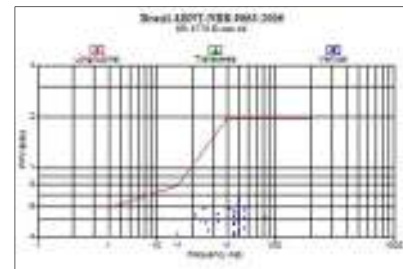
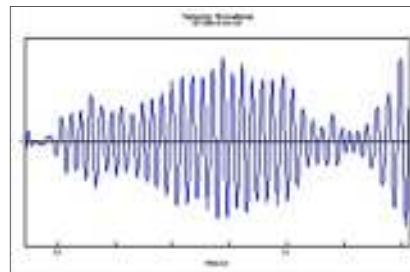
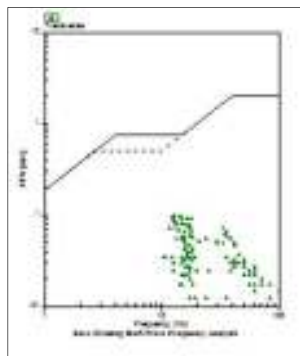




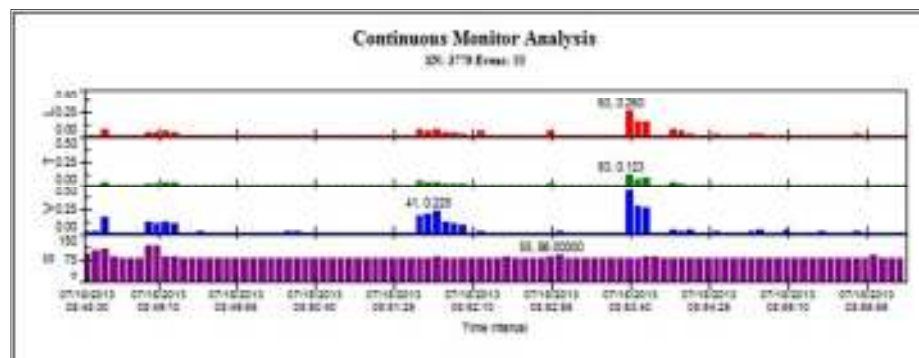
GeoSonics Inc.

AnalysisNET®

Analysis and Reporting Software



Continuous Monitor Analysis												
SN: 3779 Event: 95												
Report Interval			Longitudinal		Transverse		Vertical		Sound			
Date	From	To	PPV in/s	Hz	PPV in/s	Hz	PPV in/s	Hz	OE	PSI		
07/18/2013	08:51:20	08:51:25	0.005	38.5	0.005	125.0	0.008	55.5	76	0.00003		
36	07/18/2013	08:51:25	0.005	196.7	0.005	500.0	0.008	33.3	76	0.00002		
37	07/18/2013	08:51:30	0.005	38.5	0.005	90.0	0.008	38.5	78	0.00004		
38	07/18/2013	08:51:35	0.008	55.6	0.008	31.3	0.008	33.3	78	0.00004		
39	07/18/2013	08:51:40	0.045	41.7	0.045	33.3	0.175	31.3	76	0.00004		
40	07/18/2013	08:51:45	0.058	10.9	0.045	62.5	0.198	41.7	79	0.00005		
41	07/18/2013	08:51:50	0.068	71.4	0.040	71.4	0.225	55.6	81	0.00007		
42	07/18/2013	08:51:55	0.040	13.9	0.025	50.0	0.110	62.5	78	0.00004		
43	07/18/2013	08:52:00	0.035	41.7	0.025	71.4	0.103	27.8	76	0.00002		



This manual has been designed for use with GeoSonics' Inc. Analysis .NET Software version 8.1.54 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.

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Introduction:

The Analysis .NET software package has been developed for use with data recorded with the GeoSonics Safeguard Seismic Unit (SSU) System. 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, and Fast Fourier Transform (FFT) analyses, or any other available compliance report can be combined with a basic waveform report listed above.

Options for histogram (continuous monitor) event options include selectable scaling, and compliance graphing.

Advanced options for scaling, labeling data points, graph customization, and text annotation are also available. When viewing triggered or histogram events the user can easily view the data in 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:

- ⚡ Windows PC 500 MHz - Pentium III Processor
- ⚡ 1024 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:

- ⚡ Windows PC – 1.5 GHz – Pentium Core 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.

Getting Started - Overview

Software

- Install AnalysisNET on your PC
- Install the Cables to Go® software on your computer

Hardware

- Connect the Prolific serial - USB adapter to the DotNet USB Port Adapter
- Connect your seismograph to your PC using the cable assembly

Open Connection

- Open the AnalysisNET software package
- Click on *Device Manager*
- Press and hold the button on the USB port adapter until the RED LED illuminates

Getting Started – In Detail

Installing AnalysisNET on your PC

The latest version of AnalysisNET is available from the GeoSonics web site:

<http://www.geosonicsvibratech.com/seismic-analysis-software.html>

Follow the on-screen instructions.

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. From the Start menu click on *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.

Installing the Cables to Go® software on your computer

Installing the USB to Serial Converter cable and 3000 USB-Serial Port Controller:

Install the device drivers on the *Cables to Go®* CD that was supplied with your SSU 3000 series seismograph by following the on-screen prompts.

Connecting your seismograph to your PC¹

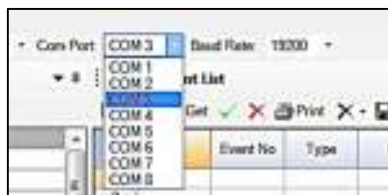
1. Attach the USB to serial cable to the Serial Port Adapter making sure to connect it to the adapter cable identified as *USB Adapter*.
2. Connect the seismograph to your PC using the USB-Serial Port cable assembly.

Establishing communication with your seismograph

1. Open the AnalysisNET software package
2. Click on *Device Manager*



3. Press and hold the Port Status button on the 3000 USB Port Adapter until the *Port Status* light comes on.
4. Select the appropriate COM port.

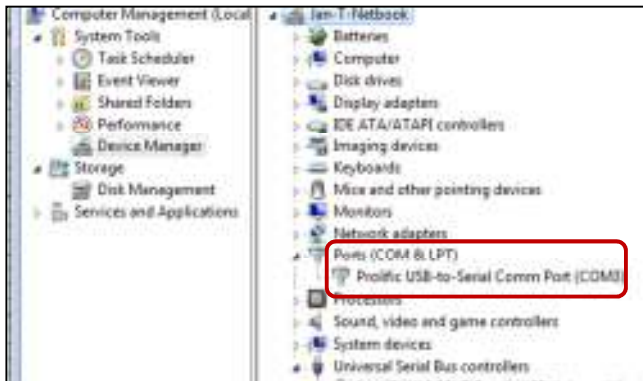


If you do not know the Com Port (number) associated with the software identified during installation, you can find it by the following steps. (Cable must be attached and active – *Status Port* light is illuminated.)



Start → Computer; right click – Manage → Device Manager

¹ **IMPORTANT NOTE FOR USERS OF PRINTING SEISMOGRAPHS:** Communication between your PC and your seismograph is accomplished through the seismograph's serial port. The serial port's circuitry is also used when data is sent to the printer. Therefore, it is **HIGHLY** recommended that the printer mode be disabled prior to connecting the seismograph to your computer. This will minimize the possibility of contention between serial port communications and printer operations, resulting in unexpected results with respect to instrument setup.



You will see *Prolific USB-to-Serial Comm Port*. The COM number next to it is the one you will need to choose when connecting to the seismograph with AnalysisNET.

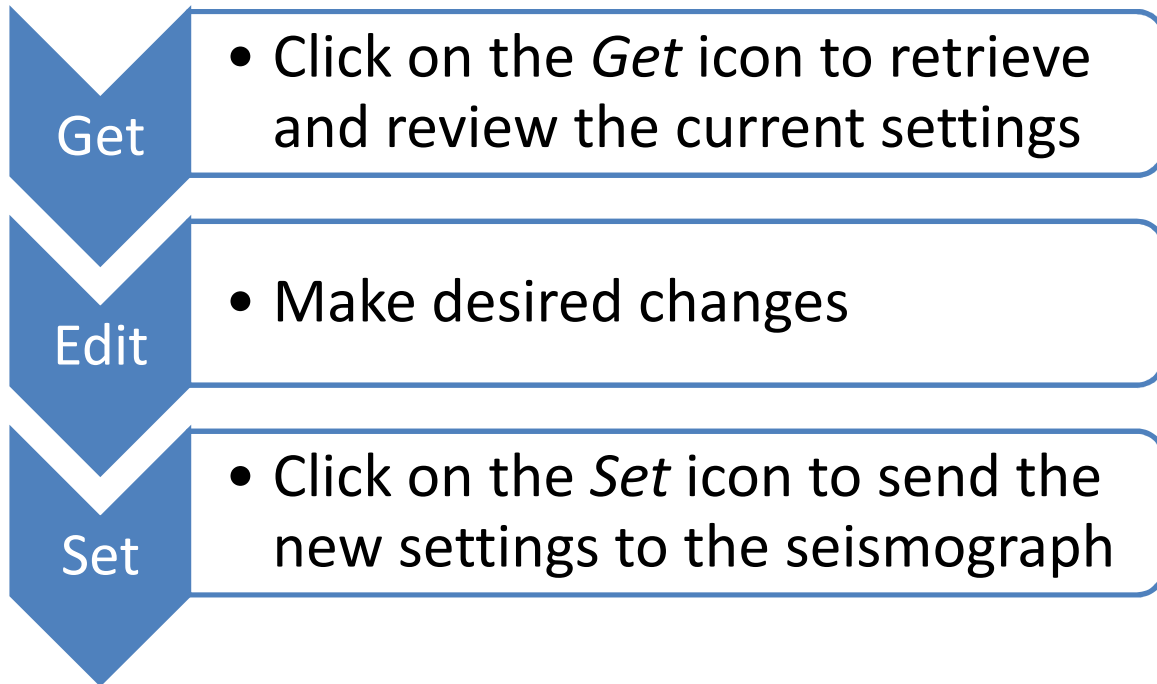
3000LC and EZ^{plus} Users – Set the *Baud Rate* to **9600**.



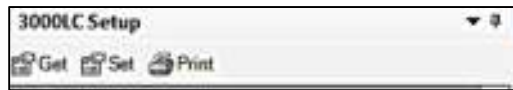
3000LCP and LCP^{plus} Users – Set the *Baud Rate* to **19200**.



Programming your seismograph through your PC – Overview



Programming your seismograph – in detail



After you have established communication between your PC and your seismograph click the *Get* icon under *3000LC Setup*.

The seismograph's internal settings will populate the 3000LC Setup table.

A screenshot of the '3000LC Setup' window, showing a detailed configuration table. The table is organized into sections: Options, Device Information, Date/Time Setup, Seismic Setup, and Host Setup. Each section contains several rows of settings with their current values.

3000LC Setup	
Get Set Print	
Options	
Batch Setup	True
Suppress Login	True
Show Com Activity	False
Device Information	
Device Info	5763 (05.08) 4 / 8 8172 B13.4
Serial No	5263
Firmware	05.08
Battery Level	B13.4
Product ID	70
Product Description	3000XP
Date/Time Setup	
Date	07/25/2014
Time	17:21:43
Date Order	mm/dd/yyyy
Seismic Setup	
Record Mode	Trigger
Seismic Trigger	6.00
Record Format	4
Record Time	5
Continuous Record Size	3448
Continuous Sample Interval	8 seconds
Records/Trigger	1
Host Setup	
Client	GeoSonic
Operation	51 Atlantic
Location	width 4 hours
Distance	8
Operator	
Comment	com window

Options –

Batch Setup – if set to *True* (default) changes to the setup are only sent when *Set* is selected; all fields are sent. If set to *False* each change to the setup is sent as it is edited. This option may save time if you typically only edit one or two fields as only changed fields are sent.

Suppress Login – legacy option; no longer valid.

Show Com Activity – legacy option; no longer valid.

Device Information – This information is not user definable and is displayed for review purposes only. Information displayed includes: Device Info, Serial Number, Firmware Version, Battery Level, Product ID, Product Description, Date & Time Settings and Date Format (order).

Seismic Setup ² –

Record Mode – Triggered, Continuous + Frequency (aka ‘Histogram’), Sustained Trigger, or Dual Mode

Seismic Trigger -0.005 – 5.00 (valid range)

Sound Trigger – enter **0** for no trigger or 81 – 142 (valid range)

Record Time – 1.0 – 15.0 seconds

Continuous Record Size – maximum histogram event file size

Continuous Sample Interval – 1,2,5,10, 15, 30 seconds, 1,2,5,10,15,60 minutes, 1 hour.

Records / Trigger – for sustained trigger mode; 2 – 15 (valid range)

Text Setup ² –

Event header information – client name, operation, location, distance operator, and comment.

Additional Notes –

Two additional comment lines plus GPS location ², or three additional comment lines.

Timer Setup –

Current timer settings may be viewed through *Device Manager*, however, it is HIGHLY recommended that timer setup be accomplished directly through the seismograph’s menu. Refer to your seismograph’s manual for instructions specific to your seismograph model.

Alarm 1 and 2 Setup –

Alarm – On / Off

Alarm Mode – Seismic or Sound

Seismic – seismic trigger level

² For additional information please refer to your seismograph’s user manual.

Sound – sound trigger level

Hold Time – number of seconds before alarm resets

Special Setup –

Event number – the number of the next recorded event

Recording units – imperial or metric

Display Timeout – when set to *True* the seismograph's LCD will go to sleep (blank) after a period of four minutes of programming / keypad inactivity IF NOT in the scan mode.

Password Protect – legacy option; no longer valid.

Language –For future development

Template Names Setup – view the names of current templates. To save or use a template see page 13.

Tools



Com Dialog – legacy option; no longer valid

3000LC Login – opens dialog window for connecting with your 3000 seismograph.

Synchronize Clock – synchronizes your seismograph's clock with the PC's clock.

Set Date Order – similar to the seismograph's *Date Format* option. Select from mm/dd/yyyy or dd.mm.yyyy.

Set UTC – legacy option; no longer valid. To use the UTC option either program the seismograph directly or (for remote units) use the Web-based Re:mote™ app. This option will retrieve and display the current UTC setting.

Erase Data – erases all event data

Start Scan – places the seismograph into scan mode

Stop Scan – exits the scan mode and retrieves the event list

Trigger unit – if SCAN is active (in a triggered mode), a signal will be sent to the seismograph to force a trigger event.

Initialize 3000LC – this option will login, erase all events and delete all template information. Text and seismic setup info will be retained as well as the seismograph's current date and time settings.

Get Template – the memory of a 3000 has six (6) template storage locations. Templates are useful for saving recurring setup information. Once a template has been saved in the seismograph's memory, it may be recalled using the *Get Template* command.

Set Template – saves the current seismograph settings to a template location. In order for the setup to be saved to the template they must have first been *Set* in the seismograph.

Open Port (Toggle DTR) & Close Port – when the button on the USB Port Adapter is pressed a signal is sent to open the seismograph's serial port so that information may be sent between the seismograph and the PC; the port will close when the serial cable is disconnected from the seismograph or after a period of inactivity. During typical use the *Open Port* and *Close Port* tools are unnecessary.

However, if you are experiencing difficulty in connecting to your unit the following procedure is recommended.

Due to changes in USB port configurations on current PCs, it may be necessary to "sync up" the USB adapter, PC, and seismograph to insure reliable communications. To do so, open AnalysisNet Device Manager and select appropriate com port and baud rate (9600 for LC and EZ^{plus} and 19200 for printing seismographs) but do not try to login yet. Connect the USB adapter and interface cable between seismograph and serial port and momentarily press button until led illuminates. In device manager, open *Tools* tab and click on *Open Port*. A message box should display, "Open Port = true", indicating serial port of PC is active. This action will sync up the USB adapter and program and you should then be able to proceed without difficulty with other actions such as getting setup or downloading event list or data

3000 Status – Returns the seismograph's current status:

Idle – scan mode is not active

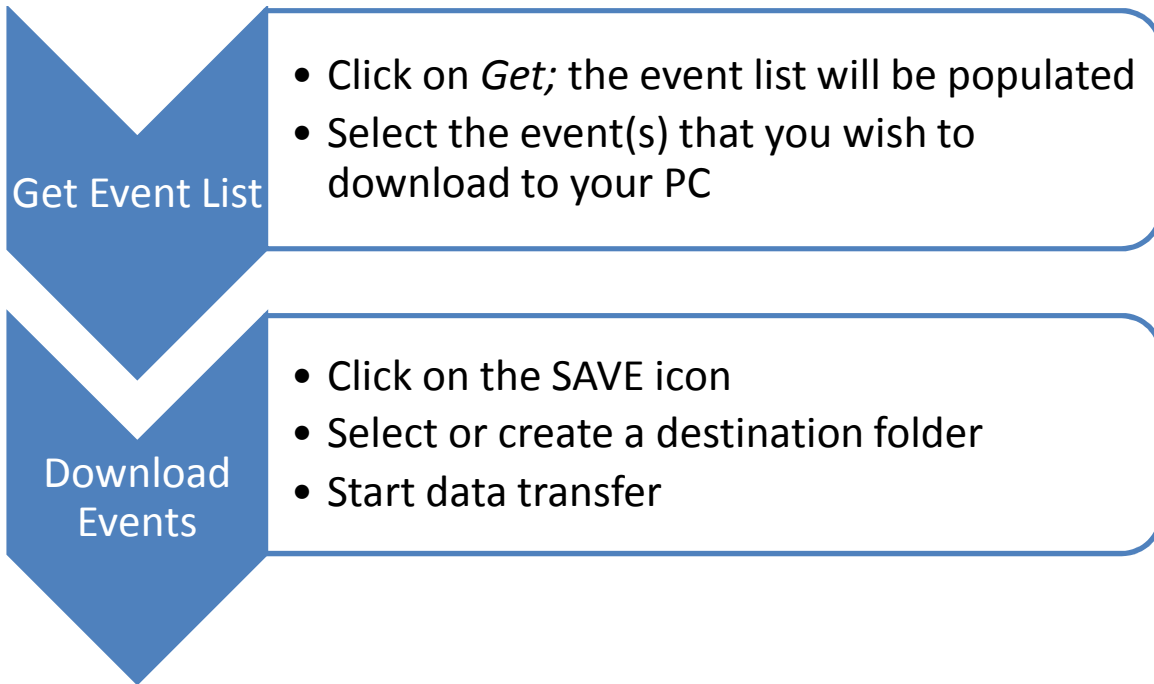
Waiting – trigger mode, scan is active, waiting for trigger

Analyzing – trigger mode, unit has triggered and data is being analyzed

Starting – histogram (including dual mode), unit is preparing to enter the scan mode and begin data collection

Sample - histogram (including dual mode), scan mode is active; data samples are being collected.


Downloading Event Data - Overview





Downloading Event Data – In Detail


Once connected to your seismograph you may download all or selected events to your computer. Once events have been downloaded the AnalysisNET software may be used to create custom reports.





 Click the *Get* icon to get a listing of the events currently in the seismograph's memory

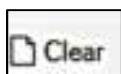
 Click on the green checkmark to select ALL events. Individual event files may be selected by highlighting the event and clicking the left mouse key.

 Clicking on the red X (to the right of the green checkmark) will un-select all events.

 Clicking the print icon will send a copy of the event list to your printer.

 Click on the diskette icon to save events to your computer. You may choose to save ALL events or only selected events. You will be prompted to select or create a destination folder prior to data transfer.

 Click on the black X (to the left of the diskette icon) to delete events from your seismograph. You may choose to delete ALL or only selected events. **ONCE AN EVENT IS DELETED, THE DATA CANNOT BE RECOVERED.**

 Click on the *Clear* icon to clear the event listing from your computer screen. Events in the seismograph's memory will not be erased.

File Type Summary

TRIG	Triggered event
HIST	Continuous monitor event with frequency data
HST-F	Continuous monitor event recorded in Dual Mode, no frequency data recorded
SUTRIG	Sustained trigger event or Sustained trigger header
CHECK	Stop event
TMPL	Template

Analyzing and Printing Events – Overview

Select

- Open folder that contains your files
- Select desired event file(s) from the Event List
- Review Summary Data

Set

- Use the *Preference* tab to make changes to Application Preferences
- Use the *Options* tab to set default report options

Build

- Build your desired report by making necessary changes in the Report Builder window
- Review data set

Print

- Click on *Report* tap to review report
- Print you report or save it as a PDF file

Analyzing and Printing Events – In Detail

Understanding and Navigating the AnalysisNET Home Page

The home page is divided into three main sections or panels. The top half of the left side displays the *Event List*, a spreadsheet of the events contained in the active folder. The lower portion of the left side of the page displays the *Summary Data*, which includes the header and summary information for the currently selected event. The right side of the page is the *Report Builder* section. There are also four (default) tabs along the left side of the screen.

Each of these panels, as well as the panels accessible from the tabs may be docked to the homepage, set to auto-hide when not needed, or float over the page.

Note that there are two icons at the upper right of each panel – a ▼ and a □

Clicking on the ▼ for one of the main screen sections (Event List, Summary Data, or Report Builder) will allow you to choose whether that screen is *Docked* or will *Auto-Hide* when you click on another screen section. Clicking on the ▼ for one of the secondary panels (tab options) will give you the option of docking that panel to your main page.

Clicking *Dockable* will dock the panel to the home page keeping it visible at all times.

Clicking *Auto-Hide* will hide the panel and a tab will be visible along the left side of the page; click on this tab to display the panel.

Clicking *Floatable* will cause the panel to float over the entire page. The main panels are not floatable. In order for this option to be available for other panels, the *Dockable* option must first be selected. This option expands the panel for easier viewing. Pressing the ESC key returns the panel to its original location.

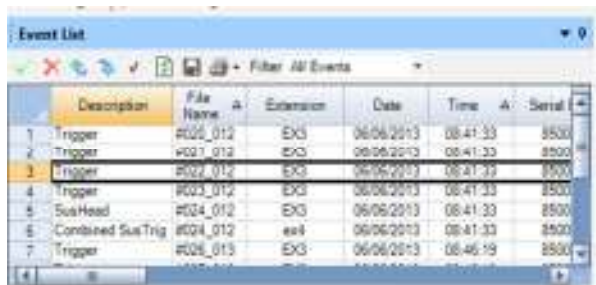
Clicking on the □ will auto-hide the panel; a tab for this panel will be created and displayed on the left side of the screen; click on this tab to restore the panel.

There are also four default tabs displayed down the left side of the screen. Each of these tab functions will be explained in detail later in this manual.



Selecting Events

In order to print or analyze events they must first be selected. The **Event List panel** displays events currently available for analysis. If the Event List is not displaying the folder that contains your desired event files, use the *Explorer* tab on the left side of the screen to search the directory tree and select the desired folder. Check the *Set as Default* box if you want this folder to be displayed whenever the program is opened. By default this screen will auto-hide once your cursor is moved off of the Explorer screen. If you want the Explorer screen to remain displayed, click on the ▼ button and select *Dockable*. To un-dock a screen, click the ▼ button and select *Auto-Hide*.



The screenshot shows the 'Event List' panel with a toolbar at the top containing icons for selection (checkmark, cross), filtering (funnel), and printing. Below the toolbar is a table with the following data:

	Description	File Name	Extension	Date	Time	A	Serial
1	Trigger	#025_012	EX3	06/06/2013	08:41:33	8500	
2	Trigger	#027_012	EX3	06/06/2013	08:41:33	8500	
3	Trigger	#022_012	EX3	06/06/2013	08:41:33	8500	
4	Trigger	#023_012	EX3	06/06/2013	08:41:33	8500	
5	SusHead	#024_012	EX3	06/06/2013	08:41:33	8500	
6	Combined SusTrig	#024_012	ee4	06/06/2013	08:41:33	8500	
7	Trigger	#026_013	EX3	06/06/2013	08:46:19	8500	

The buttons at the top of the panel may be used to perform a variety of functions. To verify the function of a button allow your cursor to hover over the button and its function will be displayed.

In order to analyze or print a given event file it must first be *selected*. To select files one at a time, place your cursor over the desired file and left click. To select ALL the files in a folder, click the ✓ button. To un-select ALL files, click the ✗ button.

To save a copy of the spread sheet to an xls (Excel), txt, or xml file click the 📄 button.

There are seven (7) print options available from the Event List.



The *Print Summary Report* will print the currently displayed summary report.

The *Batch Print* options will print ALL of the selected report types for the active folder using the current option settings.

The *Print Event List* options will print the currently displayed event list.



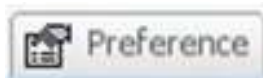
You may filter your event list by using the drop down box. Please note that not all file types are available with all seismograph models.

SUMMARY DATA

The *SummaryData* panel of the home page displays the summary for the active file. If more than one file has been selected, you may change the active file by double-clicking on desired event listing in the *Event List* or using the *next* or *previous* arrows. Summary reports may be printed by clicking on the printer icon. Please note: Summary data from Sustained Trigger Header files (SusHead) are not displayed in this window. To view summary information from sustained trigger files use the *Combined Sustained Trigger* utility (see page 26).

PREFERENCES AND OPTIONS

The menus accessible through the *Preference* and *Option* tabs present users with multiple choices for customizing the display and report output.



The following preferences are accessible from the *Preference* menu.

Date Order – i.e. *date format*;

mm/dd/yyyy; July 1, 2014 will be displayed and printed as 07/01/2014

dd.mm.yyy; July 1, 2014 will be displayed as 01.07.2014

Use Preferred Time Zone - if an event was recorded with a specified UTC time zone:

True – the software will adjust the event times from UTC time to --- and the time zone designation will be displayed following the time, i.e 10:41:14 (US/Eastern)

False – the UTC time will be displayed.

Units –

Imperial – all readings will be displayed in imperial ('inch') units regardless of the recording unit setting at the time of the event.

Metric – all readings will be displayed in metric ('millimeter') units regardless of the recording unit setting at the time of the event.

As recorded – readings will be displayed using the recording units setting active at the time of the event recording.

Internet Options – if you anticipate sending your event files over the internet via email directly from the AnalysisNET application you will need to populate the internet options fields for your specific system and email account. Contact your IT department or internet provider for assistance.



The majority of the options available from the *Options Menu* are self-explanatory. A summary of the more unique features follows. Only those options that apply to the currently displayed event type will be displayed. For instance, if a triggered event waveform is being displayed in the report builder window, histogram specific options will not appear under the *Options* tab. To view histogram file options, select and display a histogram event.



General –

Default Report Title and Sub Title: Users may choose to customize their printed reports by modifying the report title(s).

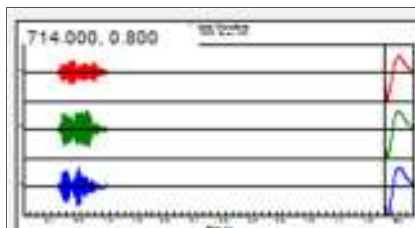
Print Preview: If this is set to **True** a popup of the report will be displayed whenever *print report* is selected. This option only applies to full reports; it does not apply to graphs or spreadsheets.

Highlight Hotspot Data: if set to *True* when a point on the waveform compliance graph or histogram is marked, the corresponding data cell in the spread sheet will be highlighted. Only one cell per spreadsheet can be highlighted at a time.

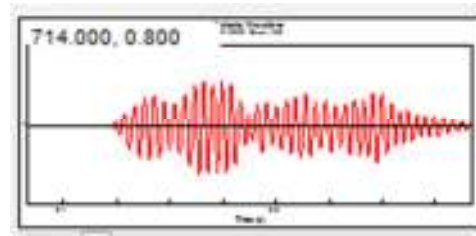
Waveform Report / Monitor Report -

Cursor tracking – when *cursor tracking* is set to *True* points within the waveform may be identified by moving your mouse (or other pointing device) over the waveform. When a point in the waveform is being identified the point will be identified with the . If the  is identifying the point, then it is not a point on the waveform. Enlarging a section of the waveform will enable you to more accurately identify specific points. Place your cursor over a corner of the desired area, left-click, and drag the cursor to the opposite corner and release.

Original / initial display:





Enlarged view of longitudinal waveform from the same event.



To zoom in and enlarge a section of a waveform place the cursor over a corner of the section to be enlarged. Left-click and hold while dragging the mouse diagonally over the desired area. When this enlarged area is being displayed in Report Builder, this is the area of the graph that will be printed.

Short Summary –legacy option; no longer valid

Line Type – the thickness of the triggered waveform line may be adjusted from extra thin to extra thick. Thinner lines will more accurately display the data while thicker lines improve the visual appearance and may be more appropriate for presentations or printed reports.

Cursor Tracking - when set to *True* points within the waveform may be identified by moving your mouse (or other pointing device) over the waveform. When a point in the waveform is being recognized the point will be identified with the . If the  is identifying the point, then it is not a point on the waveform. It is highly recommended that the *Extra Thin* line type (see above) be employed when identifying points. Enlarging a section of the waveform will enable you to more accurately identify specific points. Place your cursor over a corner of the desired area, left-click, and drag the cursor to the opposite corner and release.

EvenOdd Color – when set to *True* odd numbered spreadsheet rows will be shaded. There are separate settings for each of the four types of spread sheets – waveform, compliance, (continuous) monitor, and A-weight.

REPORT BUILDER

The Report Builder panel provides the user with numerous options that may be used to customize the type of analysis performed on event file data as well as the content and style of printable reports.

Below is the default view for a triggered event.

USBM/Velocity Waveform Report – a summary of the combination of graphs currently selected and displayed. To customize your report type use the drop down boxes on the next line.

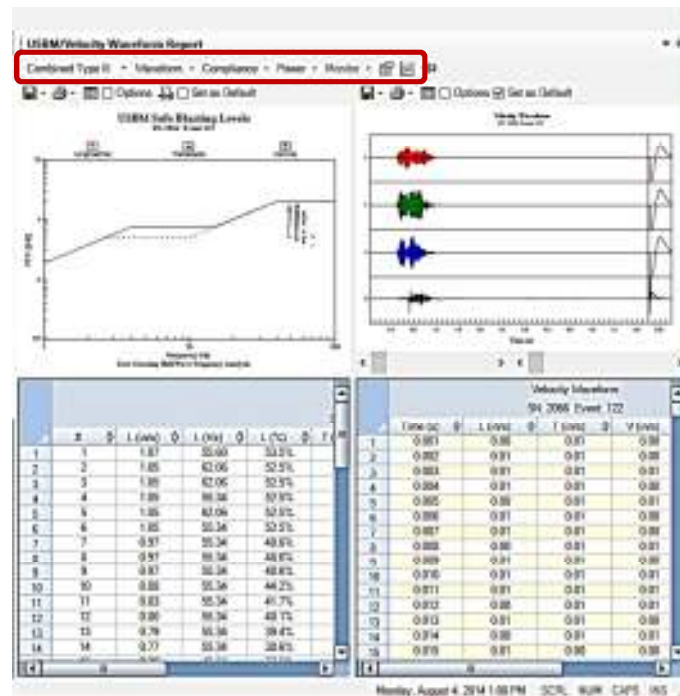
The first drop down box gives the user the choice of:

Waveform Only – no compliance graph

Compliance Only – no waveform graph

Combined Type I, Combined Type II, and Combined Type III – both graphs will be included. Preview the available styles using the *Report* tab.

The next box, *Waveform* is used to select the waveform data plotted – Velocity, Acceleration, Displacement, Peak Vector Sum, or Multiple Waveform.



The *Multiple Waveform* option may be used to print multiple waveforms (velocity, acceleration, displacement, or peak vector sum) on a single report. To set the number of graphs per report (1-6) choose the *Multiple Waveform* option then open the *Options* tab and set the number of graphs under *Multi-Waveform* section.

The *Compliance* dropdown box is used to select the type compliance graph included on your reports. All compliance options (with the exception of the *Zero Crossing Sound* option) include a plotting of peak particle velocities versus frequency. What distinguishes the various compliance graphs are the *compliance curves* that denote the maximum allowable ground vibration for that organization or agency.

PPV vs. Freq: peak particle velocity (ips or mm/sec) vs. frequency (Hz.); no compliance curve is included.

OSM – Office of Surface Mining

USBM – United States Bureau of Mines (sometimes called the *Z-Curve*)

Half-Scale USBM – often desired when doing steady state advance analysis


DIN 4150 -Deutsches Institut für Normung / German Institute for Standardization


Zero Crossing Sound – plots air overpressure (psi) versus frequency (Hz.)

Special – additional compliance options include: Illinois State Criteria, Sensitive Structures, Brazil ABNT-NBR 9653:2005, British Standard 7385, Spanish Standard, New Zealand Standard: 4403.1976, CMRS Indian Standard (proposed), Indian Bureau of Standards, Swiss Mining SN 640 312a, Swiss Piling SN 640 312a, and Swiss Traffic SN 640 312a.

The *Power* drop down box gives you the option of printing a Fast Fourier Transformation graph in place a compliance graph.

The *Monitor* (grayed out in this example) options apply to histogram and A-Weight analysis event files.

Clicking on the *options* button  will bring up the options table applicable to the type of event data being analyzed.

Clicking on the *toggle graph* button  toggles the display between both both graphs being displayed, just the compliance graph, and just the waveform graph. This does not effect the final report output.


Located directly above each graph are dropdown and option buttons for saving, printing, and customizing the individual graphs



The *Save* dropdown box can be utilized for saving a summary report (pdf), graph image, or spreadsheet file (.xls).

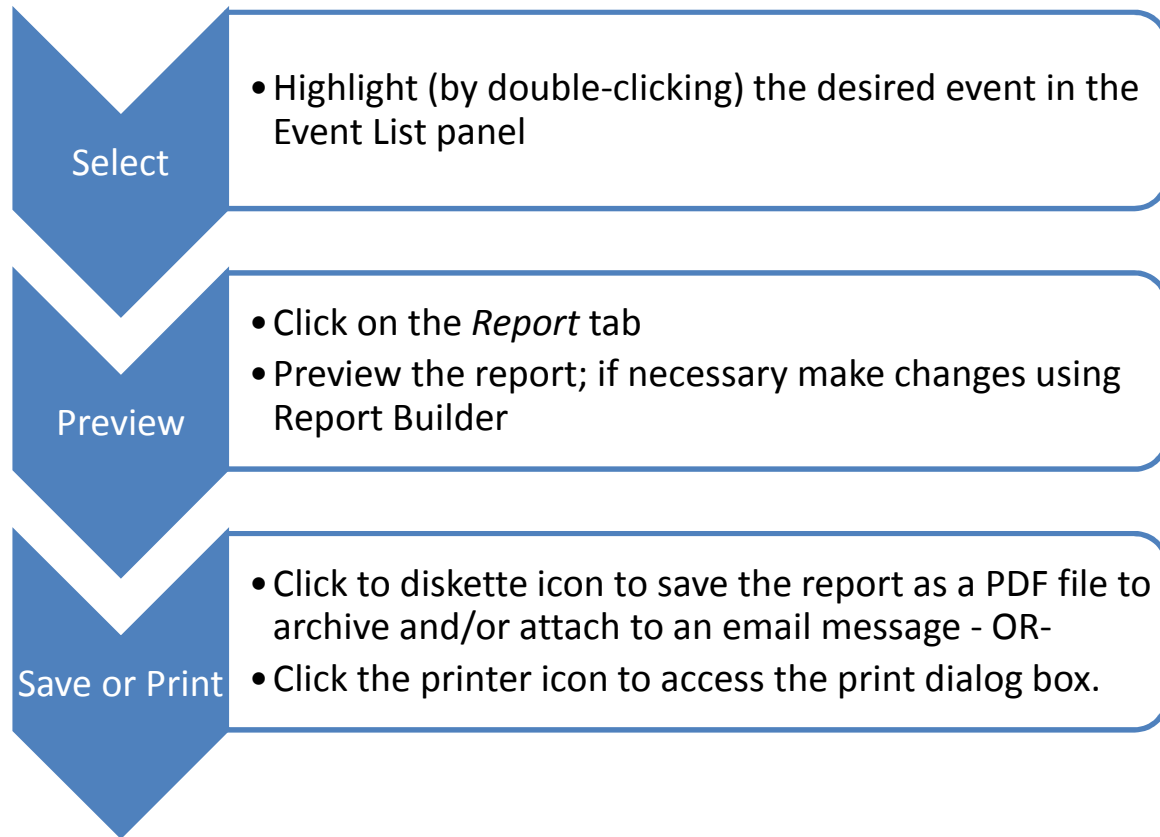
The *print* dropdown box provides options for printing the report, graph, or spreadsheet.

The *options* button toggles between default settings and user defined settings (see *Options Tab*)

The *design* button  is for advanced users who have designed their own customized .ini files.

Checking the *Set as Default* box sets the current settings as your default settings.


Printing Reports – Overview



Printing Reports – In Detail

There are two methods for printing reports using AnalysisNet.

For new users or those who are customizing their reports, the recommended method is to use the *Report Builder* Tab.

Click on the  tab (located on the left side of the screen) to print or save reports using the options and settings selected in *Report Builder*. The report will be displayed.

If you are working with a triggered event, a drop down box is available to switch the report type (Waveform Only, Compliance Only, Combined Type I, II, or III). To make any other changes to your report, return to the Report Builder panel and make the desired changes.

Printing

Once you are satisfied with the report, click on the printer icon to bring up your printer's dialog box and follow your printer specific prompts.

Saving as a PDF

To save your report as a PDF file for printing at a later time or attaching to email, click on the diskette icon. Select the location for your file (folder), name the file using the Adobe pdf extension and click on *Save*. PDF files cannot be opened using AnalysisNET. You will need to use Adobe® Reader, which is available as a free internet download.

PDF files are the most common format for saving files. However, they can also be saved in a Rich Text (rtf), Plain Text or Plain ANSI (txt), or HTML (htm) file format.

For more experienced users, those who commonly use default settings, or those desiring to print spreadsheet data, shortcut buttons are available in the *Report Builder* panel. See page 23.

There are 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.¹⁵

The Baseline Correct option is used to remove any offset that might be present on the zero crossing line.

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 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.**

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".

Notepad – opens up Microsoft Windows Notepad.

FREQUENTLY ASKED QUESTIONS

Connection Difficulties

System cannot find the port specified – USB cable is plugged into wrong USB port on your computer or you have selected the incorrect com port number. See page 7 for assistance in identifying the proper port number.

Not responding – check red light on the adapter.

If it is not illuminated, press and hold the *port status button* until the light illuminates.

If the light is illuminated, check that the proper *baud rate* has been selected. Refer to page 8.

Com error:-1

You have selected a *baud rate* incompatible with your unit. Refer to page 8.

I cannot activate the USB Port Adapter – check to make sure that the SSU connection is secure.

Please note: If you have experienced connection problems due to incorrect baud rate or com port settings it is recommended that, after correcting the settings, you exit both the Device Manager and the AnalysisNET software programs, and disconnect and re-connect the serial cable to the seismograph prior to attempting to establish communication. This will ensure that any old settings are deleted from memory and the new settings have taken effect.

Q: What is the ‘Z-Curve’?

A: The Z-Curve is another name for the USBM compliance graph.

Q: My compliance graph does not show any data points. Is there a way to adjust the graph’s axis to show lower level vibration points?

A: The graph’s minimum PPV may be adjusted by going to *Options, Compliance Graph, Minimum PPV*. Enter the desired minimum PPV. To set this as the default minimum, set the *User Defined* setting to *True*. If you leave the setting *False*, click the *Options* box in the compliance graph section of the Report Builder window to apply the setting.

Although the minimum PPV for the axis may be set lower than 0.01 only data points ≥ 0.01 will be plotted on the graph.

Q: My specifications require that I report the RPPV (resultant peak particle velocity). Is there any way to obtain this information?

A: RPPV and PVS (for all intents and purposes) refer to the same value. The maximum calculated PVS is displayed in the event's summary data.

Q: Is there a way to zoom in on specific area of the graph or a way to just print one section of the waveform?

A: Yes. See page 21.

Q: What is an FFT?

A: FFT is the abbreviation for *Fast Fourier Transformation*. The standard FFT analysis transforms the time history of an event into a series of sines and cosines:

$$f(t) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos F \frac{n\pi x}{L} + b_n \sin \frac{n\pi x}{L} \right)$$

The FFT analysis spreadsheet gives the values for $F_n = \sqrt{A_n^2 + B_n^2}$ (in/sec)/hertz. This analysis is useful for determining the predominate frequencies associated with a triggered event. The resultant Fourier Particle Velocity amplitudes are multiplied by a factor of 100. They are not equivalent to peak particle velocity.

Q. In *Options* there is a setting for FFT Windows, such as *Gaussian* and *Hamming*. What are these and how do I chose?

A. FFT Windows are mathematical functions designed to isolate a certain time period within the transformation. These window options are provided for those with advanced mathematical knowledge. Selecting *None* will ensure that the entire waveform is analyzed.

Q: When I select a sustained trigger head file (SusHead), no data is displayed. Does this mean that the data is corrupted?

A: Not at all. 'SusHead' files are working files that store sequencing information that the software will need to combine the trigger events into a single file. See page 26.

Q: I have a large group of reports that need to be printed. Is there a way that I can send multiple reports to my printer?

A: Yes. Use the Event List *Batch Print Reports* option. See page 18.

Q: Why is the USBM graph included with my histogram report not showing any data points?

A: At least five (5) data points over 0.01 ips are required to generate a USBM graph.

Q: Is there a way to determine the EXACT time of a peak reading in a histogram event?

A: The 'time' of peak readings refers to the start time of the interval that includes the peak reading. Also, if the peak reading occurs more than one time, the first occurrence is the one that is reported in the summary. As an example, if you recorded using a 5-minute interval, the peak time reported is the start time of the interval; the peak could have occurred any time within that 5-minute time span.

Q: I am trying to analyze a histogram event recorded with metric units. Is there any way to include a compliance graph other than the USBM?

A: No. The only type of compliance graph available for histogram events is the USBM (United States Bureau of Mines).

Appendix I

Recording Modes and File Types

SSU seismographs have multiple recording modes and create several types of files. Additionally available recording modes for each model vary. Individually, these files are differentiated by their event number and directory numbers and their file type. When these files are downloaded to your PC the event and directory numbers are combined to create a file name. An extension is added to the file name to distinguish the type of file that it is. The table below summarizes the seismograph file types and AnalysisNET file extensions.

SSU Model	Event Type	Seismograph	AnalysisNET Extension
2000DK			
	Trigger	Evt	evt
	Continuous Monitor		hst
	A-Weight	Awt	awt
Micro-Seis			
	Trigger		
	Continuous Monitor		
	Image		img
3000 Series*	Trigger (inc. Dual Mode)	TRIG	EV3
(includes: LC,	Sustained Trigger	SUTRG	EX3
EZ ⁺ , LCP, LCP ⁺ ,	Histogram	HIST	HX3
WR IP, & IP ²)	Dual Mode Histogram	HST-F	HS3
	Stop / check	CHECK	ST3
	Combined sustained trigger		ex4
	Template		TP3
5500			G3K

When files from a 3000LC or EZ^{plus} are down loaded via the G3K Bluetooth app the file extensions are converted to *G3K*. Their functionality does not change.