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WinSeis 1.8

Quick Start Guide

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Seismic-Reflection Processing Quick-Start Using *WinSeis 1.8*

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NOTE: This quick-start guide is intended to provide quick answers to common questions associated with the WinSeis 1.8 software. This guide is not intended to be a replacement for the educational background for reflection [seismic-data analysis](#), which is necessary to allow users to understand the concepts used in WinSeis, nor is it intended to replace the tutorial, sample data, manual, and other documents provided. To address questions in more detail, please refer to the tutorial and manual provided with the software. [SEG Wiki](#) and other information on the web can be helpful, as well. This document provides links to some web pages.

INSTALLATION INSTRUCTIONS

Please insert the installation disc and follow the instructions provided in the installation window. The default location for the installed WinSeis software will be to the HDD that is associated with your operating system. It is advised that this default location not be changed (e.g., WSeis18).

Contents

Once WinSeis 1.8 is installed, the default application folder (“WSeis18”) will contain a sub-folder called “Documents”. Within this folder there is another sub-folder named “How To”. This folder contains examples and an explanation on how to remove unwanted traces that are located in a given shot record. The next sub-folder located in “Documents” is called “Manual.” This folder contains the Winseis Manual. This manual is divided into multiple PDF files, with each PDF containing one section of the manual (e.g., [4section1.pdf](#), [5section2.pdf](#), etc.). These files may be printed and bound to generate a physical copy of the WinSeis Manual for your personal use. This manual contains all the information needed to build the required “.dek” files for each process. In the “Documents” folder there is also a PDF file entitled “[EavesTutorial.pdf](#)”, which is the original step-by-step walkthrough developed for the WinSeis software. This tutorial refers to the data located in the “C:\WSeis18\SampleData” folder path. Using these sample data along with the tutorial can provide a basic understanding of a general processing flow as well as descriptions of what each process achieves.

The “Utils” folder within the “WSeis18” folder contains executables that allow the conversion of data from various field acquisition file sources to the proprietary KGS format required by WinSeis, as well as to-and-from SEG Y format. The common data acquisition file type is [SEG2](#). The SEG2 to KGS file conversion executable is located in the Main “WSeis18” folder.

Executables that build “.dek” files required by the WinSeis 1.8 software are located in the “WSeis18” folder. Additionally, software used to view the data is located in the same folder.

HOW TO

Process Data

The actual processing of the seismic data is performed by the “WSeis.exe” module (aka processing engine), which reads a “.dek” file (a simple text file) with information about the input data file, one or more processes to apply (defined by “commands” [*short word] with parameters), and output file(s). An output journal text file, “.lst”, is generated and updated with each process outcome providing processing information.

Most of the remaining “.exe” modules in the main application folder (e.g., “C:\WSeis18”) are designed to help build such text “.dek” files. They may not be necessary, if users have mastered the use of the “commands” described in the manual. If the user is proficient with the “commands”, it may be even more efficient to simply type the commands with the appropriate parameters in a “.dek” file and run it by launching the “WSeis.exe” module and selecting the corresponding “.dek” file.

An easy way to run processing is to find the “.dek” file using [File Explorer](#) (available with Windows 10, aka “[Windows Explorer](#)” in previous Windows versions) and just double click on it.

Best Place to Process Data

First, save the acquired data to a folder on the “C:\” drive.

For the generation of simple “.dek” files, it is easiest to first write the information into a “.txt” file using a simple .txt file editor, such as “Notepad” (which comes with the Windows operating system). Once satisfied, go to “File > SaveAs” and take the “.txt” extension off and replace it with “.dek.” This will save the text file as a “.dek” file which “WSeis.exe” can read.

NOTE: Once a “.dek” file is made, it must be manually saved. Closing the windows prior to saving will delete the work.

“Cmdedit.exe”, which can be found within the “WSeis18” folder is a tool specifically designed to create .dek files with friendly command-insertion options and tips.

Converting Data

SEG2 format seismic data

In order to process seismic data using the *WinSeis 1.8* software, the data acquired in the field must be converted from the field acquisition datatype (typically [SEG2 format](#)) to the proprietary KGS processing data type. To convert the data from SEG2 to KGS format please use the following steps:

Using [File Explorer](#) go to the WinSeis’ installation folder (e.g., “C:\WSeis18” and double click on the “[SEG22KGS.exe](#)” file. Then select from the menu:

File > Select Inputs > “Select Range > OK >

File > Output > “Name Output File > OK > Convert

This will now convert the SEG2 files to the KGS format. This will allow the user to utilize the software.

Check Figure 1.2 on page 1-4 from the WinSeis Manual (“4section1.pdf”).

WinSeis Manual files can be found in the “C:\WSeis18\Documents\Manual” folder

KGS and *SEGY* formats

Using [File Explorer](#) go to the “WSeis18\Utils” folder

Use [SEGY2FPT.EXE](#) to convert SEG Y format data to KGS format.

Use [FP2segyf.exe](#) (or FPT2SEG Y.EXE) to convert KGS format data to SEG Y format.

Merging Multiple Records Together

If multiple files need to be merged/combined into one file, please follow these instructions:

```
Open MS-DOS Command Window > Change directory (cd) >
File Path > “COPY File.dat /b + File2.dat /b + ... + FileN.dat = AllFiles.dat” >
ENTER > Repeat as necessary ...
```

The default MS-DOS-type Command Window is a black box with white type. It can be located by searching “Command Prompt” in the Start Windows Search Bar.

View Data

WinSeis 1.8 comes with a seismic-data visualization program. This will allow users to view either shot records or a final stacked section. To see the data, follow these steps:

Using [File Explorer](#) go to the “WSeis18” folder and launch “[Winview.exe](#)” program. Then select from the menu:

```
File > Open > “Select File > OK”
```

The viewing parameters can be changed in the “Options > Change Graphics” window.

Check Figures 4.1 – 4.6 on pages 4.1 and 4.2 from *WinSeis Manual* (“7section4.pdf”).

Application of Geometry

Geometry is applied by using the *SORT command in a .dek file. Geometry refers to the survey acquisition parameters (i.e., the locations of the sources and receivers). Geometry is applied after such information is written to the headers in the data (i.e., trace headers). Without geometry information some processes, such as FK filtering, Muting, and Stacking cannot be accomplished. Small errors in geometry application can compound in further processing, contributing to substantial error in the finished product.

[Winsort.exe](#) is a graphics tool within the “WSeis18” folder that can help with the making of sort.dek files (typically a laborious and demanding process).

Based on the geometry information, data can be “sorted” (i.e., reordered, reorganized) from the acquired common shot records trace order into different “gather”, such as common-mid-point ([CMP](#)) gathers.

Sorting the data to [CMP](#) gathers is the only way to achieve normal-move-out ([NMO](#)) analysis using the constant-velocity stack (CVS) panel executable provided in WinSeis. To generate a sorting “.dek” file using a program provided with WinSeis please follow the instructions below:

Launch the “[Winsort.exe](#)” program the “[WSeis18](#)” folder. program. Then select from the menu:

File > Open “Select File” > Adjust Parameters > Make *SORT

NOTE: The data can be initially sorted using header words “92 8”, i.e., record and trace numbers. After vertical stacking, the most friendly sorting can be “87 86.” After the data has been initially sorted through geometry, it is easiest to reorder it (i.e., reorganized, resorted) using the *RSRT command (rather than the *SORT again) into different gathers, such as CMP. Please jump to the **Resort** section below for instructions.

Check Figures 1.21 – 1.27 on pages 1.11 and 1.12 from WinSeis Manual (“[4section1.pdf](#)”).

Frequency Filtering

Frequency filtering “.dek” file preparations can be done using a program provided with WinSeis. Please follow the instructions provided below to generate the “.dek” files.

Launch the “[Winfilt.exe](#)” program the “[WSeis18](#)” folder. Then select from the menu:

File > Open File > Use the options to select the type of frequency filtering >
Enter the desired parameters into the software >
Make *FILT

To generate the filtering “.dek” from scratch, please refer to the manual provided with the software in the Documents folder.

Frequency-Wavenumber (FK) Filtering

The FK filter is a subclass of the *Winfilt.exe* program. To do FK filtering please follow these instructions.

Launch the “[Winfilt.exe](#)” program the “[WSeis18](#)” folder. Then select from the menu:

Options > FK filtering > File > Open > FileName > Pick FK values >
Make Command > Jump to next record > Continue...

Check Figures 1.76 – 1.86 on pages 1.23 - 1.25 from WinSeis Manual (“[4section1.pdf](#)”).

Killing Traces

Killing noisy traces “.dek” file can be made using the “[Winedit.exe](#)” program. Please follow these instructions to kill traces.

Launch the “**Winedit.exe**” program in the “**WSeis18**” folder. Then select from the menu:
File > Open > Filename > OK > Options > Edit Options > EDKL-Surgical Mute >
Select Traces

Muting

Surgical Muting

Surgical muting parameters for a “.dek” file can be selected using the “**Winedit.exe**” program. Please follow these instructions to achieve surgical muting.

Launch the “**Winedit.exe**” program in the “**WSeis18**” folder. Then select from the menu:
File > Open > Filename > OK > Options > Edit Options > EDMT-Surgical Mute >
Select Mutes

First Arrival Muting

First arrival muting parameters for a “.dek” file can be selected using the “**Winedit.exe**” program. Please follow these instructions to achieve first arrival muting.

Launch the “**Winedit.exe**” program in the “**WSeis18**” folder. Then select from the menu:
File > Open > Filename > OK > Options > Edit Options > EDFM-Surgical Mute >
Select Mutes

*Check Figures 1.28 – 1.39 on pages 1.33 and 1.14 from WinSeis Manual (“**4section1.pdf**”).*

Resort Data to CMP

Resorting (reorganizing) the data traces to CMP gathers is the only way to achieve NMO analysis using the velocity panel executable provided in WinSeis. Use the following text, as a “.dek” file example:

```
>>Start  
*INPF C:\EXAMPLE.dat  
*RSRT 12 19  
*OUTF C:\EXAMPLE_RSRT.dat  
>>END
```

Please refer to the manual to write the “.dek” file from scratch and to sort the data into other sorting formats.

Velocity Analysis

CVS panels are typically used for NMO velocity analysis. The “**Winvsch.exe**” program generates constant-velocity stack panels to determine the proper NMO velocity and to generate a “.dek” file horizontally (i.e., CMP) dependent NMO velocity functions to be executed by “**WSeis.exe**”.

Generate Panels

Launch the “**Winvsch.exe**” program in the “**WSeis18**” folder. Then select from the menu:
File > Open > “Select CMP Sorted Data” > OK (.DAT) >
Select CMP and Velocity Range >

File > SaveAs > “File Name” > Change name extension to “.NMO” (Drop Down) > OK > Click “Generate Panels”

View and Pick Panels

Launch the “Winvscn.exe” program in the “WSeis18” folder. Then select from the menu:

File > Change name extension to “.NMO” (Drop Down) > Select “.NMO” File > OK

OR

Velocity Estimation on CMP

Another velocity estimation program is provided with the *WinSeis* 1.8 software package that estimates velocities on the uncorrected CMP gathers. The program is called “Winvelp.exe”.

Launch the “Winvelp.exe” program in the “WSeis18” folder. Then select from the menu:

File > Open > “Select CMP Sorted Data” > OK > Check Parameters > OK

CMP Stacking

To stack the CMP data, please refer to the manual that was provided with the data. In order to stack the data, it must be reordered (sorted) using header words “12 19” (CMP) sorting.

TIPS

Good Practices:

1. Place the data to be processed in a separate folder on the C:\ drive. This will minimize issues while processing.
2. Files cannot exceed 2.1 GB (gigabytes) in size. Keep all file sizes less than 1.5 GB to minimize issues while processing.
3. Use short and meaningful file names while processing data to avoid confusion later on.
4. After making “.dek” files using programs provided with the WinSeis software, it is a good practice to re-save the file as a “.txt” file as a backup in case something happens to the original file.
5. If the user decides to make a “.dek” file from scratch, it is easiest to generate the information as a text file first. Then re-save the text file as a “.dek” file by removing the “.txt” extension and adding “.dek” in its place.

FAQ

This section provides some of the most frequently asked questions and the most likely answer to why the error or question is being raised. If the solutions provided below do not lead you to resolve the issue, please refer to the “.lst” file to solve the issue. If the issue persists, please contact the KGS to address the issue.

Why will my software not open?

Please be sure your Sentinel USB Dongle is plugged into the computer and the light is red on the dongle (indicating the software is installed automatically by the computer).

How do I view the seismic data?

Using [File Explorer](#) go to the “WSeis18” folder and launch the “Winview.exe” program WinView window will open. Go to “File > Open > Double Click on the .DAT file, which is in KGS format.

How is WinSeis 1.8 different from the executables in the “WSeis18” folder?

The majority of the executables in the folder allow for “.dek” files to be made that can be opened and executed by the “WSeis.exe” executable. The only data processing is completed by opening and running “.dek” files in “WSeis.exe”.

An error occurred in the processing, what happened?

To troubleshoot what happened, open the “.lst” file that was generated from the processing in “WSeis.exe”. It will be the same file name that was saved in the “.dek” file. There will be a line that starts “Abnormal termination” followed by an error message. This is a meaningful message that will illuminate what went wrong and point the user in the right direction to rectify the issue.

What does the error “Ran out of disc space” mean?

This error is associated with either an input or output file path name that is too long. Please try a different, shorter file name.

WinSeis continues to process and never stops. The final file size is too large and the list file does not provide any meaningful solution. What happened?

“>>END” is missing at the end of the “.dek” file.

What does “overflow” mean as an error?

The file or operation is too large to be completed. Please reduce the size of the file to below 1.5 GB and try again. Or, there is a user defined error. Please check the “.dek” file to ensure the correct process is being done.

Error “Divide by zero” in NMOT command. What does this mean?

The stacking velocities cannot provide a realistic solution based on the surrounding velocities. Please refer to the “.lst” file to identify the problem picks. Then correct and run again.

OR

Interval velocities were provided instead of the required stacking velocities.

[Check the KGS WinSeis FAQ web page](#) for more.