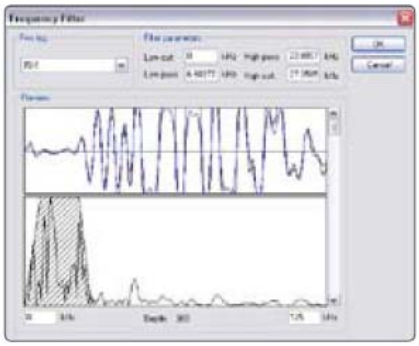
Terraplus

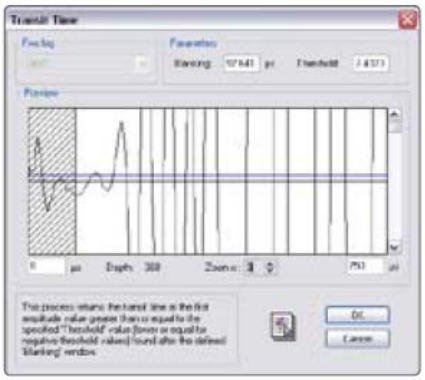
# WellCAD Full Waveform Sonic

The FWS module includes a set of processing techniques to interpret sonic data. The software provides full control of the Process by allowing the user to define the parameters



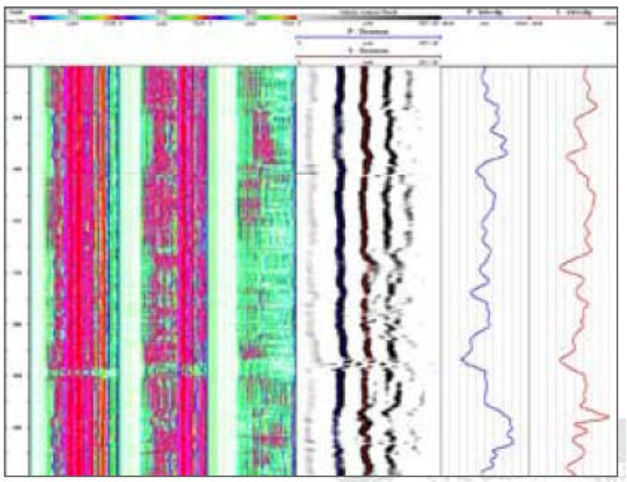
## Preprocessing

A range of preprocessing techniques are provided to get optimized data prior to applying the relevant process. Filtering can be applied using moving average, weighted average or frequency. For improved results, these filters can be combined. In some cases, it might be useful to interpolate bad traces prior to filtering.



## DT Picking

WellCAD allows different algorithms for dt pick up. The standard threshold algorithm returns the transit time at the first amplitude value greater or equal to the specified threshold value, found after the blanking window.
The advanced threshold process computes the ratio of the average value of signal and noise windows. The user may define the values for blanking, small window width, large window width and ratio threshold.



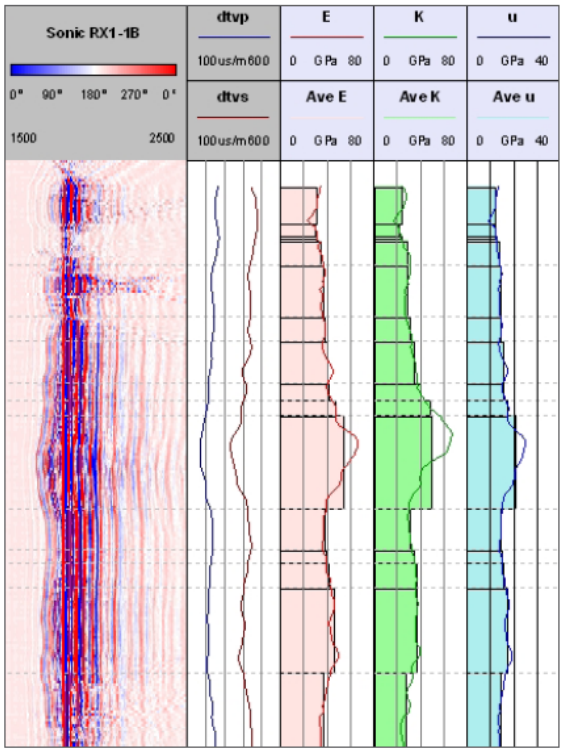
## Velocity analysis

The velocity analysis based on semblance processing can be used to derive p-, s- and tube wave velocities.

Terraplus Inc.
52 West Beaver Cr. Rd. #12, Richmond Hill, ON. Canada L4B 1L9

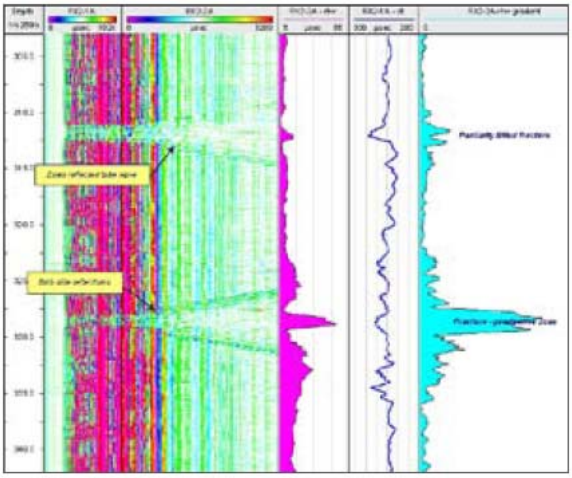
**Tel: 905-764-5505**
**Fax: 905-764-8093**

**Email: sales@terraplus.ca**
**Website: www.terraplus.ca**




## Mechanical properties computation

Sonic logs are widely used to provide formation porosity/permeability and mechanical properties. If dt compressional, dt shear and Rhob are known, WellCAD computes for each depth mechanical properties of the rocks: poisson ratio, shear modulus, young's modulus, bulk modulus, bulk compressibility.



## Reflected Tube wave analysis

The tube wave may be seen as an indicator of fracture. Prior to computation, the offset, blanking, transmitter frequency and the fluid velocity have to be defined. The process returns a curve. The value of each depth is the cumulative energy computed over a V shaped area in the late time area of the FWS log. The higher amplitude could be seen as indicator of fracture (fluid velocity defining the slope and the transmitter frequency the width).

## Cement bond logging (CBL)

Standard algorithm for cement bond quality evaluation are available (e.g. fixed and floating gate method).

*The specifications are not contractual and are subject to modifications without notice*

Terraplus Inc.
52 West Beaver Cr. Rd. #12, Richmond Hill, ON. Canada L4B 1L9
**Tel: 905-764-5505**
**Fax: 905-764-8093**
**Email: sales@terraplus.ca**
**Website: www.terraplus.ca**