

# VSeis (Visual Seismic)

## Introduction

VSeis establishes the geophysical expression of depositional systems as encountered in on-line or near-line wells. This seismic facies character can be identified for the reservoir interval in order that the same geophysical expression may be mapped away from the borehole control to establish the reservoir distribution.

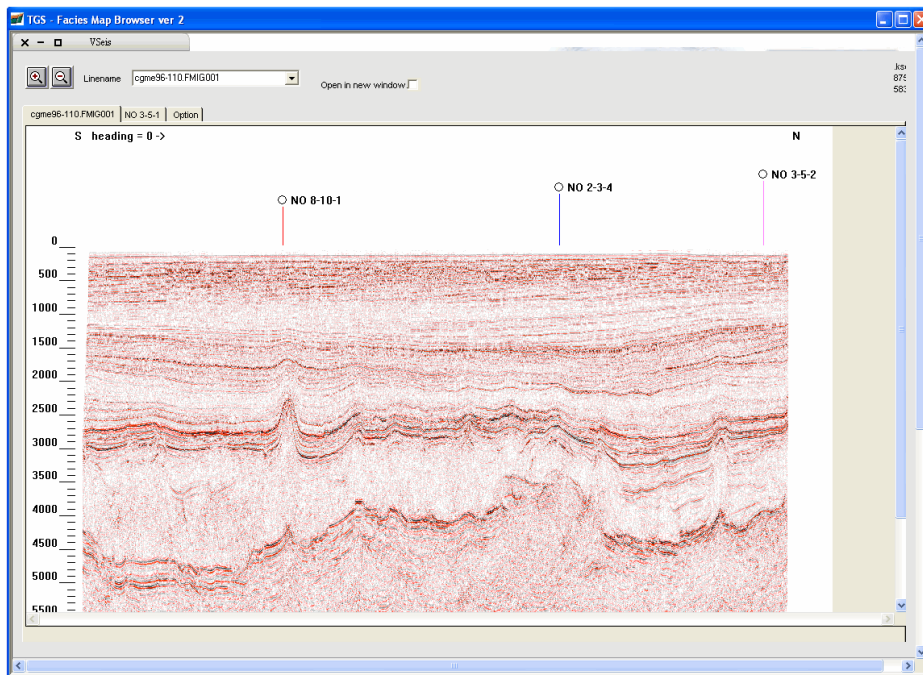


Figure 1 - Seismic Profile showing in-line (and near-line) wells

VSeis provides inbuilt seismic visualization, with time converted borehole zonation and synthetic seismograms to constrain and tie sequence “models”, especially in areas of sparse well control.

All data is presented against TWT. Borehole data available for review includes:

- Sonic and density logs
- Synthetic seismograms

- Interpreted Lithology
- Main Environment of Deposition
- Depositional Facies Association
- TVD depth reference
- Well stratigraphy

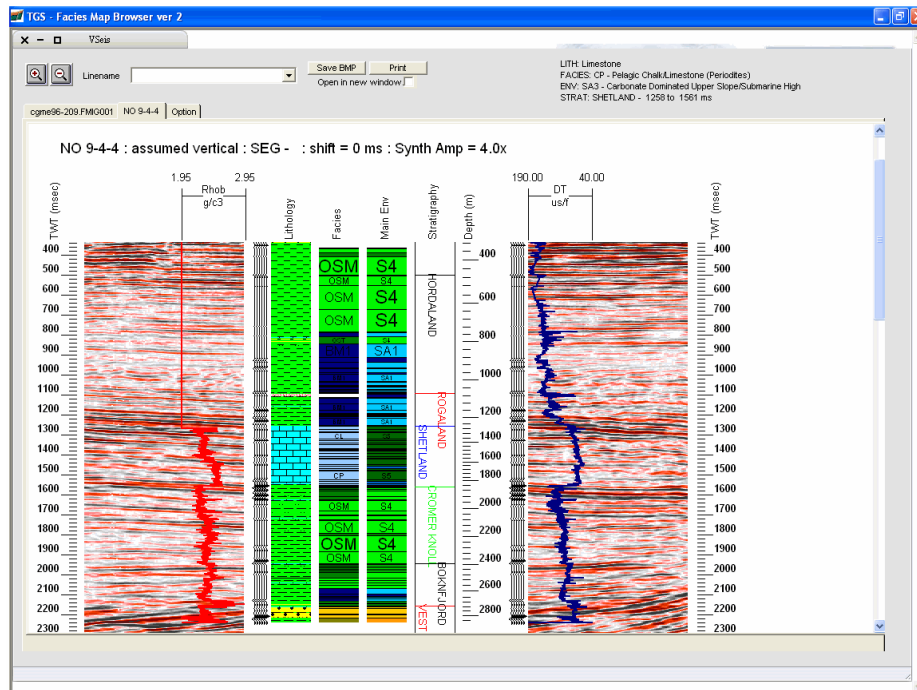


Figure 2 - Seismic with spliced in borehole interpretation and Synthetic Seismograms.

When packaged for distribution the FMB2 does not have any seismic trace data loaded. We do however provide clients with the navigation details of a number of surveys we have worked with/are continuing to work with. These are presented in maps A to D inclusive which can be accessed at the end of the list of maps in the GeoScope Lite map selection drop down menu.

One of the principle functions of FMB2 is to provide access to both well and seismic data, therefore the first part of this manual will detail the process required in order to introduce seismic trace data. This is currently achieved through the introduction of a Kingdom project. (The FMB2 currently only works with seismic profiles loaded as 2D sections). For clients without a Kingdom interpretation system we offer a data loading service. The future intention is to be able to provide bespoke seismic data loaders that will introduce seismic data to any of the Basin level databases as appropriate.

## Import of seismic packages into the FMBv2

To import a seismic package into the FMBv2 it is necessary to:

1. Add Seismic Package to FMBv2
2. Normalize the Well Names
3. Intersect the seismic lines of the package with the wells already in FMBv2

## Step 1: Add Seismic Package to FMBv2

### 1. Open the Tools menu from the FMB Sandbox. Run Add Seismic Project.

(Note: your PC settings may prevent you running this routine from within the FMB browser. If this is the case go to the FMB2\NW\_Europe\Tools directory and run the AddRemoveSeismic.bat file. The AddRemoveSeismicPackage program should appear:

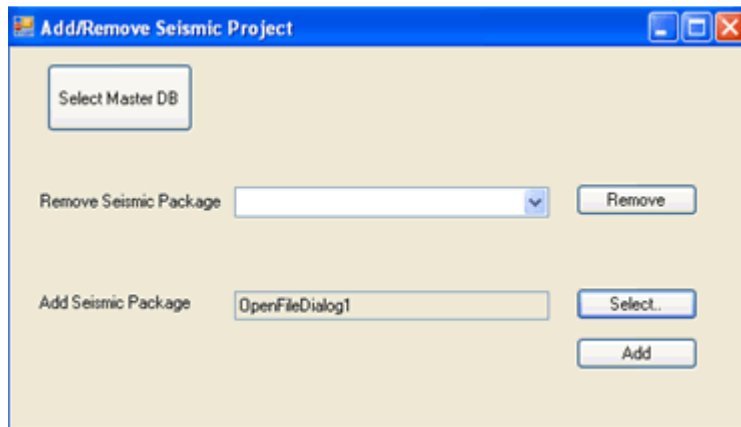


Figure 3 - Add Seismic Project Menu

### 2. Select the master database of the FMBv2.

To do this push the 'Select Master DB' button - this will open a File Dialog. Go to the FMB2\NW\_Europe\DB directory and select the Main-FMS2.mdb file.

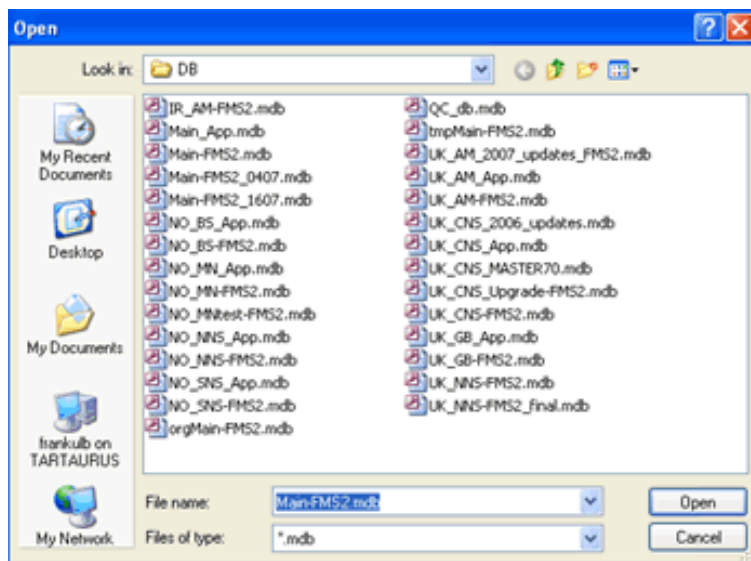


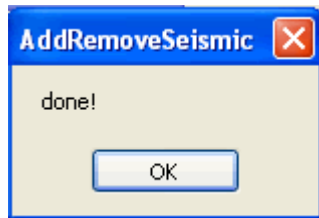
Figure 4 - Select Master Database

After the selection of a master DB its location and name will be displayed on the right hand side of the 'Select Master DB' button.

If Seismic Packages are already added to your FMBv2 they will be listed in the 'Remove Seismic Package' ListBox. To remove a seismic package select it in the ListBox and push the 'Remove' button beside the list box.

### 3. Select a seismic package

To select a seismic package push the 'Select' button on the right hand side beside the 'Add Seismic Package' label and the text field. This opens a FileDialog. Select the Access database (file extension .mdb) which represents the seismic package. The location and name of the seismic package will be displayed in the text field. Add the seismic package using the 'Add' button. After a short delay, the following message will appear:



Now you have added a seismic package into the FMBv2. Close the AddRemoveSeismicPackage program using the red exit ('X') button in the upper right corner. The import process has now to be continued with Steps 2 & 3. If the import is abandoned at this stage the VSeis program in FMBv2 will not display its full functionality and errors may occur.

### ***Step 2: Normalize Well Names***

The Well names derived from your Kingdom Project will need to be normalized with the Well Names in the FMB for the full functionality of VSeis to work.

- 1. Open the FMB Master Database (\NW\_Europe\DB\Main-FMS2.mdb)**
- 2. Ensure the Well Names as listed in Table T\_All\_SeismicWells are the same as the equivalent Wells as listed in Table T\_All\_Wells.**

For example, if in your Kingdom project you had a Norwegian Well labeled 1/2-01 this will need to be changed in Table T\_All\_SeismicWells to NO 1-2-1

### ***Step 3: Intersect the seismic lines of the package with the wells already in FMBv2***

Finally, to make VSeis fully operational you need to intersect the seismic lines of the new package with the wells in FMBv2.

- 1. Open the Tools menu from the FMB Sandbox. Run Calculate Seismic Intersections.**

(Note: your PC settings may prevent you running this routine from within the FMB browser. If this is the case go to the FMB2\NW\_Europe\Tools directory and run the seismicIntersect.bat file.

The Seismicintersector program should open as shown below:

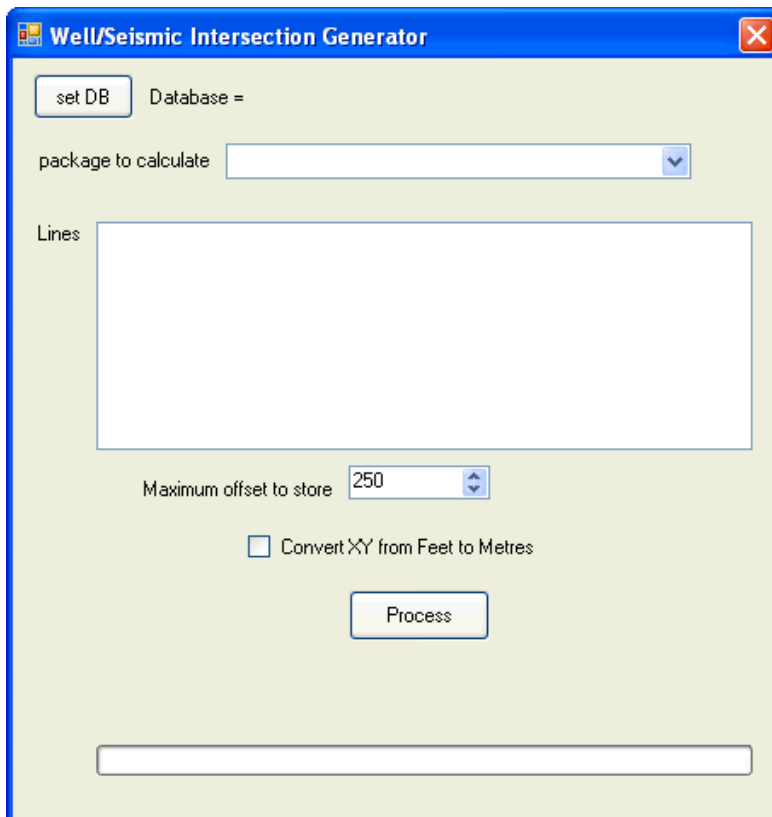


Figure 5 - Seismic Interjector Menu

## 2. Select the master database of the FMBv2.

To do this push the 'Set DB' button - this will open a File Dialog. Go to the FMB2\NW\_Europe\DB directory and select the Main-FMS2.mdb file.

After the selection of a master DB its location and name will be displayed on the right hand side of the 'Set DB' button.

## 3. Intersect the seismic line with wells within a defined offset

First select the offset you want to use for the intersection in the 'Maximum offset to store' list. The offset is the maximal distance of wells to the seismic line. Only wells within that offset will be intersected to the seismic line. It is suggested that you select a high figure for the offset at this stage to ensure as many wells as possible are processed and stored in the database. You can then refine the offset in VSeis.

Start the intersection processing using the 'Process' button. The processing will take several minutes. Its progress is displayed in the progress bar. When the processing is finished close the Seismicintersector program using the red exit ('X') button in the upper right corner.

## Starting VSeis

When you next open GeoScope and make the Seismic theme visible you will be able to see the profiles that you have introduced to the FMB. If you make the Seismic theme the active layer and left mouse click on a seismic line you will be able to launch VSeis, which will open displaying the seismic profile selected.

An alternative way to open VSeis is to use the “Find a Seismic Well” Search Tool. Here you can find seismic lines that are within a selected offset from any well of interest:

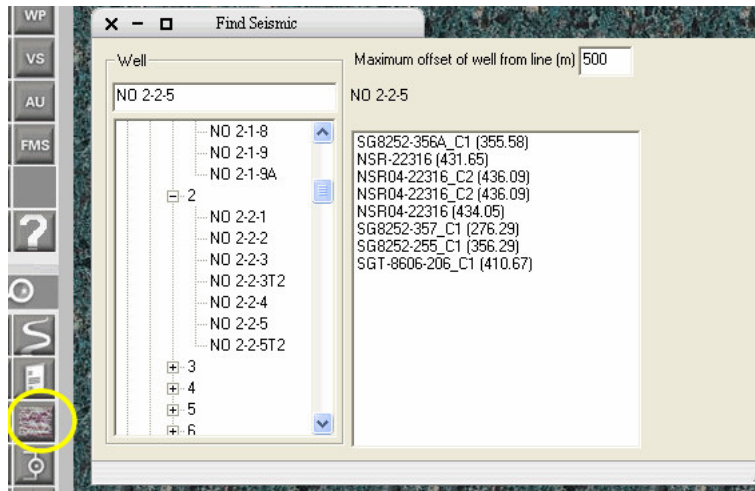


Figure 6 - Find Seismic

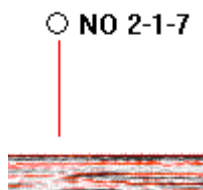
The icon circled above Figure 6 is used to launch Find Seismic. Set the maximum offset from the selected well to display any lines within this range. Lines meeting this criteria will be displayed in the right-hand pane, with their offset showing in brackets after the line name.

Double click on a line to display this seismic line in VSeis.

VSeis will open showing the seismic profile. The inline well selected above (and any other inline wells) will be displayed.

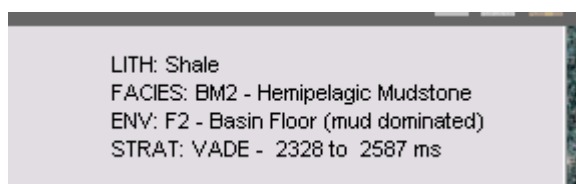
Once VSeis is open you can change the offset to include or exclude other near-line wells. To fully utilize the functionality of VSeis, your source Kingdom project needs to include Synthetics and Time-Depth pairs for the inline wells.

To splice Well Data into the seismic profile double left mouse click on the small circle to the left of the well name:



The well data will then be displayed in the Wells Tab.

A mouse “hover-over” on any part of the well data will reveal details of the Lithology, Facies, Environment and Stratigraphy, in the top right of the screen as shown below.



To change the display select the Options Tab:

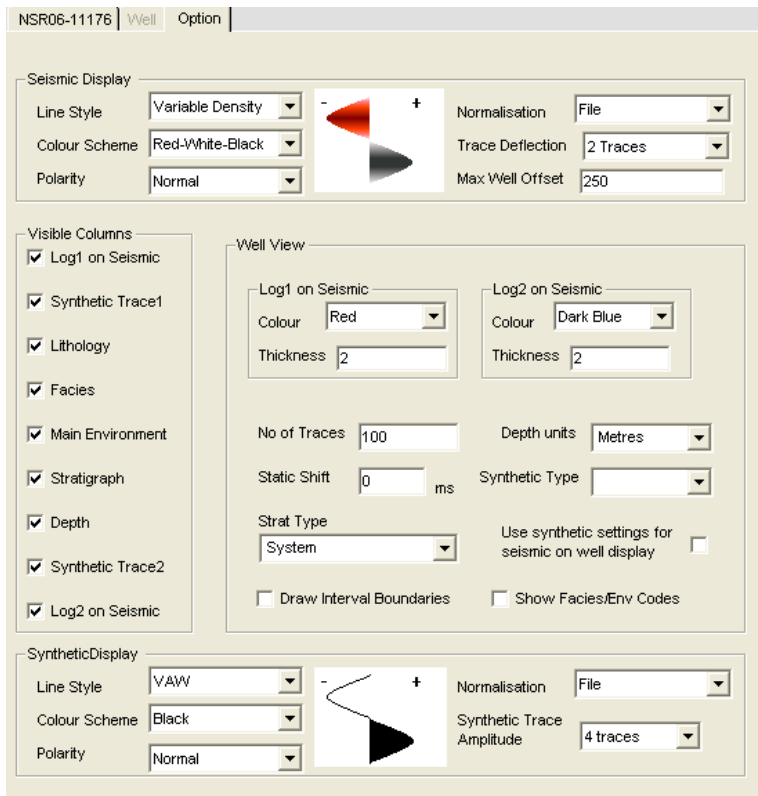


Figure 7 - VSeis Visualization Options

The default Visualization options are shown in Figure 7 above.