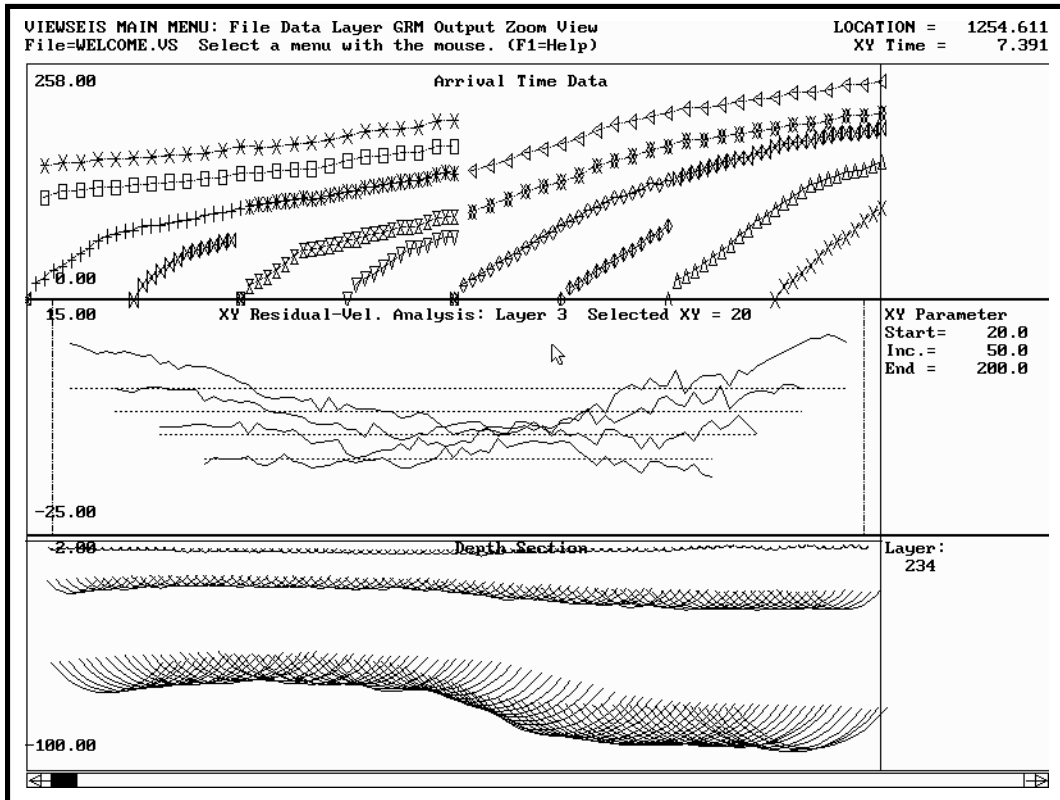


VIEWSEIS

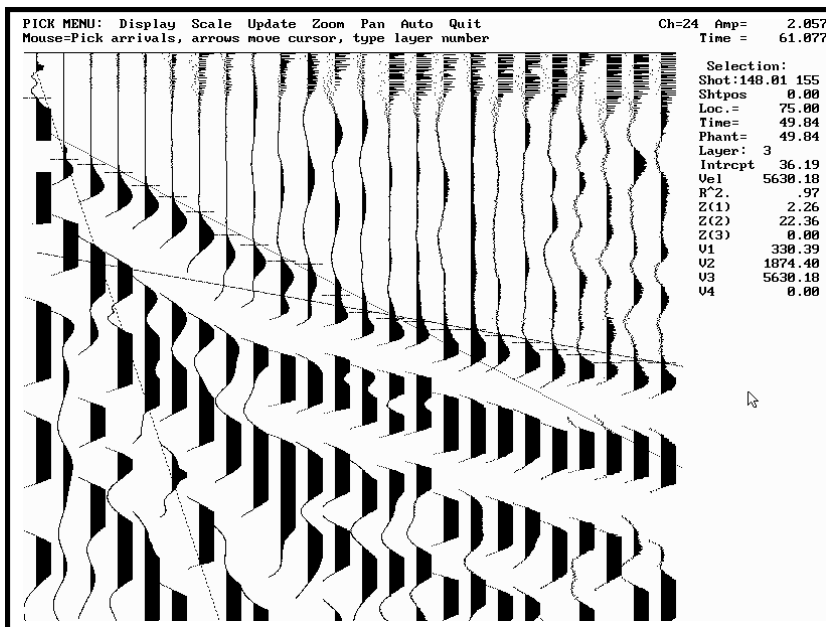
Seismic Refraction Analysis Software



VIEWSEIS is an interactive system for seismic refraction analysis. Interpretation, on up to nine sub-surface layers, can be performed using the Generalized Reciprocal Method (GRM), Delay time or Time-intercept methods.

All analysis is performed on-screen with the mouse, in up to 5 data windows.

VIEWSEIS: A complete system for:



- Interactive Analysis
- First Break Picking
- Arrival Time Analysis
- Seismic Modelling
- Arrival Time Phantoming
- GRM XY Analysis
- Velocity Analysis
- Time-Depth Analysis
- Depth Migration
- Output

First break picking is seamlessly integrated into the program.

Arrival Time Data Input:

First Break Picking:

- Make all first break picks with the mouse, assign layer numbers and review velocities during picking
- Display the trace data in either Variable Area, Wiggle or unique "Colour Wiggle" formats
- Adjust the trace gain scaling, and zoom in on a smaller time window and fewer traces to improve pick accuracy
- Load trace data from common seismograph file formats, including ABEM, Bison, EG&G, OYO, Proseis, Scintrex, SEG-1, SEG-2 and SEG-Y standards, including all floating point formats.
- Sum polarized records to cancel compressional wave energy from shear wave refraction records.
- Use the Auto Pick function for quick, consistent picks

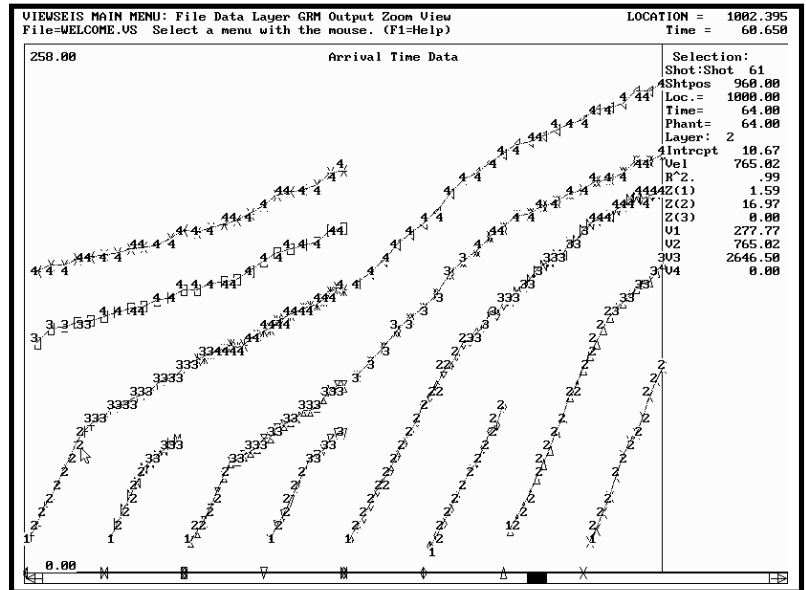
Data Entry and Editing:

- Full screen input and editing of 12 to 96 channel data, with forward, mid, and reverse shot types
- Define over 100 shots per seismic line, with any geophone spacing
- Shift the line origin, reverse the viewing angle, and instantly convert between feet and metres, even after interpretation

Arrival Time Analysis:

Layer Number Assignment:

- Interactively assign arrivals to one of 9 subsurface layers
- Velocity and intercept time calculations are displayed to aid layer assignment
- "Re-number" any layer group to insert or merge layers
- All layer number assignments are stored, allowing later editing. Ignore poor arrival time picks by assignment to a "garbage" layer.
- Automatic interpolation, if necessary, of any missing arrivals due to bad geophones
- Automatic averaging of arrival times when overlapping or duplicate data exists



Assigning arrival times to layers.

Seismic Refraction Modelling:

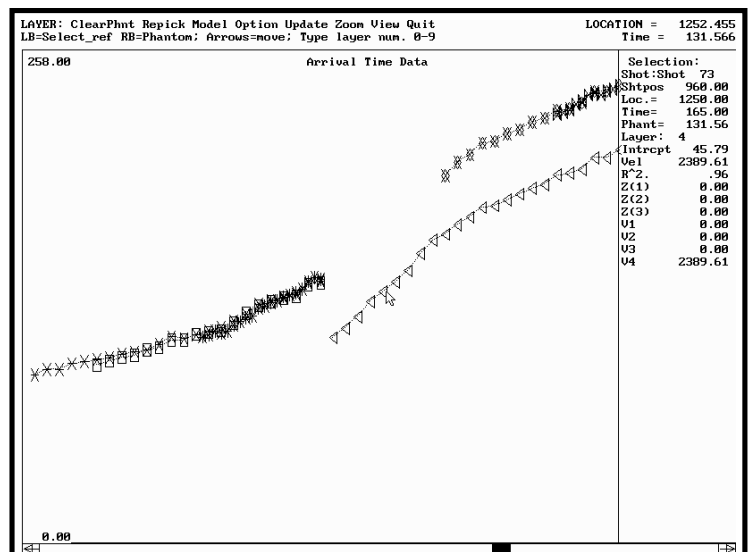
- Plot theoretical arrivals from user defined layer thicknesses, velocities and spread geometry
- Use the model for survey geometry design, hidden layer and theoretical XY calculations
- Graphically overlay model results on actual arrivals
- Graphically compare 2 model cases, each with up to 9 layers

Flexible Display Options:

- Show or hide arrivals, and assign symbols and colors, according to shot number or layer number
- Display phantom and/or unphantomed data
- Show or hide layer numbers, regression lines and velocities
- Display any combination of forward, reverse and mid shot types
- Display the entire seismic line, or quickly zoom in on a smaller segment for more detailed analysis

Data Phantoming:

- Phantom any arrival, including partial forward and reverse segments from mid-shots
- Clear phantoming on any shot, and re-phantom at any time
- Use temporary "overlay phantoming" to improve layer assignment when irregular layer interfaces are encountered



Phantoming arrival times with the mouse.

XY and Velocity Analysis:

- Compare and determine the optimum GRM XY value by selecting the start, increment, and end XY value
- Remove a slope from the velocity analysis curves to more accurately determine velocity variation (ie. regression residual calculations)
- Define laterally varying XY and velocity in up to 20 line segments per layer
- Smooth velocity transitions along the line using an n-point weighted moving average
- Plot the time-depth curves as a function of G position, laterally changing XY and velocity

Depth Migration:

- Migrate to depth using either the GRM Approximate Velocity Method or Average Upper Layer Velocity Method . If insufficient data for the GRM, Delay time and Time Intercept methods can be used.
- Plot layer surfaces using any layer arc swing angle, or straight line segments
- Enter evenly or unevenly spaced ground surface information. VIEWSEIS automatically interpolates to geophone positions.

Program Output:

- Complete user control of all scaling parameters, page size, labels, ticks and grid lines
- Output support for over 100 devices, including multi-pen plotters, dot matrix, color dot matrix and laser printers. Report quality output available on dot matrix printers.
- Output pre-view function saves paper and reduces output errors (WYSIWYG!)
- Computer Aided Drafting (CAD) interface allows unlimited output customization. Support for DXF file transfer to Autocad, Generic CAD, EasyCAD, and others.

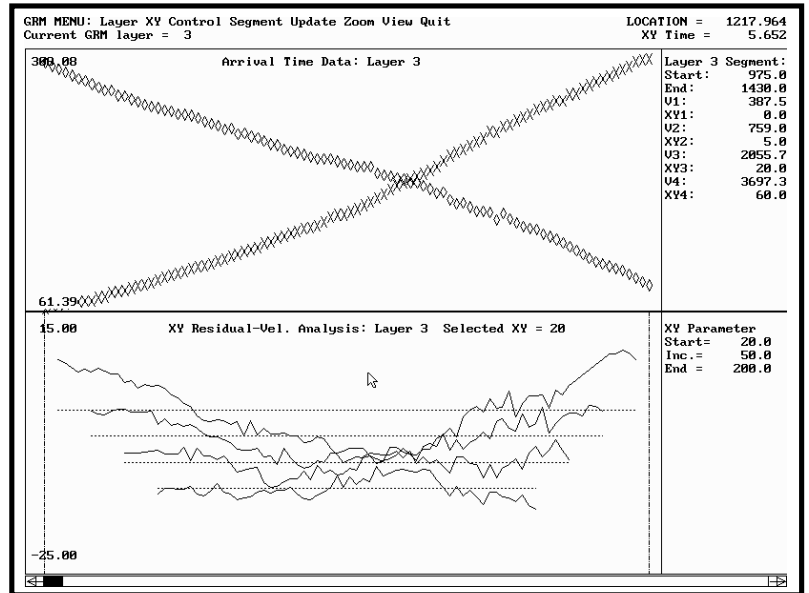
System Features:

- Extensive use of a mouse for data interaction, screen scaling, and menu selection
- Support for CGA, Hercules, EGA, VGA, and Super-VGA (800x600 and 1024x768) graphics adaptors
- Automatic detection of math co-processors, and LIM 4.0 Expanded Memory for overlays and trace data
- Comprehensive on-line context sensitive help system available from all menus
- Extensive program documentation and GRM tutorial
- Advanced file system saves all data, interpretation and screen set-up for each seismic line

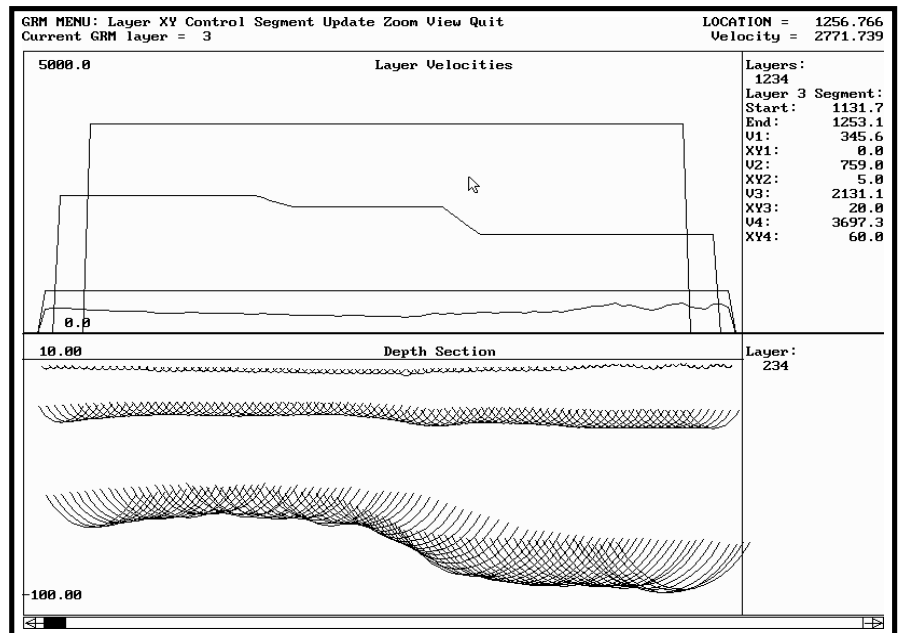
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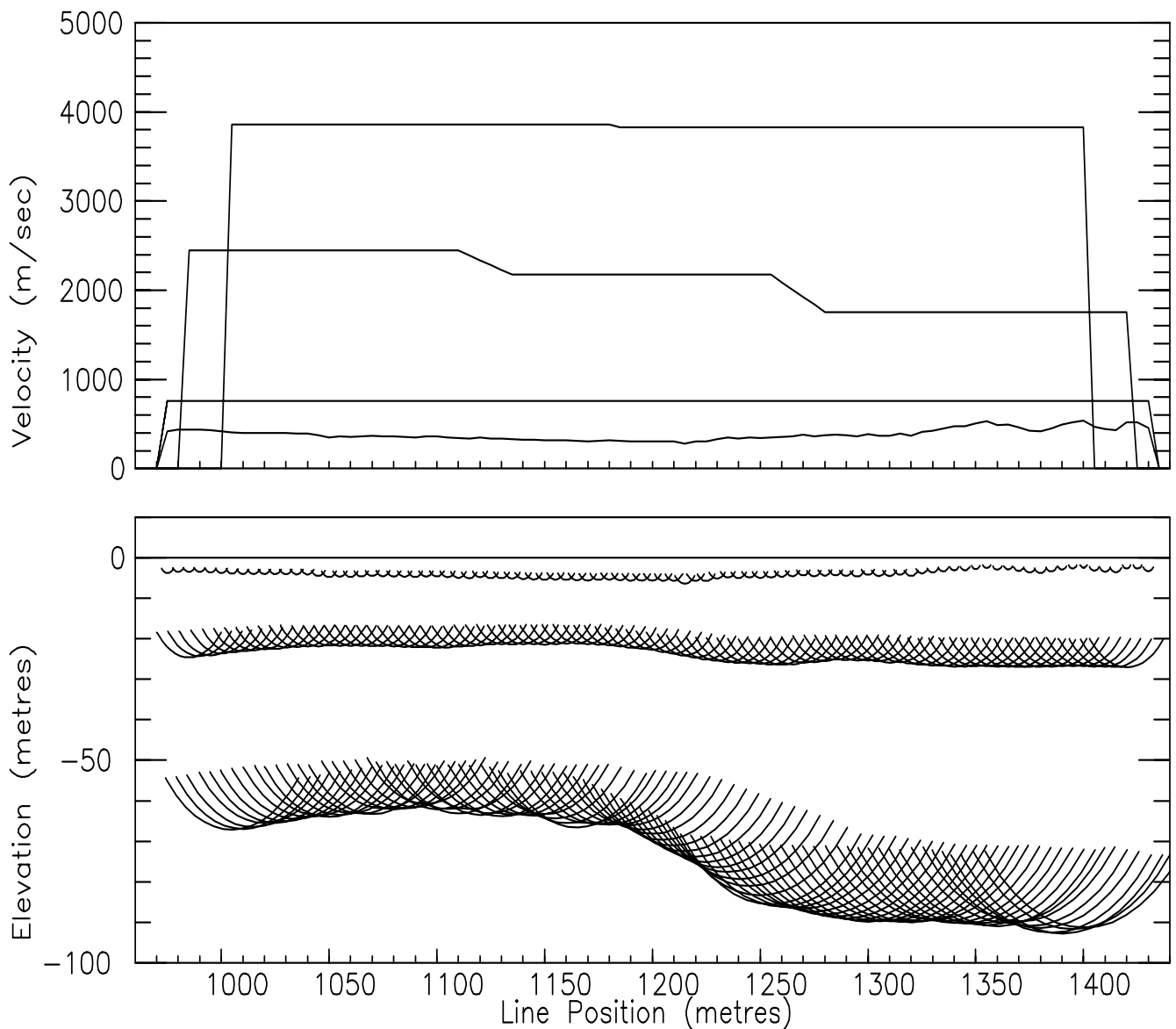
Credits: Data shown in images taken from *The Generalized Reciprocal Method of Seismic Refraction Interpretation* by D. Palmer (1980)



Phantom arrivals and velocity analysis for a range of XY values.



Final layer velocities and the resulting depth section.



VIEWSEIS Seismic Refraction System
 Example output