

ShotTrack VoD Monitor



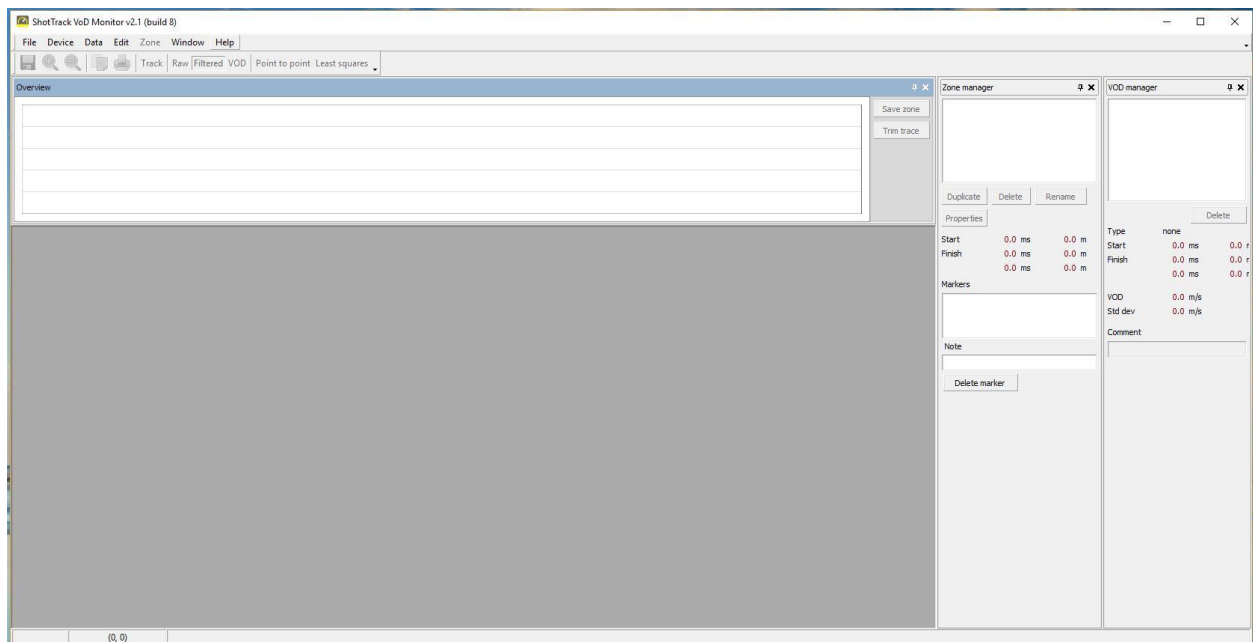
Operation Guide

USB download data operation:

Plug unit into USB Port with the supplied cable.

After the USB is recognized “double PC tone” is heard

Double click on the ShotTrack VoD Monitor Icon.



Clicking on Device will connect to the unit.

Configure instrument

Select device: USB device

USB connection: Connected

Device

Connected: V6R 1.4 Refresh

Display units: Metres Set units

Repeat: 0 Set repeat

Time and Date

26 June 2019 12:00:09 Set RTC

Cable factor

8.594 Set cable factor

Select standard cable

Add Edit Delete

Cable length: 305.00 m Cable factor not determined

Get calibration Save to standard cables

Unit Cable Calibrate

Unit Autocal length: 305 Set Autocal length

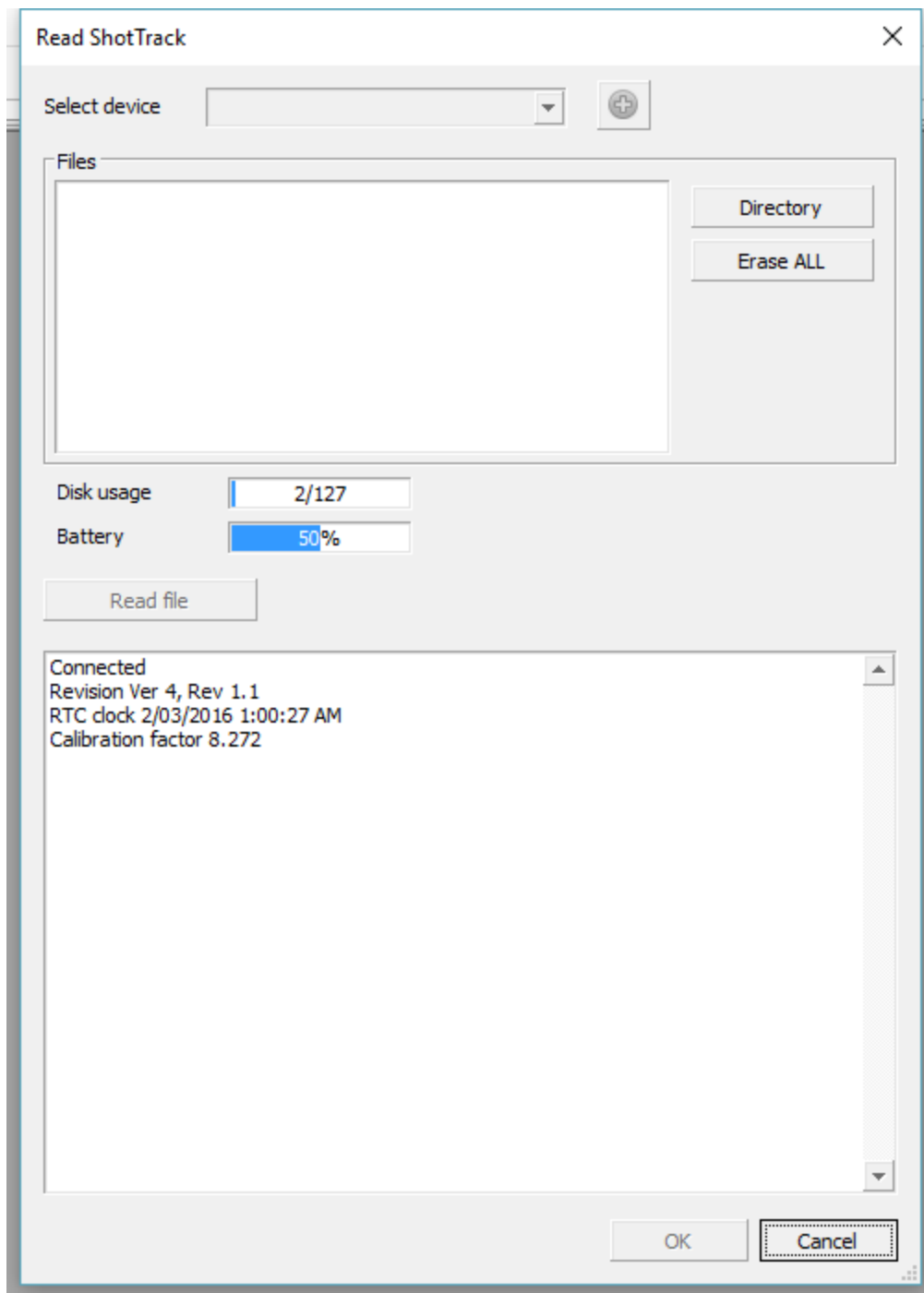
Close

This screen is used to check the Battery condition, disk usage, version and revision of the software.

This is also where cable calibration is done. See later description.

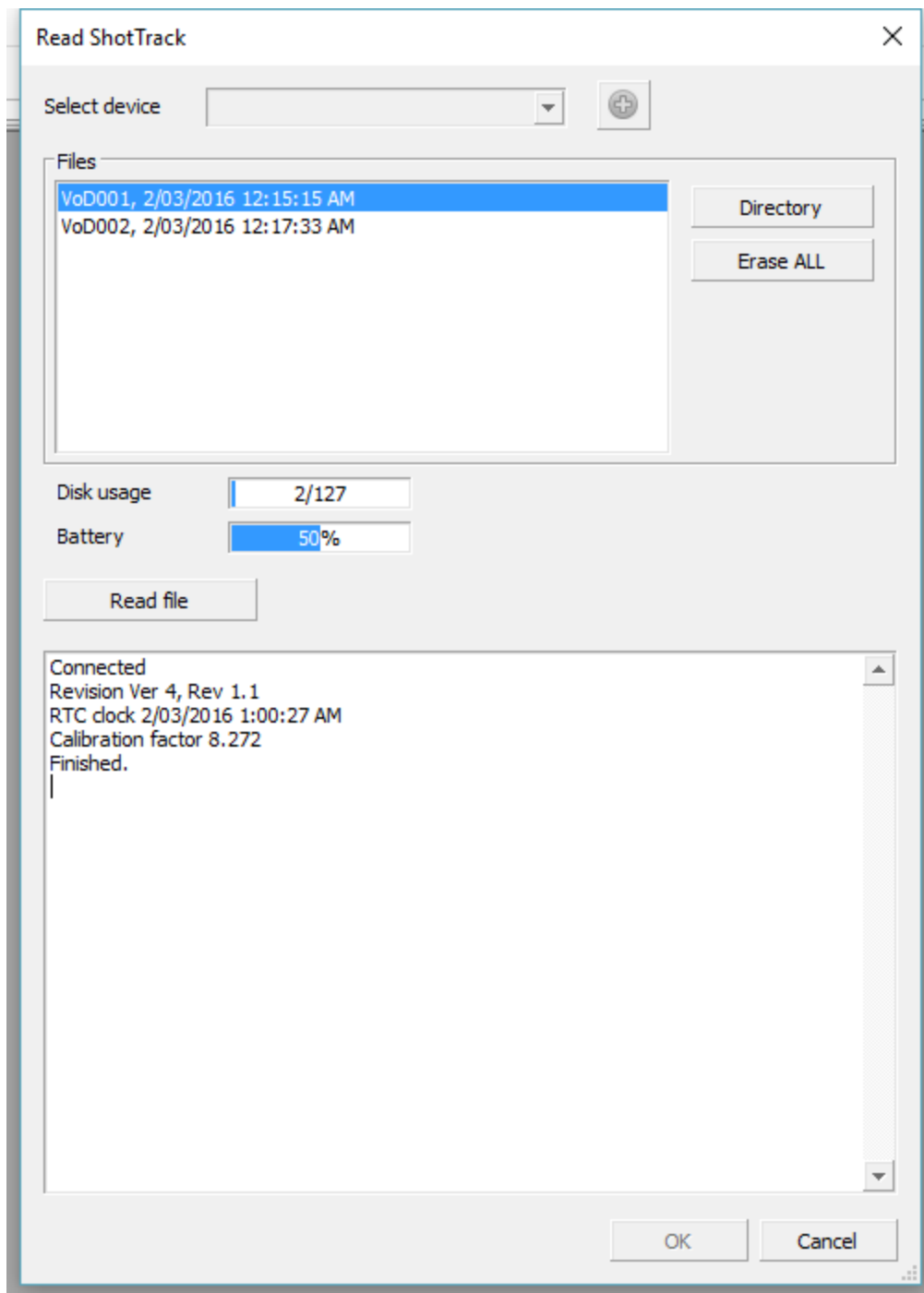
Close this screen.

Click on Data:



Disk usage, Battery condition, Revision version, RTC time and date, and current Calibration factor is displayed.

Click on Directory

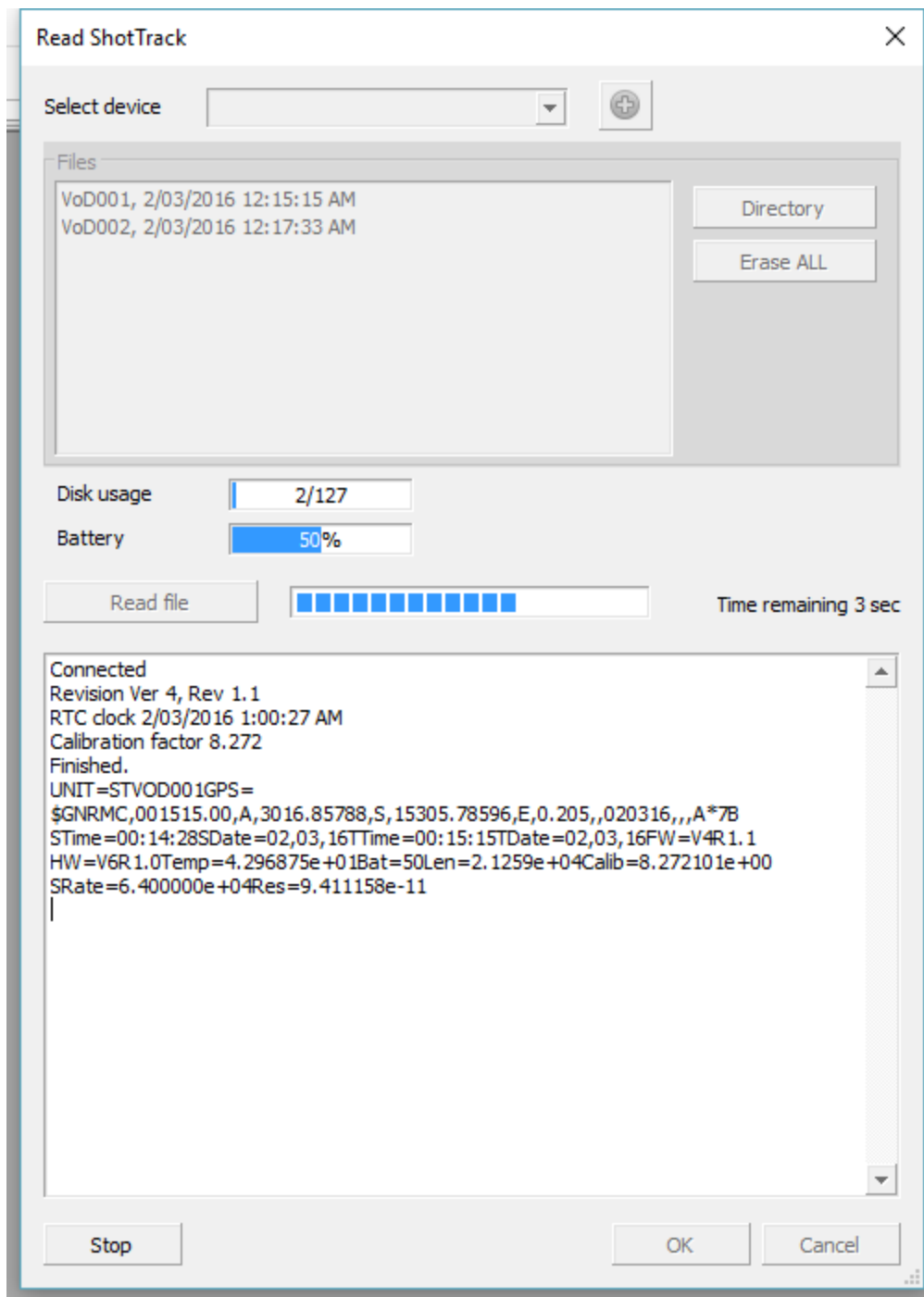


The files currently stored on the unit is displayed in the Files dialog.

In this case there are two files stored on the 2nd March 2016 at 12:15:15 AM and 12:17:33 AM

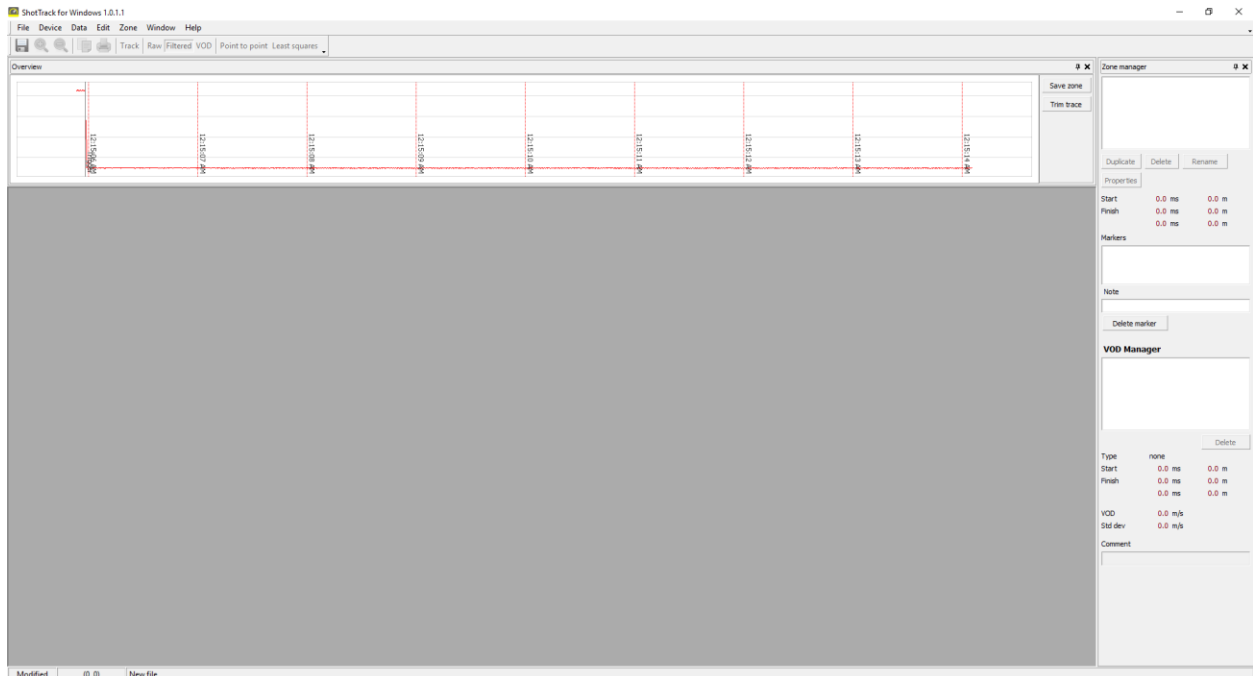
These times are UTC format. They are acquired from the GPS module and will be accurate to a second if the GPS has “visible satellite reception”. Otherwise it will be the time and date stored in the GPS modules RTC.

Click on file wanted and select read File.



The file data header information is displayed and the data is downloaded with the progress bar showing the download progress.

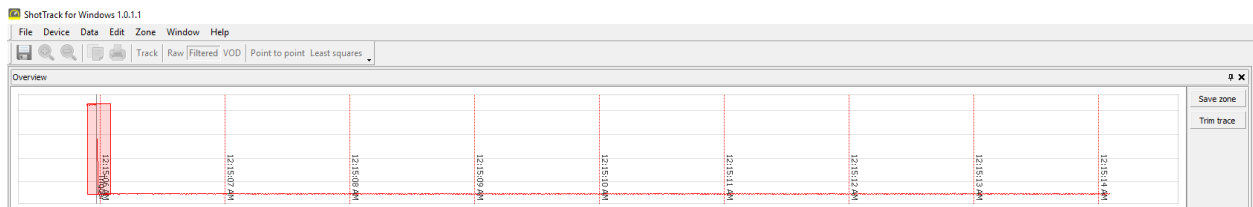
Clicking OK will display the file in the overview window.



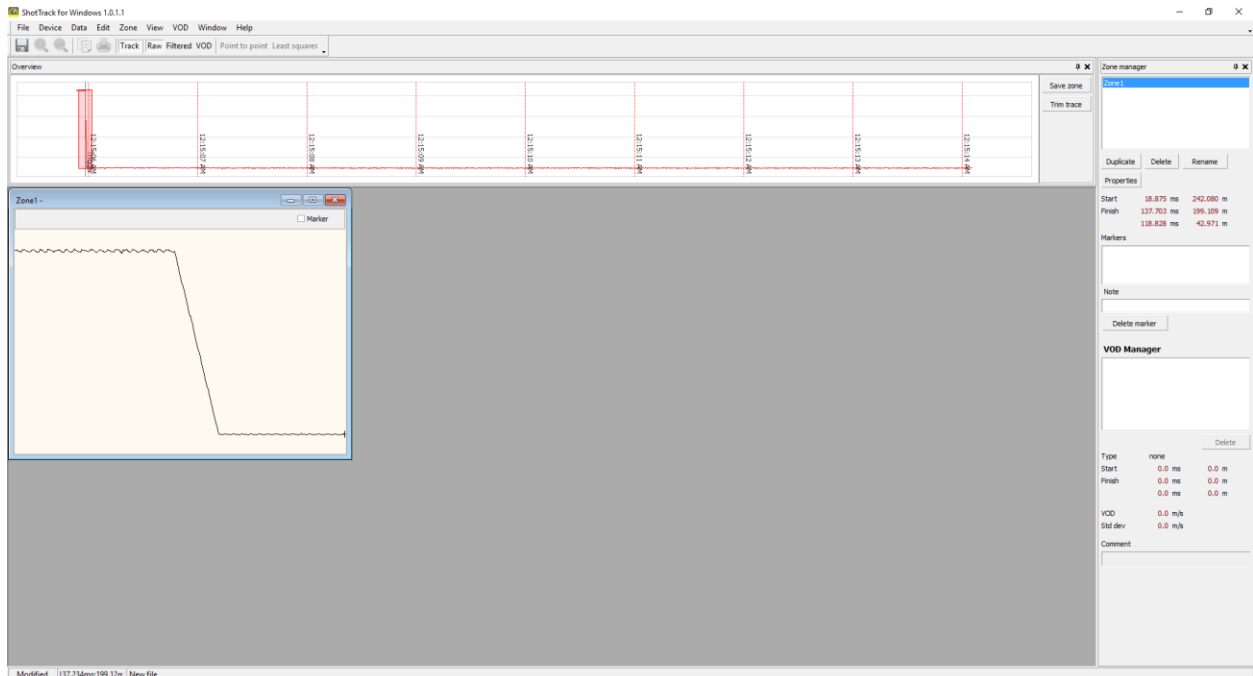
In this case this is one of our “Test Shot Equipment” files and uses a custom slope generator unit to mimic a shot. The unit is set to 64 KHz sample rate for this test.

As can be seen the GPS PPS data is displayed as a marker in the overview bar.

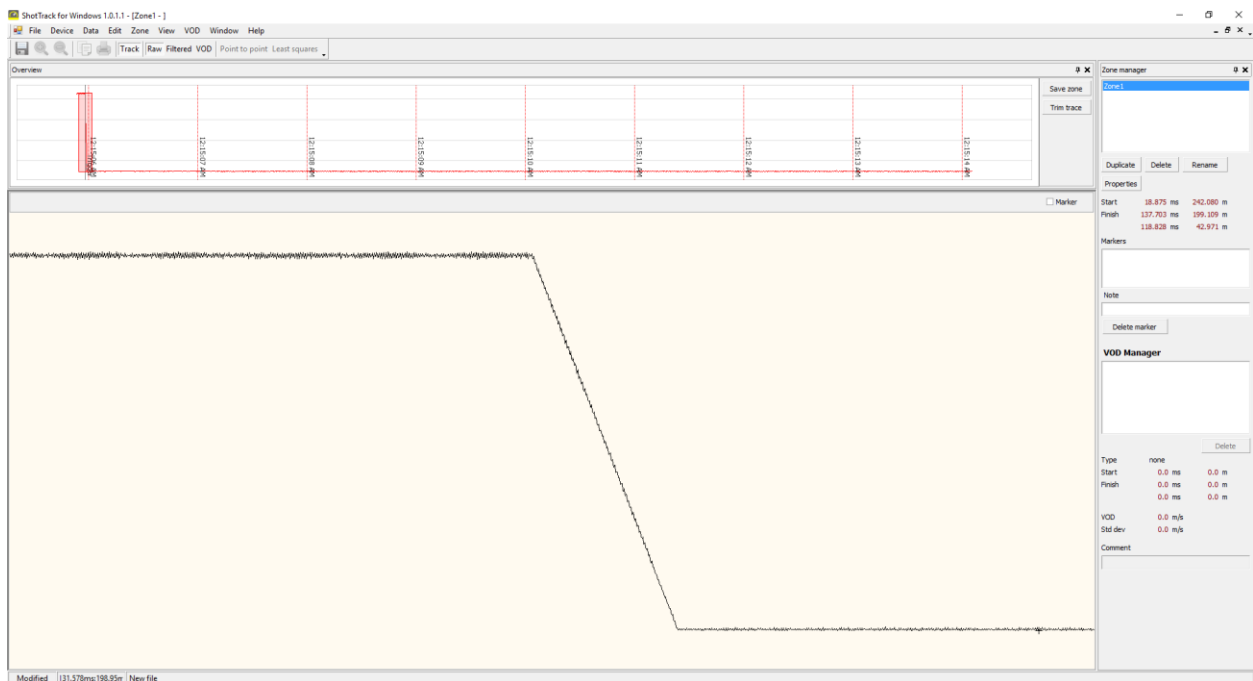
Select the region of interest by dragging the cursor from left to right with the right mouse button pressed.



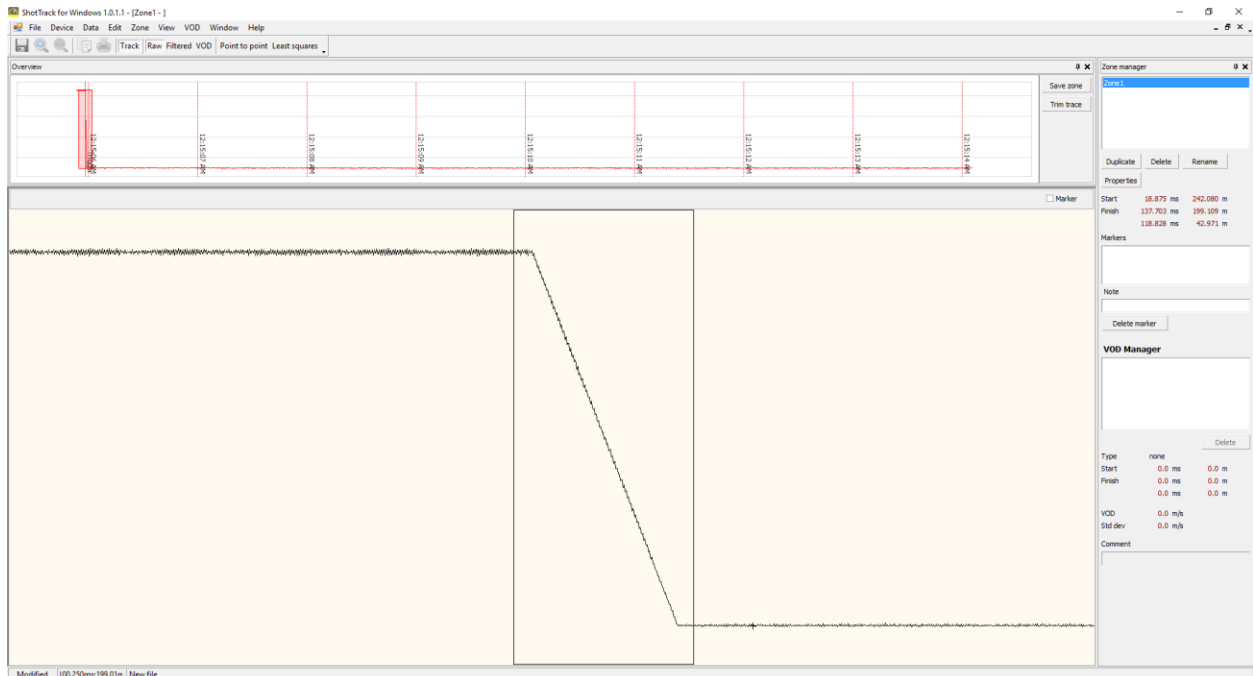
Clicking on Save zone will select a window with this “zone of interest”



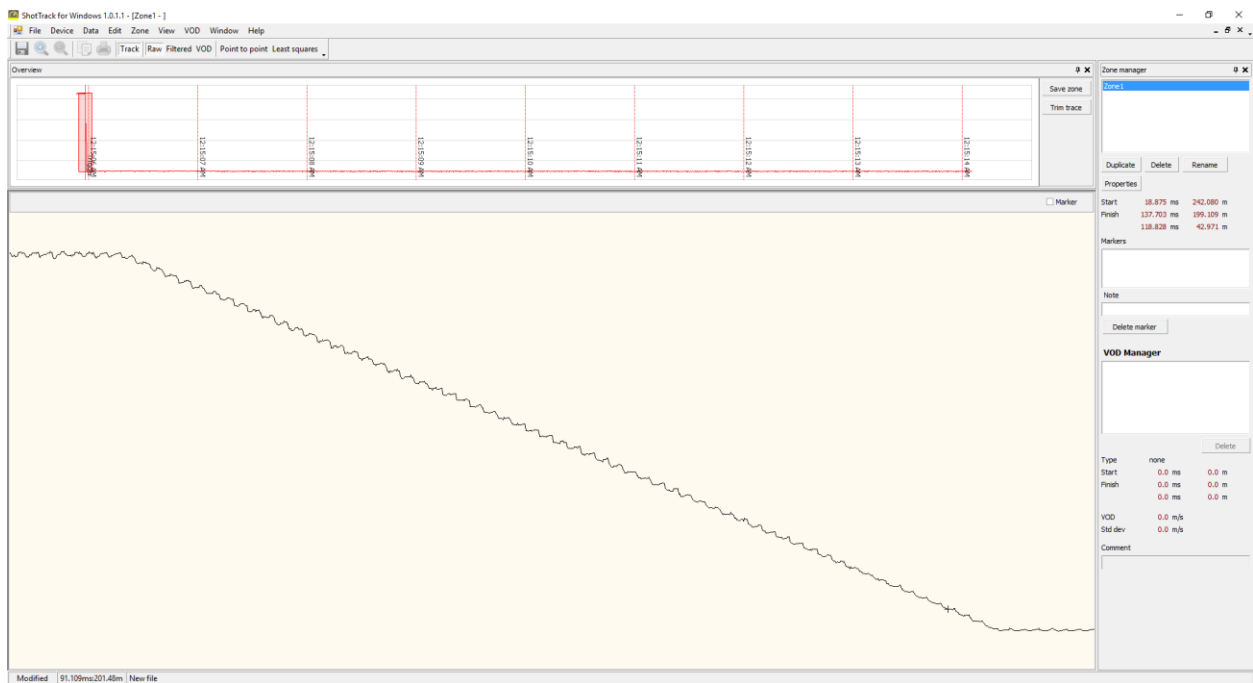
Click on the maximize button top right hand side of window will expand it to fill the main window



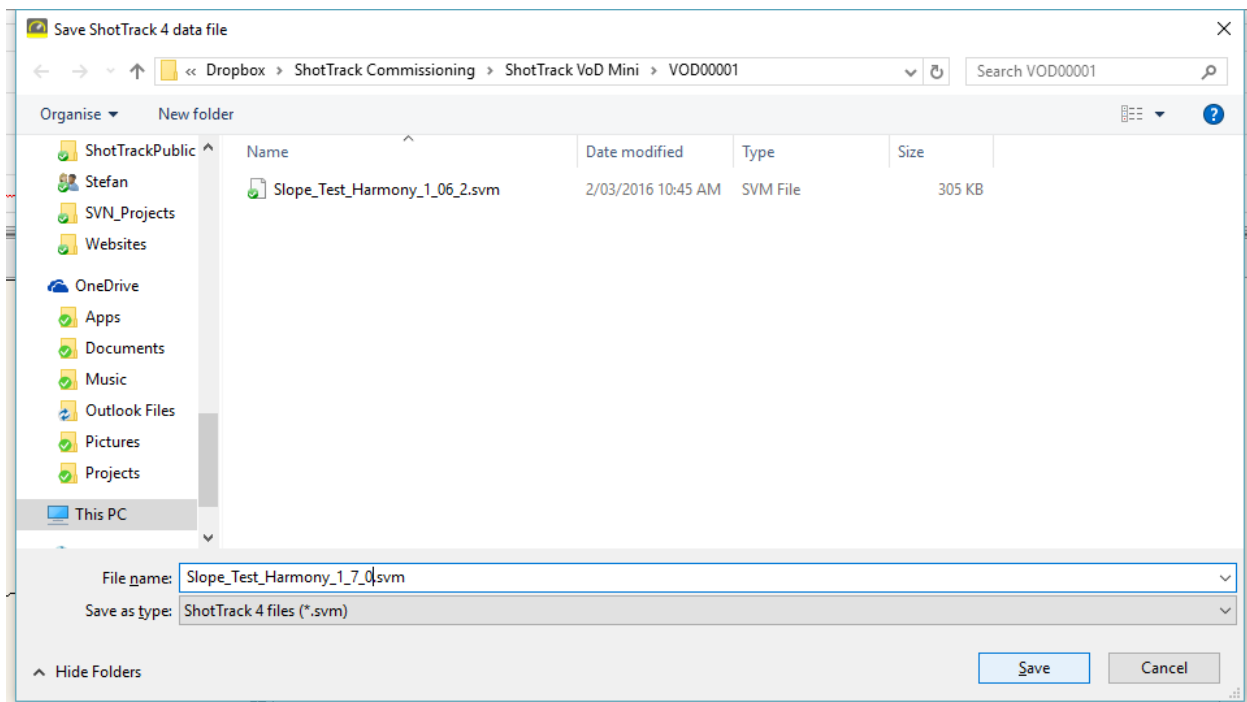
Drag a window over the area of interest:



Right click the mouse and select Trim region to get the area of interest.



Select File/Save as



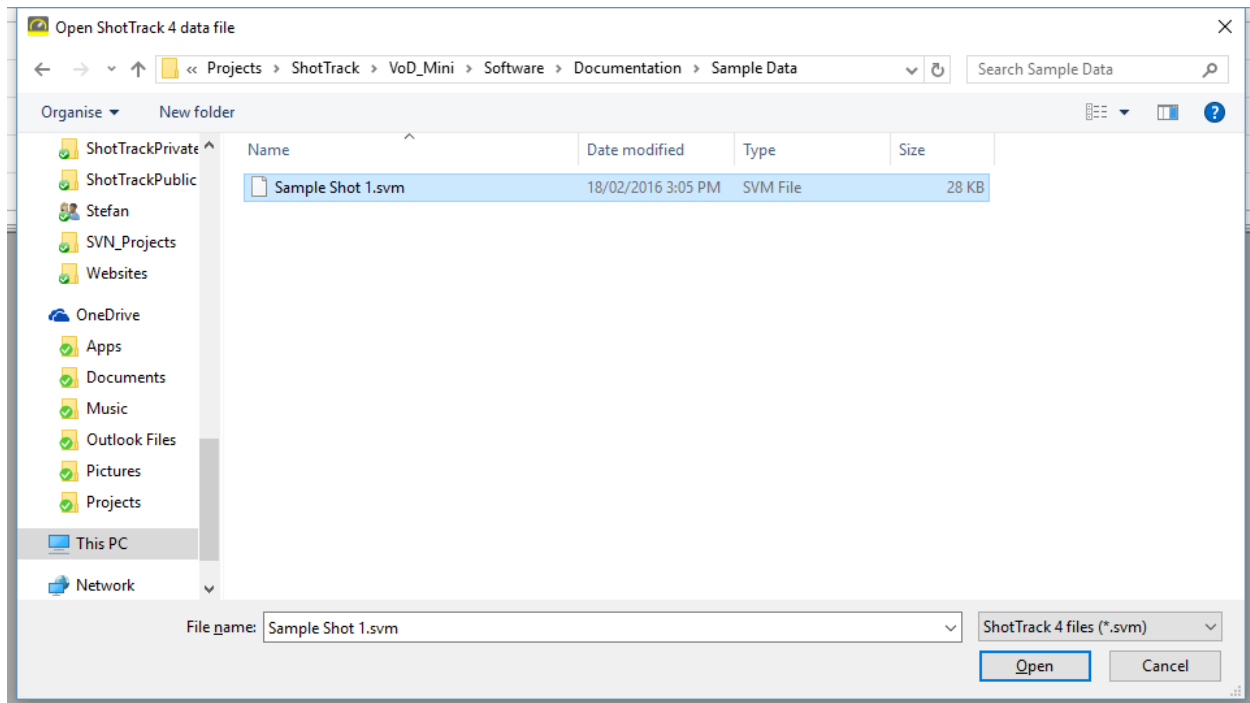
Browse to where you want to save the file and click Save.

File analysis

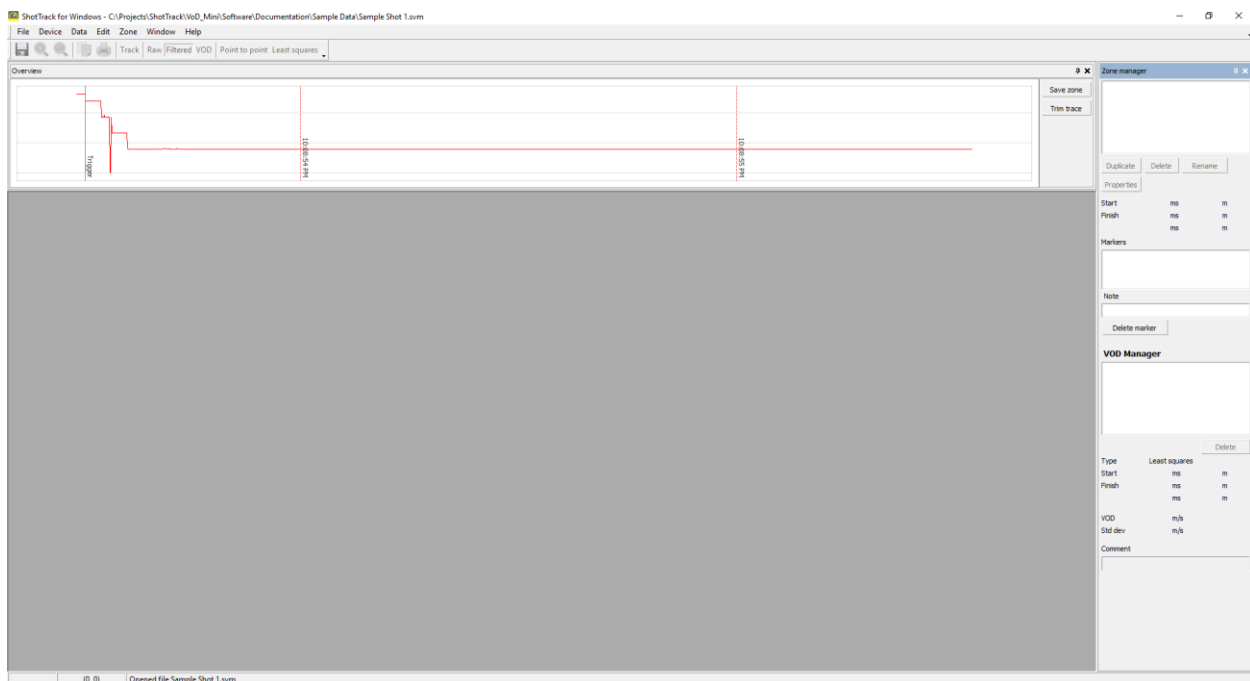
Open ShotTrack VoD Monitor and click on File/Open.

Navigate to the location you have saved the file you wish to analyze (you can do this immediately after downloading the data from the unit without opening the file).

Choose the file and click Open.



The file is loaded and the overview window shows the events captured along with the PPS markers.



Enter Shot properties:

If this hasn't been done when loading the data from the unit, the Shot properties should be entered now.

From the task bar select Edit/Shot properties

Edit shot parameters

General | Cable | Blast | Defaults

Box header STVOD002

GPSHeader Lat: 37° 07.64040' S Long: 174° 59.31422' E
4/02/2016 22:08:56

Shot description

Blast date 5/02/2016

Time of firing 9:08:56 AM

OK Cancel

Enter the Shot description.

Edit shot parameters

General | Cable | Blast | Defaults

Box header STVOD002

GPSHeader Lat: 37° 07.64040' S Long: 174° 59.31422' E
4/02/2016 22:08:56

Shot description Sample Shot

Blast date 5/02/2016

Time of firing 9:08:56 AM

OK Cancel

The screenshot shows the 'Edit shot parameters' dialog box with the 'Cable' tab selected. The dialog has four tabs: General, Cable, Blast, and Defaults. The 'Cable' tab contains the following fields:

Parameter	Value	Unit
Initial return time	1001.1	nsec
Cable factor	8.546	
Initial cable length	117.15	m
Resolution	0.09	nsec
Sample rate	25600000	samples per second
Arm time	4/02/2016 9:57:03 PM	
Trigger time	4/02/2016 22:08:53.512000	(12 min)

At the bottom right are 'OK' and 'Cancel' buttons.

The cable screen shows the state of the shot at the time of the trigger.

The Arm and Trigger times are in UTC and the shot was fired 12 min after the unit was set.

The Trigger time has a seconds decimal point value that is calculated from the GPS PPS and is accurate to the sample period of 0.00000390625 seconds.

Fill in Blast information.

The screenshot shows the 'Edit shot parameters' dialog box with the 'Blast' tab selected. The dialog has four tabs: General, Cable, Blast, and Defaults. The 'Blast' tab contains the following fields:

Parameter	Value	Unit
Shot ID	Number 1	
Operator	Roy Miller	
Mine	Big top one	
Rock	Granite	
Hole diameter	110	mm
Hole depth	20	m

At the bottom right are 'OK' and 'Cancel' buttons.

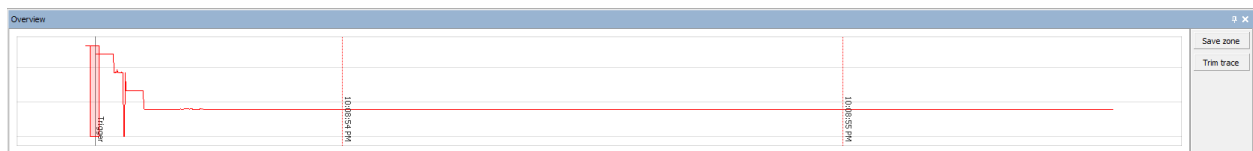
Fill in default product and positioning info.

The 'Edit shot parameters' dialog box has four tabs: General, Cable, Blast, and Defaults. The Defaults tab is active. It contains three input fields: 'Product' with the text 'STD Anfo 1234', 'Stemming length' with a value of 2.0 and a unit of 'm', and 'Primer offset' with a value of 1.0 and a unit of 'm'. Each numerical field has up and down arrow buttons. At the bottom right are 'OK' and 'Cancel' buttons.

As can be seen the relevant data is at the start of the recorded data in four sections.

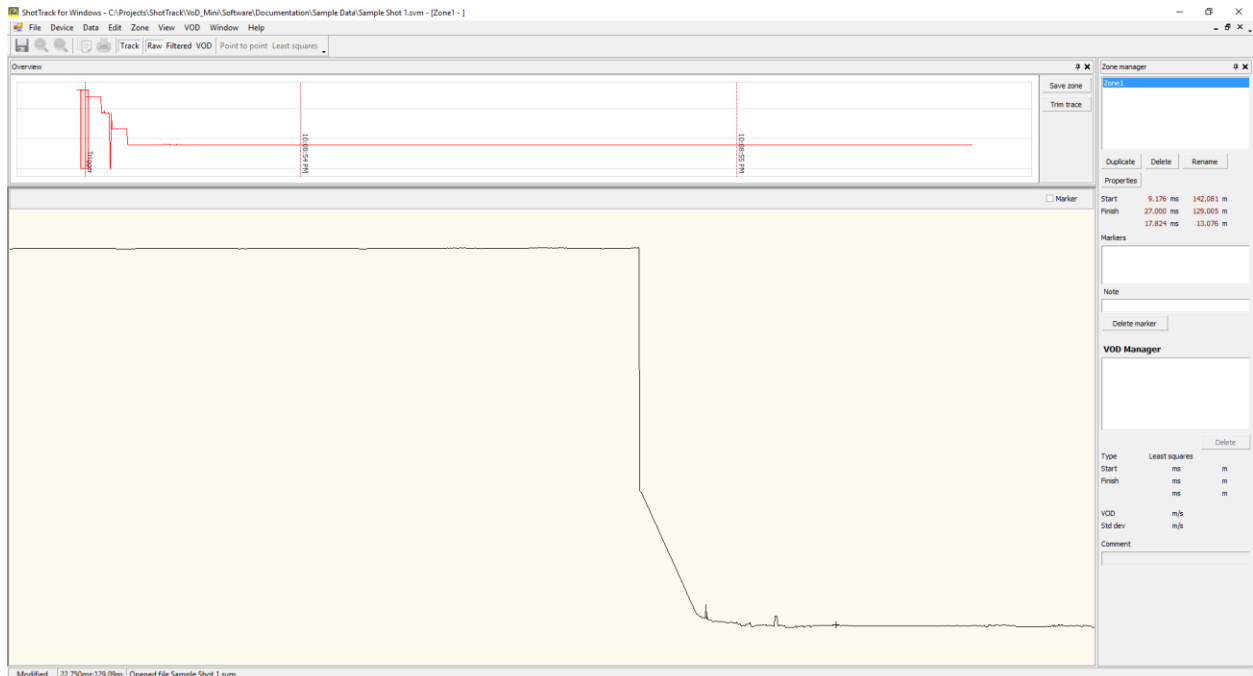


Select the regions of interest by holding the left button down and dragging the cursor selecting the area of interest.

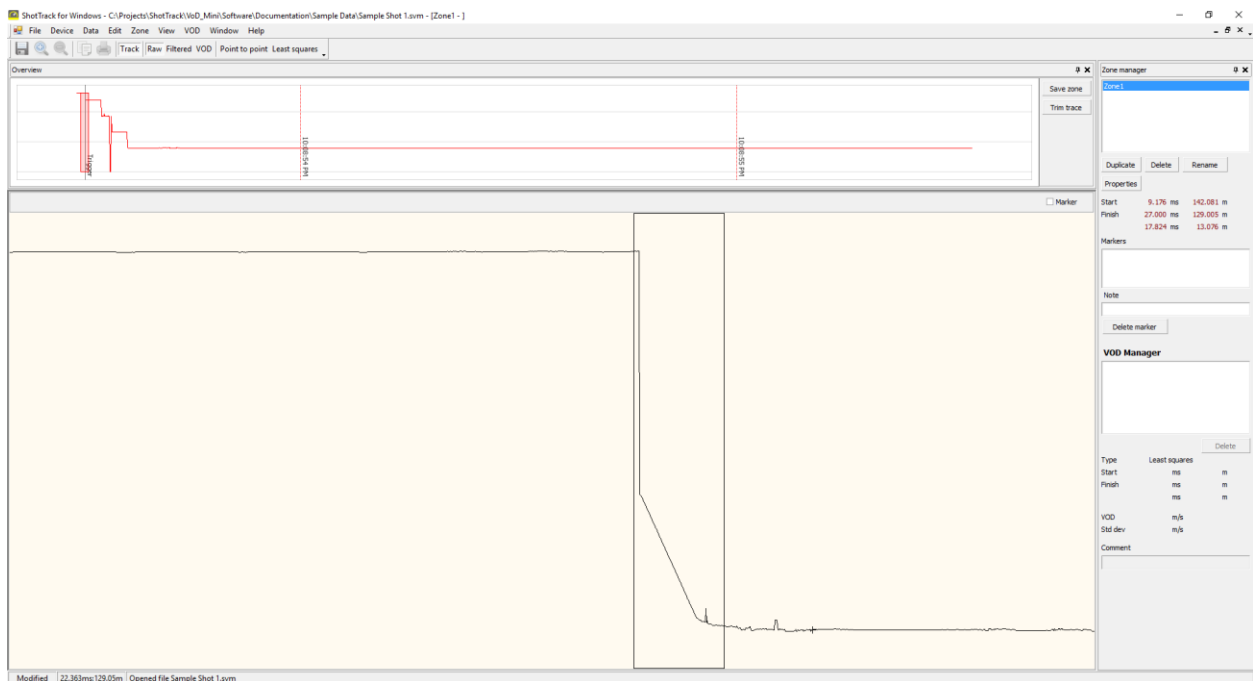


Click on Save zone and a window opens showing this selected area.

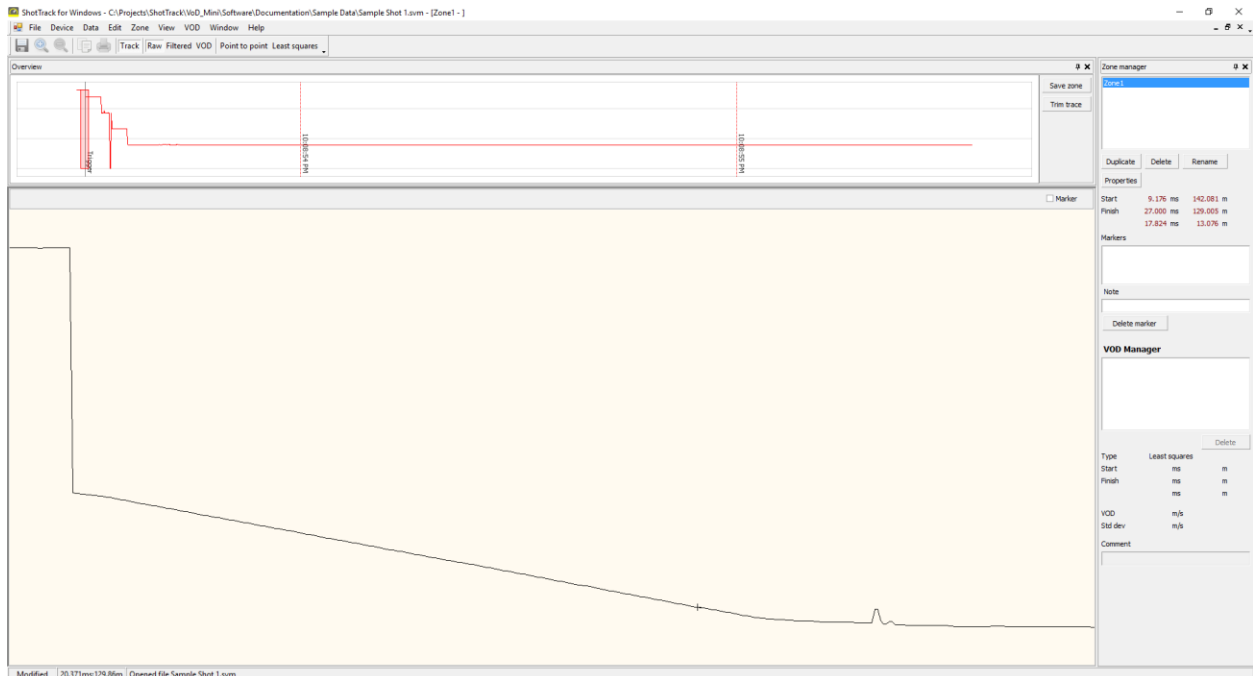
Click on enlarge to fill window.



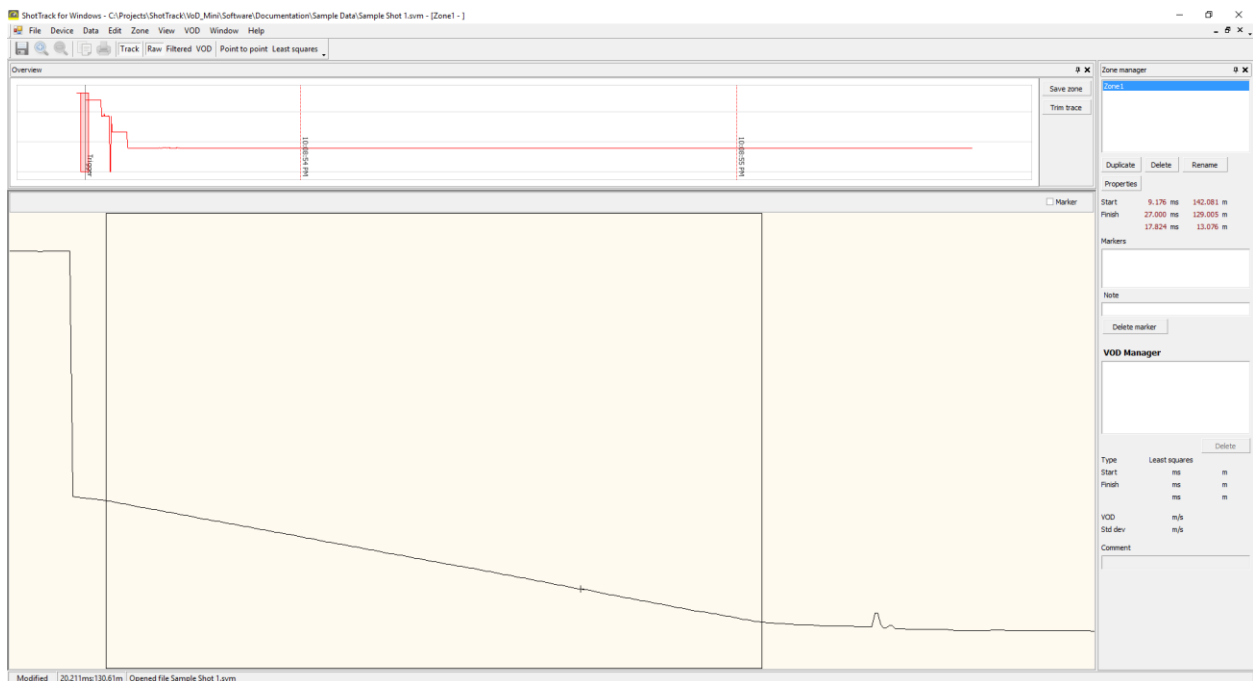
We can now further zoom in on the area we are interested in by left dragging the cursor over what we want.



And then right click to select Trim region.



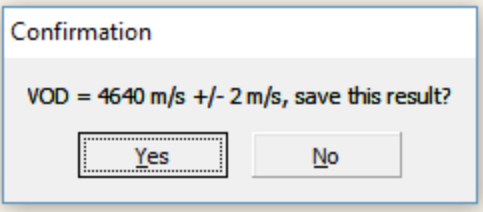
To select an area to calculate a VoD left drag cursor to select it.



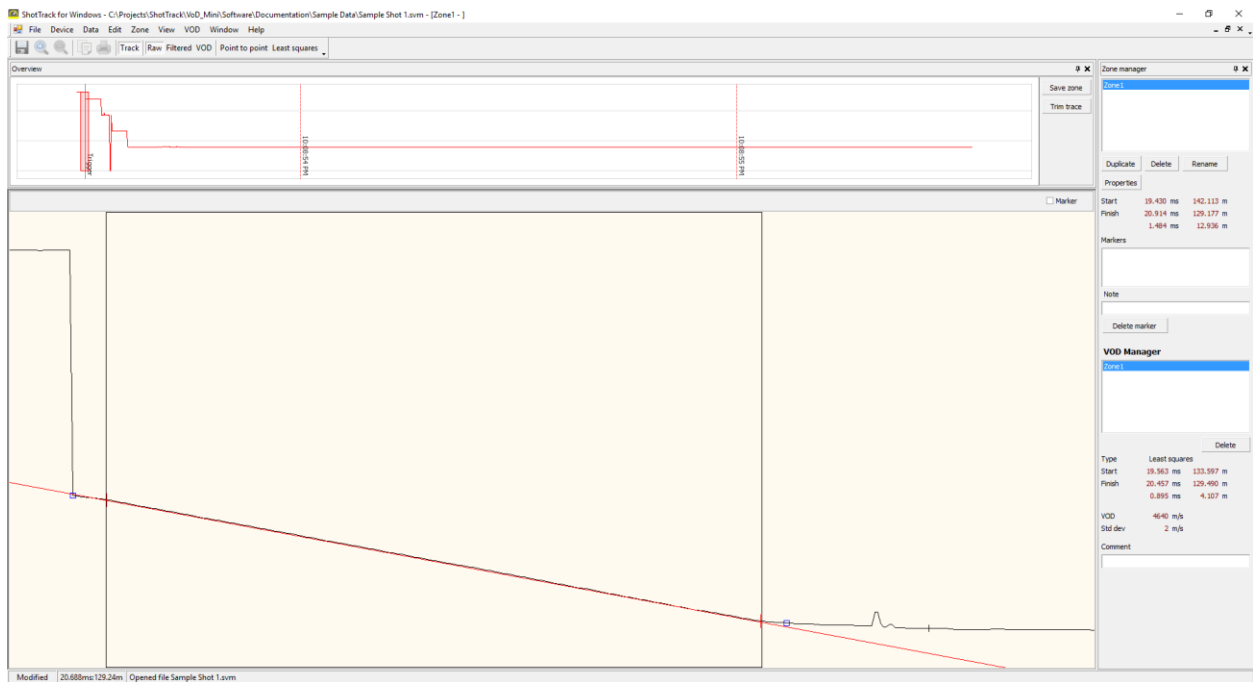
In this case I have noticed a area at the beginning of the trace where the VoD is lower than over the rest of the trace. I have positioned my selected are to start after this.

Press right mouse button and click on Leaste squares.

You will be asked to confirm this.



After pressing Yes the VoD is calculated and a red line indicates the “slope”.

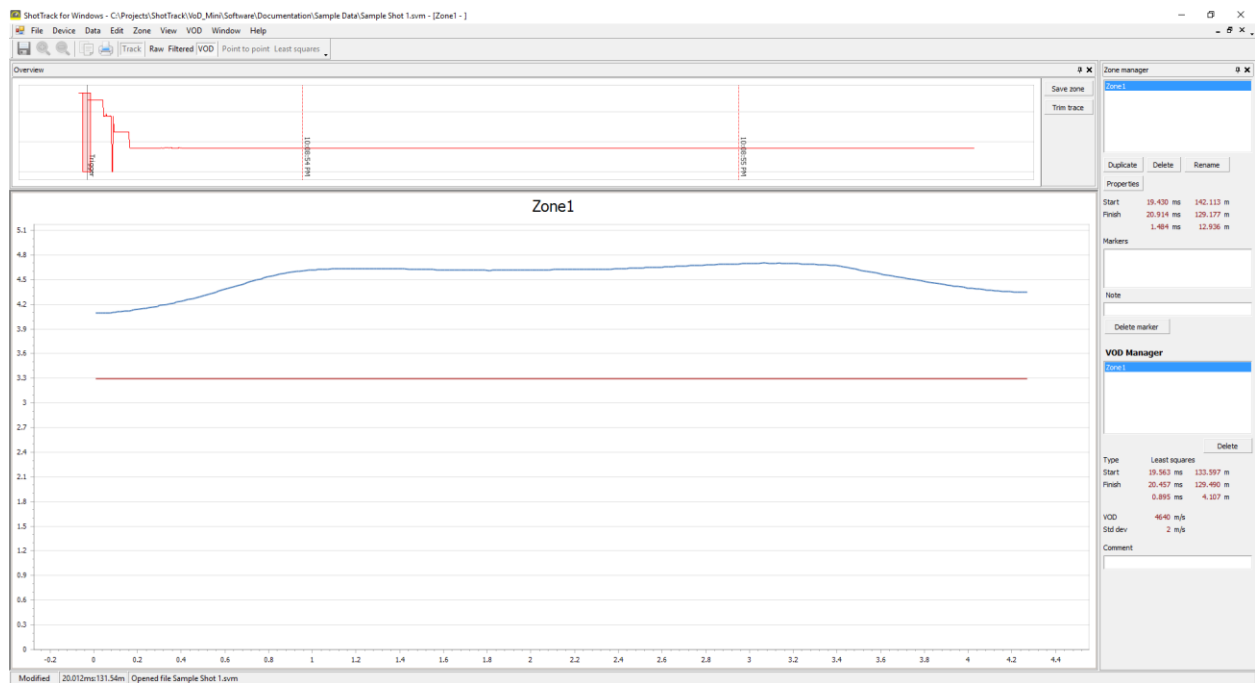
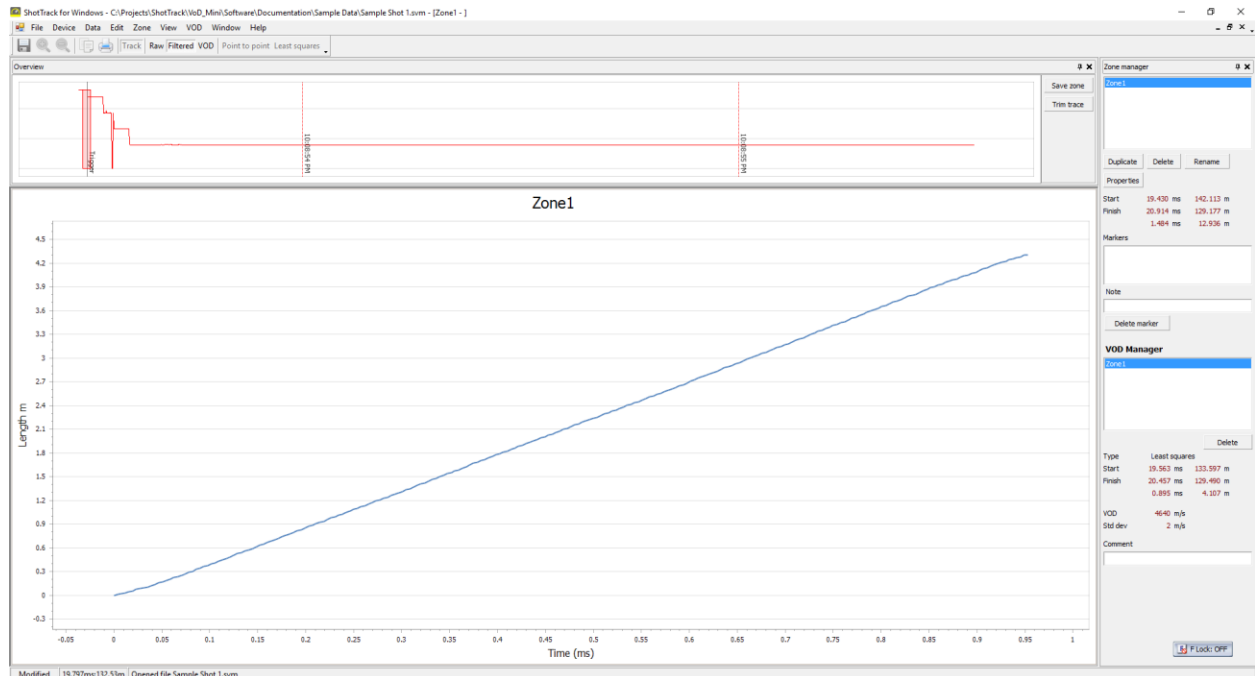


The software assigns blue dots to indicate the area it thinks is of interest.

These blue dots are used to select the area for Filtered data and continuous VoD calculations.

These dots can be moved by left clicking on them and dragging with the mouse.

Clicking on Filtered in the task bar calculates a filtered graph of the area of interest.



The zone details should now be entered:

Zone manager

Zone 1

Duplicate

Delete

Rename

Properties

Start

19.430 ms

142.113 m

Finish

20.914 ms

129.177 m

1.484 ms

12.936 m

Markers

Note

Delete marker

VOD Manager

Zone 1

Delete

Type

Least squares

Start

19.563 ms

133.597 m

Finish

20.457 ms

129.490 m

0.895 ms

4.107 m

VOD

4640 m/s

Std dev

2 m/s

Comment

Clicking on Properties opens the dialog box.

Edit region parameters

Blast | Explosive

Shot ID: Number 1

Operator:

Mine: Big top one

Rock:

Hole diameter: 0 mm

Hole depth: 0.0 m

Copy from Shot parameters OK Cancel

Pressing Copy from Shot parameters uses the default values entered earlier.

Edit region parameters

Blast | Explosive

Shot ID: Number 1

Operator: Roy Miller

Mine: Big top one

Rock: Granite

Hole diameter: 110 mm

Hole depth: 20.0 m

Copy from Shot parameters OK Cancel

The image shows a software dialog box titled "Edit region parameters" with a close button (X) in the top right corner. It has two tabs: "Blast" and "Explosive", with "Explosive" being the active tab. The dialog contains several input fields and spinners:

- Product:** A text field containing "STD Anfo 1234".
- Hole ID:** A text field containing "24-25-001".
- Deck No:** A spinner box set to "1".
- Charge length:** A spinner box set to "7.0".
- Stemming length:** A spinner box set to "2.0" with a unit "m" to its right.
- Primer offset:** A spinner box set to "1.0" with a unit "m" to its right.

At the bottom of the dialog, there are three buttons: "Copy from Shot parameters" on the left, and "OK" and "Cancel" on the right.

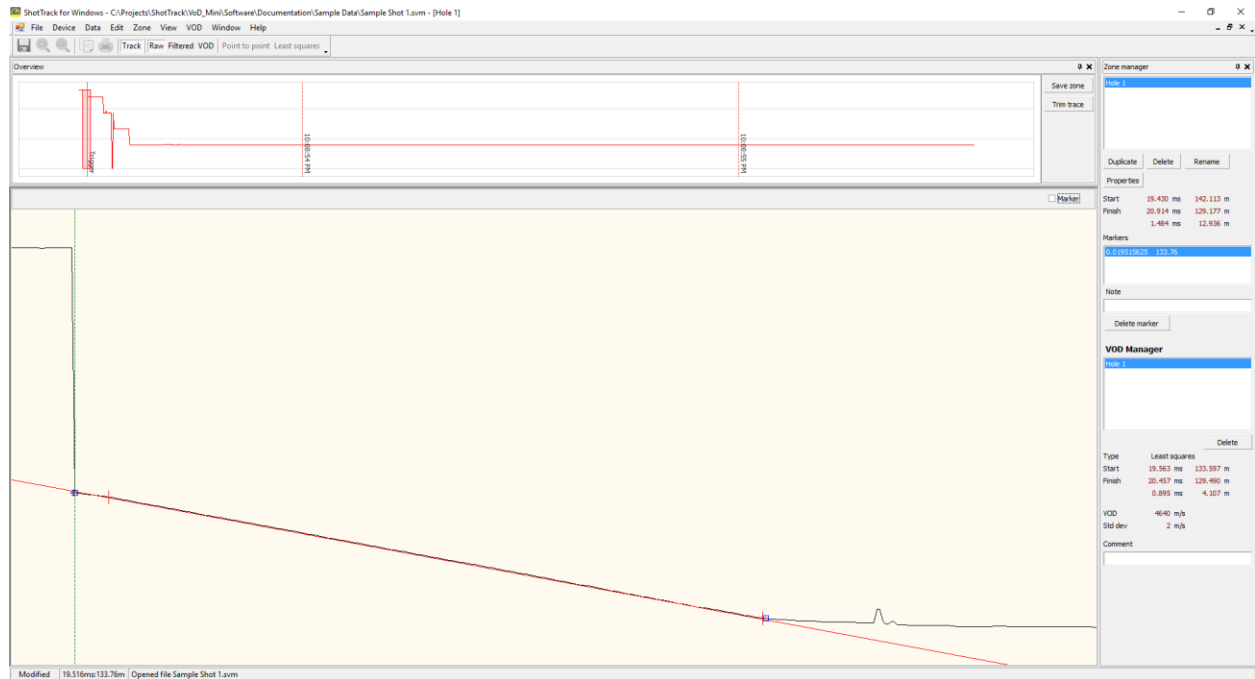
In the explosive tab enter Hole ID deck number and charge length. Edit the default Stemming length and Primer offset if needed.

The Zone can be renamed if wanted, in this case we called it Hole 1

Marker insertion:

In the top right hand corner of the zone screen there is a check box named Marker.

Checking this box allows you to place a marker at any point on the screen.



This marker is time stamped to the GPS calculated time and date.

Other notes can be added and we now have a Zone manager filled in for the first hole.

Zone manager

Hole 1

Duplicate

Delete

Rename

Properties

Start19.430 ms142.113 m

Finish20.914 ms129.177 m

1.484 ms12.936 m

Markers

0.019515625133.76

Note

Cut of cable first hole

Delete marker

VOD Manager

Hole 1

Delete

TypeLeast squares

Start19.563 ms133.597 m

Finish20.457 ms129.490 m

0.895 ms4.107 m

VOD4640 m/s

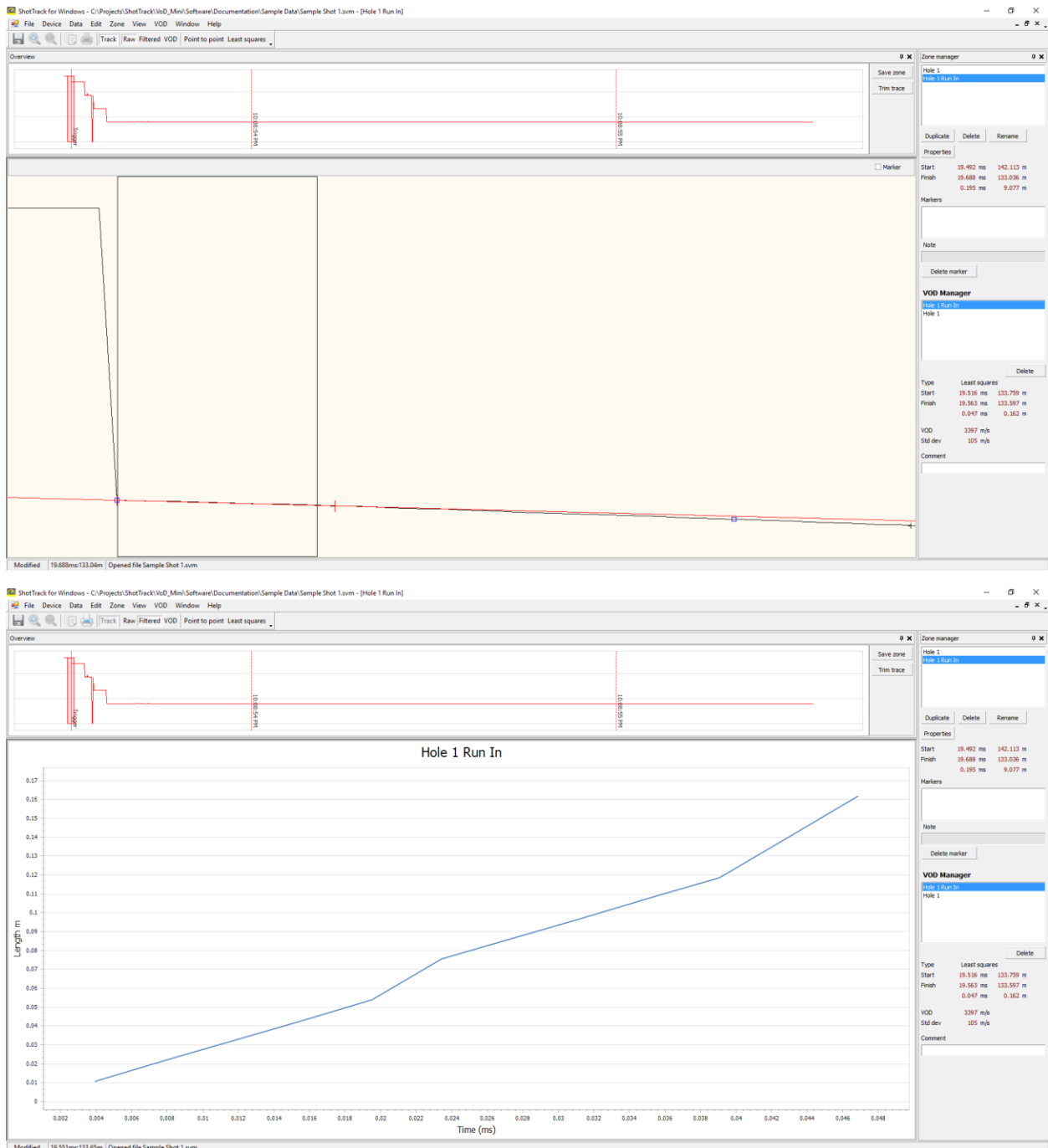
Std dev2 m/s

Comment

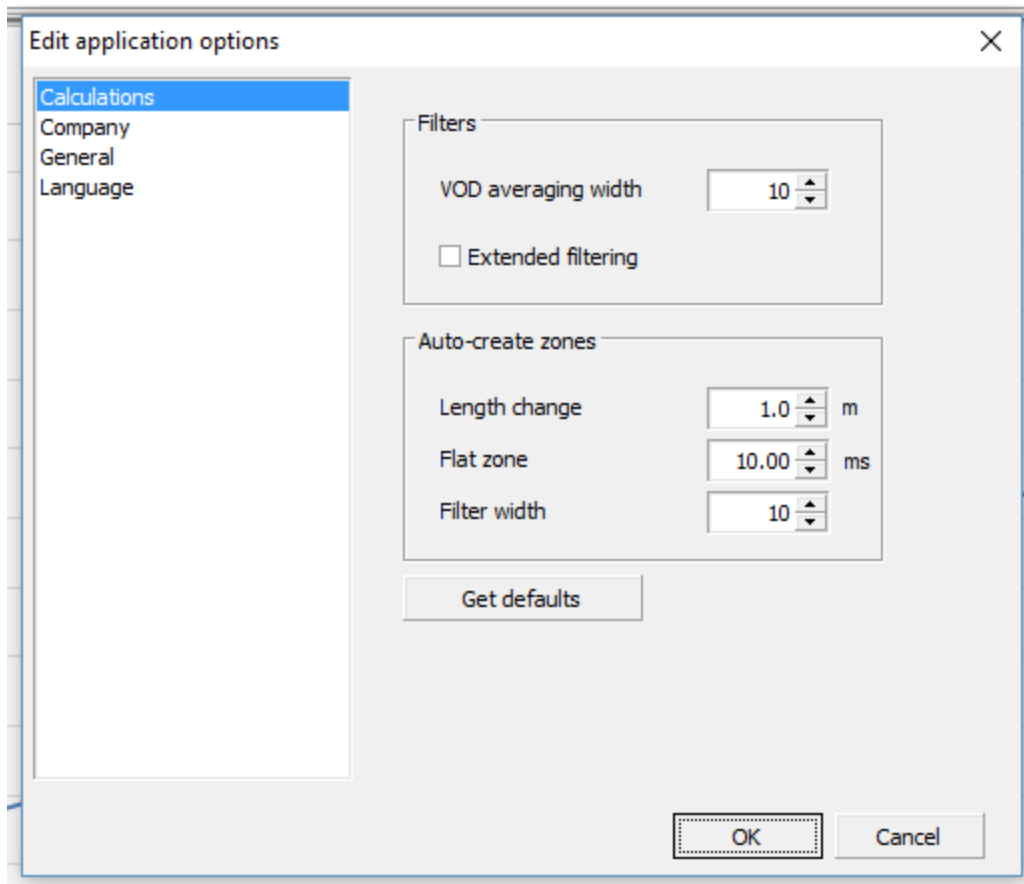
Hole 1 was wet

As I had noticed that the looked like a “run to detonation” period that I am interested in I have clicked on Duplicate to get a copy of the zone. I have renamed this to Hole 1 Run In.

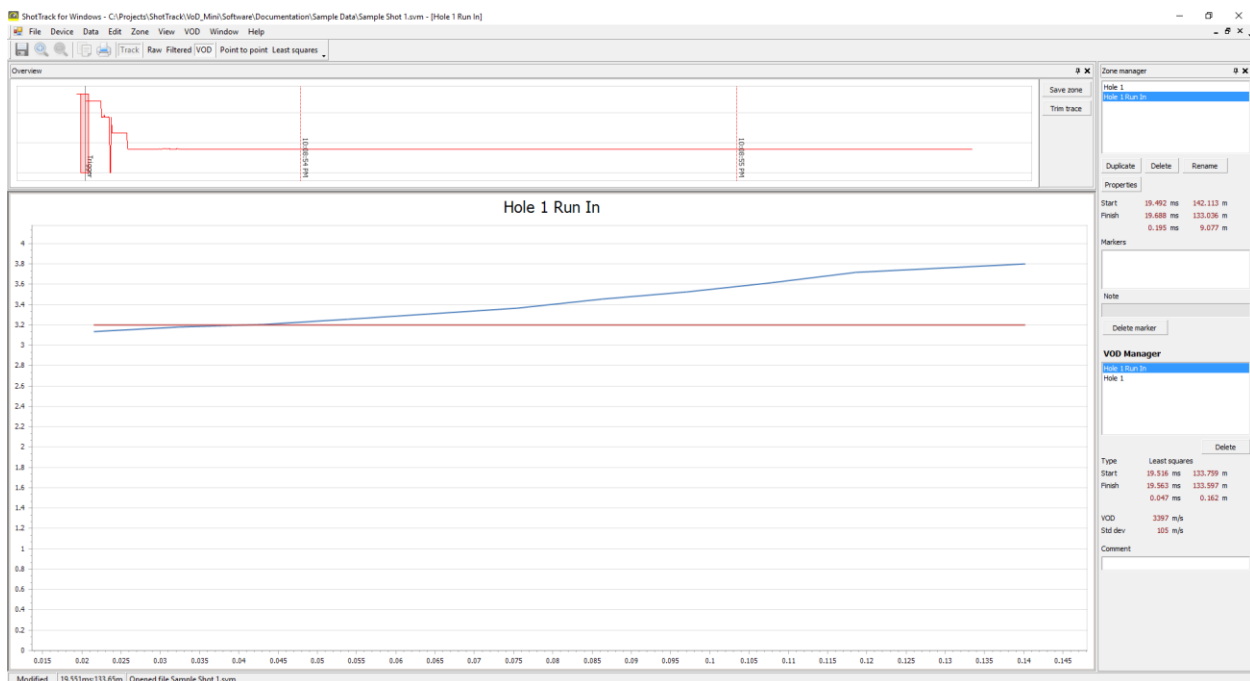
I have selected a closer look at the beginning of the trace and done a “leaste squares” calculation on this.



To have a look at the continuous VoD I need to change the VOD averaging width to fit the data points recorded with the filter.

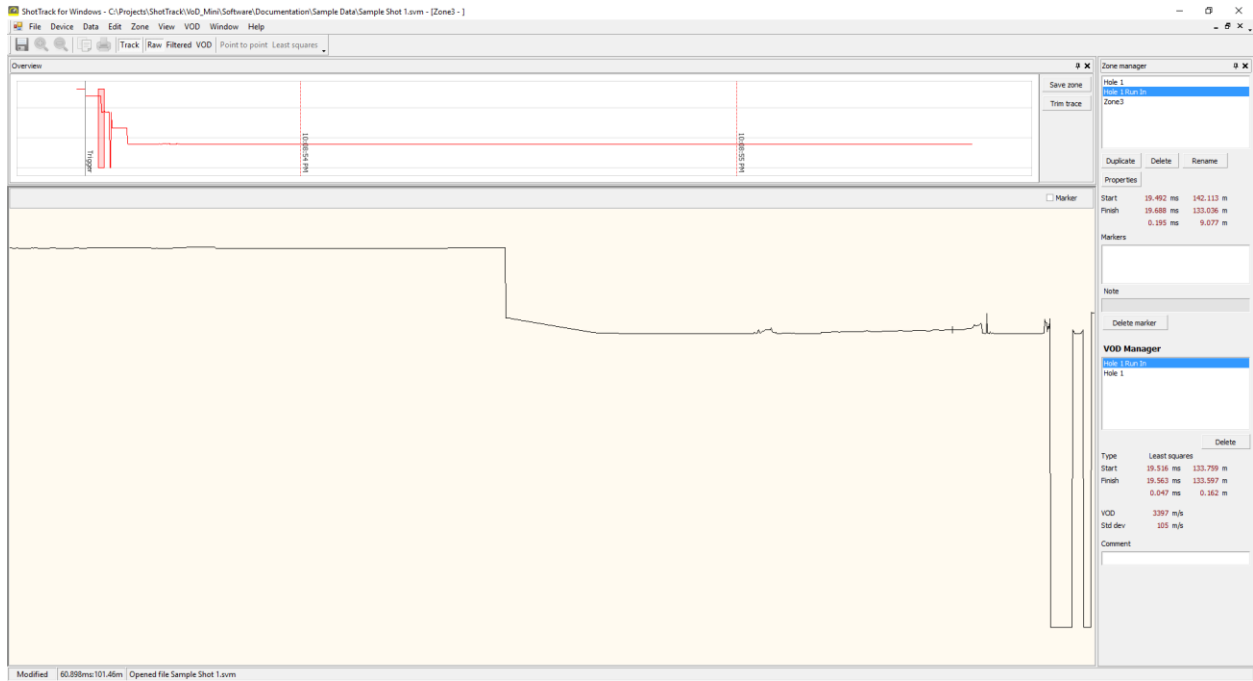


In this case I choose 10.

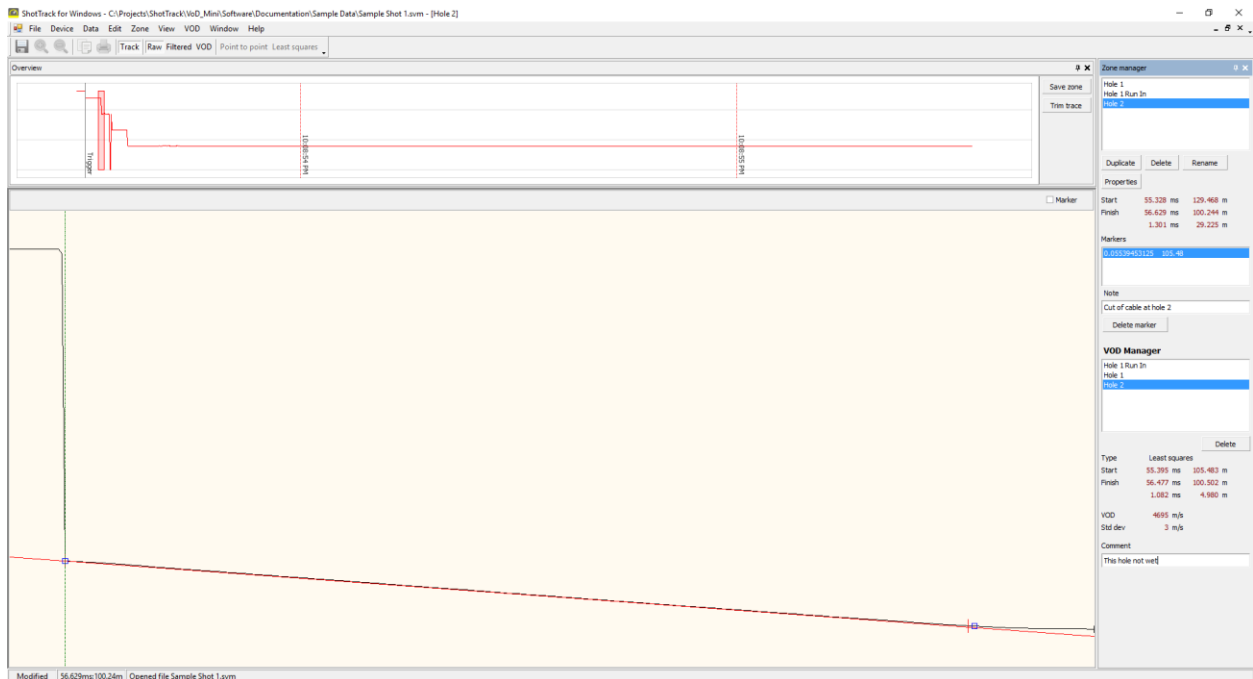


Next I want to look at the next hole.

I reselect the area around the next event.



And then followed the same procedure to get a VoD for the hole.



I then did the same for the remaining holes.

Zone manager

Hole 1
Hole 1 Run In
Hole 2
Hole 3
Hole 4

Duplicate
Delete
Rename

Properties

Start	115.262 ms	72.065 m
Finish	116.738 ms	42.732 m
	1.477 ms	29.332 m

Markers

0.115359375 47.53

Note

Cut hole 4

Delete marker

VOD Manager

Hole 1 Run In
Hole 1
Hole 2
Hole 3
Hole 4

Delete

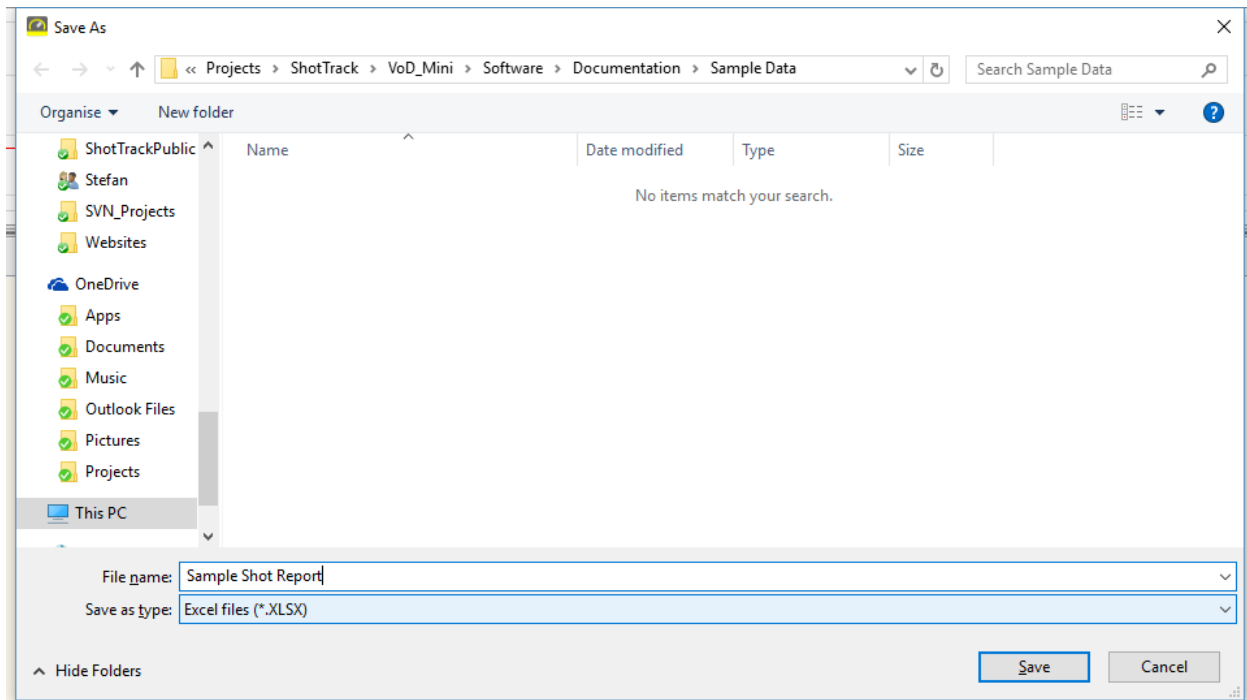
Type	Least squares	
Start	115.371 ms	47.486 m
Finish	116.316 ms	43.228 m
	0.945 ms	4.258 m
VOD	4588 m/s	
Std dev	2 m/s	

Comment

Run to detonation not obvious

When finished a report can be generated.

From the task bar select File/Export report.



Navigate to directory wanted and enter file name, click save.