

Sonic Waveform Processing

TERRASCIENCES provides one of the most advanced, yet easy to use, packages for the display and analysis of exploration and production data available today. A module for the TerraStation is available to allow the processing and display of sonic waveform data. Compressional, shear, and Stoneley travel time curves can be computed.

Data Preparation and Quality Control

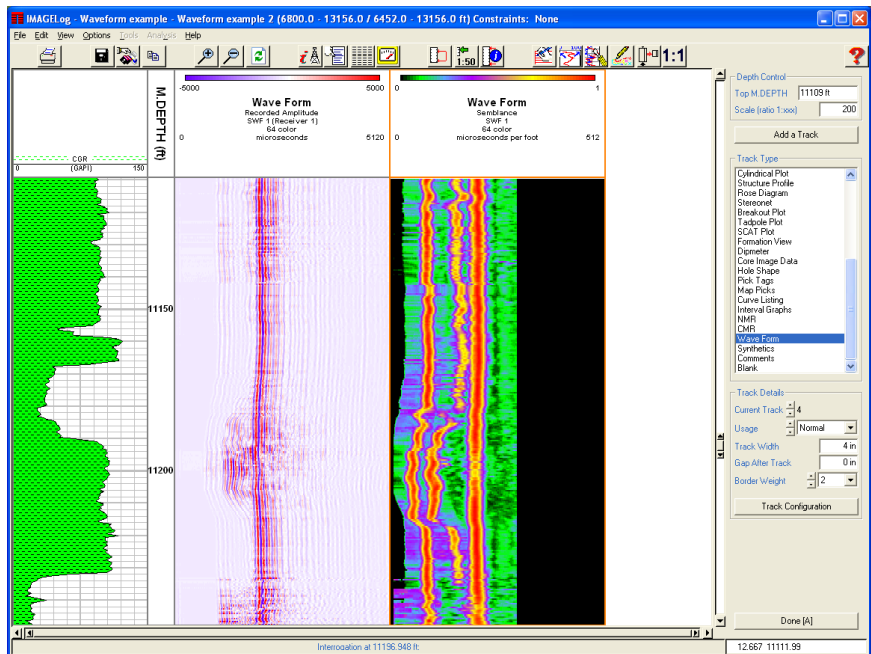
Data can be loaded from LIS and DLIS file. Quality control plots can be generated easily and quickly using our crossplot and composite log plotting capabilities.

Display of all waveforms side by side and the ability to 'mute' data before or after an event is possible.

Data Display

Waveform data can be displayed as either wiggle trace or variable density (VDL) displays. You have complete control over the color maps used for the VDL display.

Detailed views of the data from all receivers at a specified depth can be displayed (see display immediately overleaf), and the computed slowness lines can be toggled on or off.



Displays of instantaneous phase, frequency, amplitude, as well as frequency spectra and semblance can be easily generated.

Calculations

Compressional, shear, and Stoneley slowness can be computed using semblance methods and compressional slowness can be calculated using other methods including first motion slowness and T-R1. You have full control over all computation parameters. You can also create a slowness curve by tracking a feature on the waveform.

Dipole tools can be processed for anisotropy. Fast and slow shears can be computed. Azimuthal anisotropy map generated and displayed.

Additional Capabilities

Within the TerraStation are additional options for performing synthetic seismograms and rock strength calculations to complement the sonic waveform analysis.

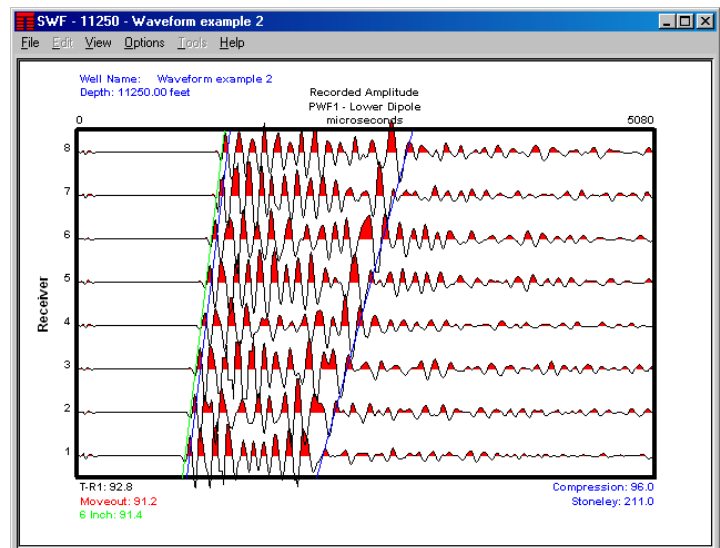
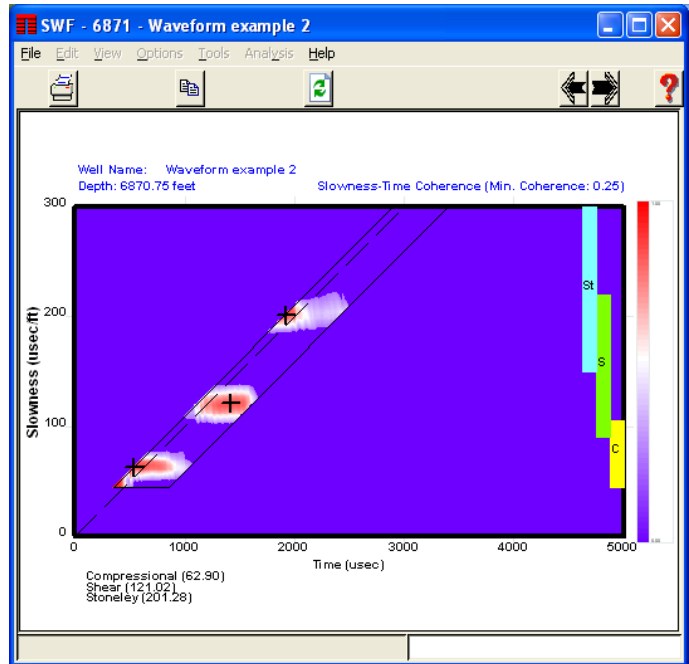
Support and Training

TERRASCIENCES provides immediate telephone and email support by trained earth science professionals. A regularly updated web site, electronic newsletter, and training courses are also available. All product upgrades are included in the maintenance and support fee.

Product Specifications



- ✓ Data loading from LIS and DLIS files.
- ✓ Handles both monopole and dipole tools.
- ✓ Application of filters to receiver data to remove noise components.
- ✓ Wiggle trace and variable density log VDL displays of the waveform data.
- ✓ User controlled color maps and display characteristics.
- ✓ 'Muting' of data based on fixed cutoff, or by wave tracking.
- ✓ Detailed waveform display of individual receivers.
- ✓ Semblance contouring function. Computed semblance track display with option of several sampling methods.
- ✓ Frequency spectrum based on Full or Fast Fourier transforms.
- ✓ Computation of compressional, shear, and Stoneley arrivals from either semblance or first motion slowness.
- ✓ Computation and display of Instantaneous Phase, Instantaneous Amplitude, and Instantaneous Frequency.
- ✓ Waveform data can be displayed with any other well data, including wireline logs, completion information, lithology, borehole imaging data, and much more.
- ✓ Additional modules for performing synthetic seismograms and rock strength computations are available within the TerraStation environment.
- ✓ Frequency dispersion crossplot and correction.
- ✓ Dipole anisotropy analysis – fast and slow shear computation, anisotropy angle and map of azimuthal anisotropy computed.



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