																
<input type="checkbox"/> Clear <input type="checkbox"/> Get <input checked="" type="checkbox"/> <input type="checkbox"/> Print <input type="checkbox"/> <input type="checkbox"/>																
#	Event No	Type	Date	Time	L PPV	T PPV	V PPV		L FREQ	T FREQ	V FREQ		DB	Resultant		
1	001	000	TMPL	12/18/08	17:58:31											
2	002	001	TRIG	12/23/08	10:41:44	0.048	0.075	0.260	in/s	166.7	166.7	100.0	HZ	79	0.27	in/s
3	003	002	TRIG	12/23/08	10:42:10	0.028	0.040	0.128	in/s	11.4	250.0	25.0	HZ	79	0.13	in/s
4	004	003	TRIG	12/23/08	10:44:47	0.043	0.053	0.135	in/s	5.8	6.5	22.7	HZ	78	0.13	in/s
5	005	004	TRIG	12/23/08	10:45:14	0.093	0.078	0.280	in/s	166.7	166.7	125.0	HZ	78	0.29	in/s
6	006	005	TRIG	12/23/08	10:45:46	0.083	0.165	0.440	in/s	166.7	166.7	125.0	HZ	78	0.47	in/s
7	007	006	TRIG	12/23/08	10:46:12	0.105	0.090	0.320	in/s	166.7	166.7	100.0	HZ	78	0.33	in/s
8	008	007	TRIG	12/23/08	10:46:40	0.073	0.065	0.355	in/s	125.0	125.0	25.0	HZ	78	0.36	in/s
9	009	008	TRIG	12/23/08	10:47:13	0.020	0.020	0.118	in/s	125.0	9.3	83.3	HZ	78	0.12	in/s
10	010	000	STDP	12/23/08	10:48:06											
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																

The Tools Menu:

Numerous tools are provided to assist you during interrogation of instrumentation. The details of this menu are explained below:



Com Dialog: Selecting Com Dialog will allow you to send raw commands to a 3000 series instrument. Examples of these commands are highlighted below:

KEY nnnn	Unlock the unit (password)
RUN	Enter data collection mode
OFF	Force the serial port to close
HLT	Exit the data collection mode
BYE	Shut down the unit
INF	Display basic information about the unit
GET n	Get a 3000 series property
SET n	Set a 3000 series property
CLK [mm/dd/yy hh:mm:ss]	Gets/Sets unit clock
CLR A	Clear Memory, Reinitialize Templates ('A' uppercase)
CLR E	Clear ALL Event data, Preserve templates ('E' uppercase)
TTY	Enter VT52 Terminal Mode (4 Line Display)
#	Exit VT52 Terminal Mode (4 Line Display)

CAL	Perform Calibration Test
LST[[-]n]	Directory Listing (where n = ID -1=most recent)
SUM[[-]n]	Directory list of summary information
CLR[[-]n]	Clear a directory item (delete event data)
XFR[[-]n]	Y-modem transfer event data (0=ALL)
PRN[[-]n]	Transfer Report (NOT IMPLEMENTED)

This is an “advanced” mode and is used for trouble shooting communications problems or when you need a more detailed log for diagnostic purposes. You can open ports, login to the unit, and print the dialog.

The **3000LC Login** is used to gain elementary access to a 3000 series unit. Under most circumstances this feature is not necessary and you are automatically logged into the unit when you request any data from the machine. However, if you are logged into the unit and the communications port “times out”, this feature allows you to log back into the unit with out accessing those features.

The **Synchronize Clock** tool is available to manually sync your 3000 series instrument to the clock on your PC. Selecting this tool will show a dialog window and status of the synchronization.

The **Erase Data** tool will allow you to remove all event data from a 3000 series instrument. Use caution when applying this tool as data that is erased using this process is not recoverable.

The **Start Scan** tool will allow you to manually place a 3000 series instrument in scan mode. Be advised that depending on settings, your instrument make take up to 30 seconds to arm.

The **End Scan** tool will allow you to manually stop a unit that is already in scan mode or actively recording histogram data.

The **Trigger** tool will allow you to manually force the unit to record an event in the “triggered” mode. Note that this tool will not operate if the unit is not already scanning in the triggered mode.

The **Initialize 3000LC** tool is used to reset a 3000 series instrument to the factory defaults. If you are unsure if you have changed critical settings and need to restore the factory defaults use this tool. Please note that event data and templates are not removed.

The **Get/Save Template** functions are used to store and retrieve templates. Templates are saved images of 3000 series setups. They are exact copies of instrument setup

parameters, text settings, timers, and other information contained in the seismograph. These are useful for using one machine at different jobs or locations.

The **Open/Close Port** commands are used to toggle the communications port status on the seismograph. You must be connected to a seismograph for this to work.

The **3000 Status** tool will allow you to view the basic status of a 3000 series instrument. Unit serial number, battery voltage, percent memory available, and the number of events are displayed.

Other information can be located in the Device Manager's **HELP** menu.

GEOSONICS INC.
ANALYSIS .NET
COMPLIANCE SOFTWARE
MANUAL



For further help please contact our service center in Warrendale, PA at (724) 934 -2900.
You can also email support@geosonics.com for more information.