**Velocity Editor**

For severe problems, manual velocity editing tools can be used to delete poor velocity picks and edit stacking velocities using a semblance spectrum.

- View the velocities globally and adjust locally by using the built-in volume sliders.
- Create new velocity functions to obtain picks in any location.
- Compare velocities with well logs.
- Apply the corrected velocities to the seismic data.

**Wavelet Shaping**

Pre-Stack Pro contains a versatile wavelet tool, which synchronizes dynamically with the Spectral Analyzer viewer. The Wavelet Tool can be used to improve vertical resolution, match frequencies on partial angle stacks, or make the wavelet consistent across angles. “Wizards” can be used to design and apply operators for cohered inversion and extended elastic impedance (EEI).

**Spectral Balancing**

Performs time-variant spectral matching across offsets or angles. A near-mid stack reference trace is created and decomposed into frequency sub-bands by a Gabor-Morlet wavelet transform. Individual sub-bands are matched to the reference before being recombined.

**Bandwidth Extension**

Allows interactive design and manipulation of wavelets to broaden spectra and enhance high-frequency response.

**List of Additional Features**

Utilities include time-depth and offset/angle conversion, resampling, NMO correction and full SEG-Y customization for export.

- Filtering including Ormsby and Butterworth
- Spatial filters for smoothing, median
- Footprint removal and destripping
- AWA scaling guided by well synthetics
- Phase rotation
- Bulk time shift application
- Time dependent gain filtering and ALE
- Q modelling and filtering
- Gain with geometric spreading
- RMS amplitude calculation
- Forward and reverse Fast Fourier Transform
- Time / depth resampling
- Time / depth conversion
- Time domain attributes: complex trace analysis, extreme, moving window, cross correlation, dip steered semblance signal-to-noise ratio, trace integration
- AWA attributes
- Offset / angle domain conversion
- Interval to RVS Velocity and depth conversion
- Offset / angle stacking and partial stacking
- Frequency domain attributes: bandwidth, amplitude and phase spectra
- Matching filters
- Volume calculator
- Inline / Crossline trace interpolation (can delete if needed to match demer interpretation grid)
- Offset / angle trace interpolation

**Our other software packages**

- **Amplitude Analysis Toolkit**
  - Pre-Stack Pro Amplitude Analysis Toolkit
  - www.sharpreflections.com
  - info@sharpreflections.com | +47 518 14 107

- **ProFib**

- **Azimuthal Toolkit**
Interactive QC and Health Checks

Good processing starts with a detailed understanding of the input data. Post-Stack Pro has QC tools to analyze and compare large volumes of different types of seismic data in inline or crossline direction, in offset, pre-stack or stacked, differently processed, or seismic vintages.

Our graphical Data Comparator allows the interactive, visual comparison of gathers and stacks, with the extraction of amplitudes on specific events or along existing horizons. The tools can be synthesized to maps or sections for easy location selection.

Compare stack or pre-stack data, of different processing or vintage, by difference, RMS, NRMS, spectral bandwidth, semblance, and signal to noise ratio. Actual amplitudes are compared to synthetic models and quantified through the complete processing sequence.

Coherent Noise Removal

Final migrated datasets are often processed conservatively, leaving multiples and other coherent events that interfere with primary reflections. It left untouched, the remainant parabolic multiples and linearly dipping events can hinder interpretation and degrade AVO integrity. Post-Stack Pro’s noise removal filters have interactive QC displays, to ensure that noise is removed without harming the rock and fluid signal.

3D Dip Filter

Designed for pre-stack, pseudo pre-stack, or post stack data. It will attenuate dipping noise in the inline and crossline direction, along common offset or angle classes, or on partial or full stacks.

Parabolic Radon

Attenuates medium to long period multiples. Our implementation uses M. Sacchi’s high-resolution technique for a clear separation of primaries and multiples.

even when moveout differences are small. It is robust against aliasing and allows control over the focusing step.

Linear Radon

The user has full control over the range of p values and the sampling with moveout.

Taw-P Decon

Strong events, such as the ECU, often generate stubborn multiple reflections. In Pre-Stack Pro, the primaries can be incorporated into a design window, whilst the multiples can be targeted within a separate application window.

The Pre-Stack Pro algorithm converts non NMO corrected CMP gathers into the tau-p domain, before applying predictive, gapped deconvolution.

Random Noise Attenuation

Noise in migrated datasets can mask detail, degrade attribute images, and reduce the effectiveness of automated horizon pickers. Pre-Stack pro contains methods to reduce random noise on both gathers and stacks.

Dip-Steered Structurally Consistent Filter (ECF3D)

Anisotropic diffusion filter used for random noise attenuation. Structurally ori- ented median filters are applied stepwise, to reduce-random noise on common-offset or angle volumes or stacks.

3D Edge Preserving Spatial Filtering

Uses semblance-weighted spatial filtering parallel to the local structure. Down- weighting dissimilar data within the aperture allows the use of larger operators, thus preserving faults or other discontinuities without smear. This algorithm was developed by T. Toner.

Gather Alignment

Aligning gathers improves stack resolution and AVO reliability.

Pre-Stack Pro provides a range of tools to improve event alignment. The methods offer dynamic QC and strong controls that help to quickly optimise the results.

Residual Moveout

RMO is an automatic semblance based picking tool that updates the RMS velocity and p field using Alkhalifah’s higher-order moveout equation. RMO delivers the updated gathers and the updated dense velocities and p fields.

Time Variant Event Alignment

Estimates and applies time shifts between neighbouring traces in a gather to maximize trace-to-trace correlations in a moving vertical window. Our implementation has many controls to avoid jumps and cycle skips:

• Time variant windows to adapt to changing seismic bandwidth from shallow to deep.
• Constraints on maximum time shift, and pick rejection with signal-to-noise threshold.