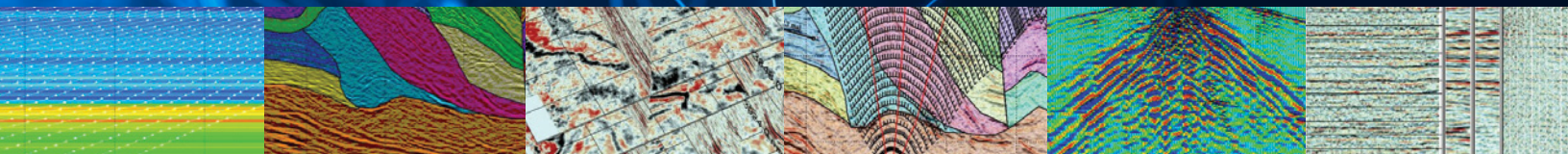# Schlumberger

VISTA

Desktop seismic data processing software

VISTA

Desktop seismic data processing software

Comprehensive seismic processing and QC software

VISTA* desktop seismic data processing software provides data processing from early-stage acquisition QC to final processing and interpretation of 2D and 3D seismic data acquired on land or offshore or as a vertical seismic profile (VSP), in all industry and manufacturer data formats. With VISTA software, you can easily navigate workflows and seamlessly evaluate datasets using the interactive and interlinked displays. You can also add in your own algorithms through a C++ or MATLAB SDK interface. The software supports advanced processing capabilities including amplitude variation with offset (AVO) and angle of incidence (AVA) analysis, multicomponent processing, and 2D and 3D VSP processing.
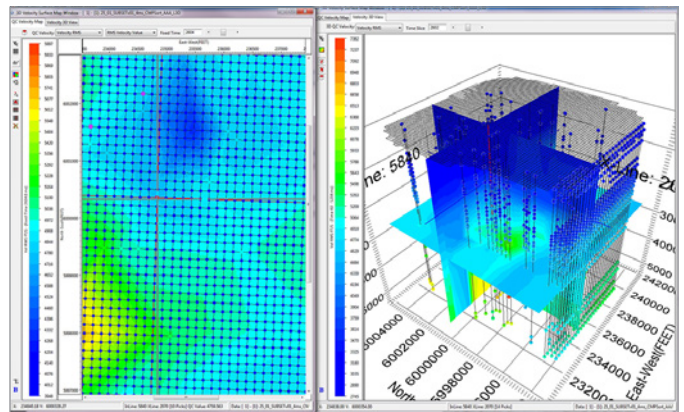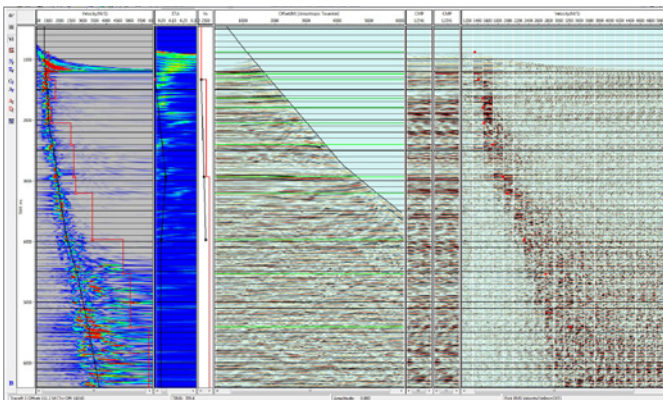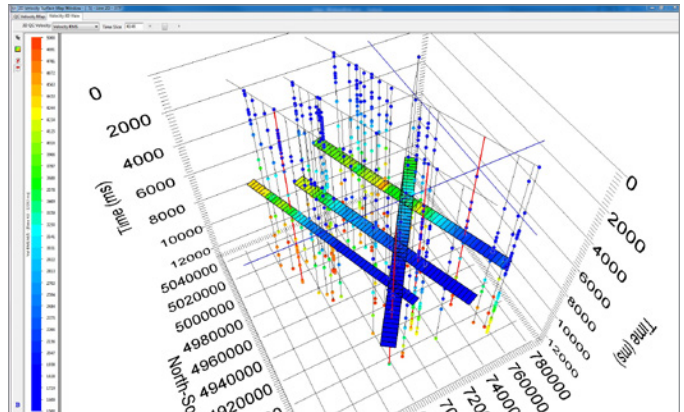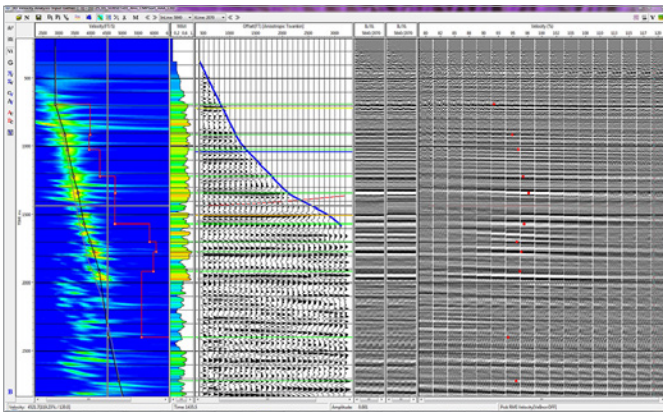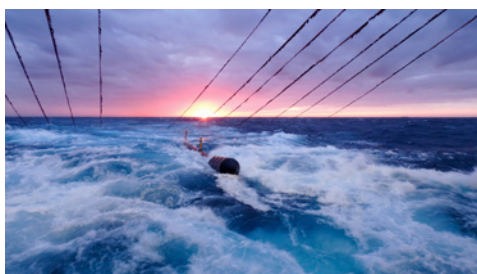

Interactive velocity analysis.

Multiple applications

Support a wide variety of acquisitions and seismic survey data types

- Land
- Marine
- Ocean bottom cable (OBC)
- Transition zones
- VSP
- Multicomponent

Sign up for hands-on Geosolutions software training customized to your needs. Click here. »»

VISTA software is suitable for in-field processing and QC of a wide range of marine and land seismic data, and all seismic data types.

Packages

VISTA software is available in four packages to meet the specific needs of your project or operation.

Component	VISTA Field QC	VISTA Field Pro	VISTA Full Pro	VISTA 2D VSP Pro and VISTA 3D VSP Pro
SCSI tape input and output	X	X	X	X
Full-geometry QC	X	X	X	X
Trace edit, scale, filter, and deconvolution	X	X	X	X
Stack (common midpoint [CMP]), receiver, source, and ensemble)	X	X	X	X
Frequency-wavenumber (*f-k*) radon, tau-p, radial trace, and curvelet transforms	X	X	X	X
Elevation and refraction statics	X	X	X	–
Surface-consistent scale, deconvolution, and statics	–	X	X	–
Residual statics	–	X	X	–
Advanced noise removal	–	X	X	–
Signal enhancement	–	X	X	–
Dip moveout (DMO) processing	–	X	X	–
AVO and AVA analysis	–	X	X	–
Multiple attenuation	–	X	X	X
Converted-wave and multicomponent processing	–	X	X	X
Poststack migration	–	X	X	–
Prestack migration	–	–	X	–
2D, 3D, and 5D interpolation and regularization	–	–	X	–
VSP depth imaging	–	–	–	X
Prestack and poststack depth migration	–	–	X	–
Time and depth image analysis	–	–	X	X

Version 2020

Continuous improvement

Consistent product development cycle
- Annual software release
- Regular product updates
- University consortium research membership

Easy-to-learn application

Worldwide software training program
- Public and private courses
- Technical and theory-based courses

Desktop- and web-based user resources
- Tutorials
- Videos
- New product features manuals
- Case studies and technical reports
- Industry articles
- Worldwide customer support from dedicated VISTA software specialists

System requirements

Operating systems
- 64-bit Microsoft® Windows® operating systems

Minimum system requirements
- Standard, off-the-shelf hardware
- Optimized for multicore hardware
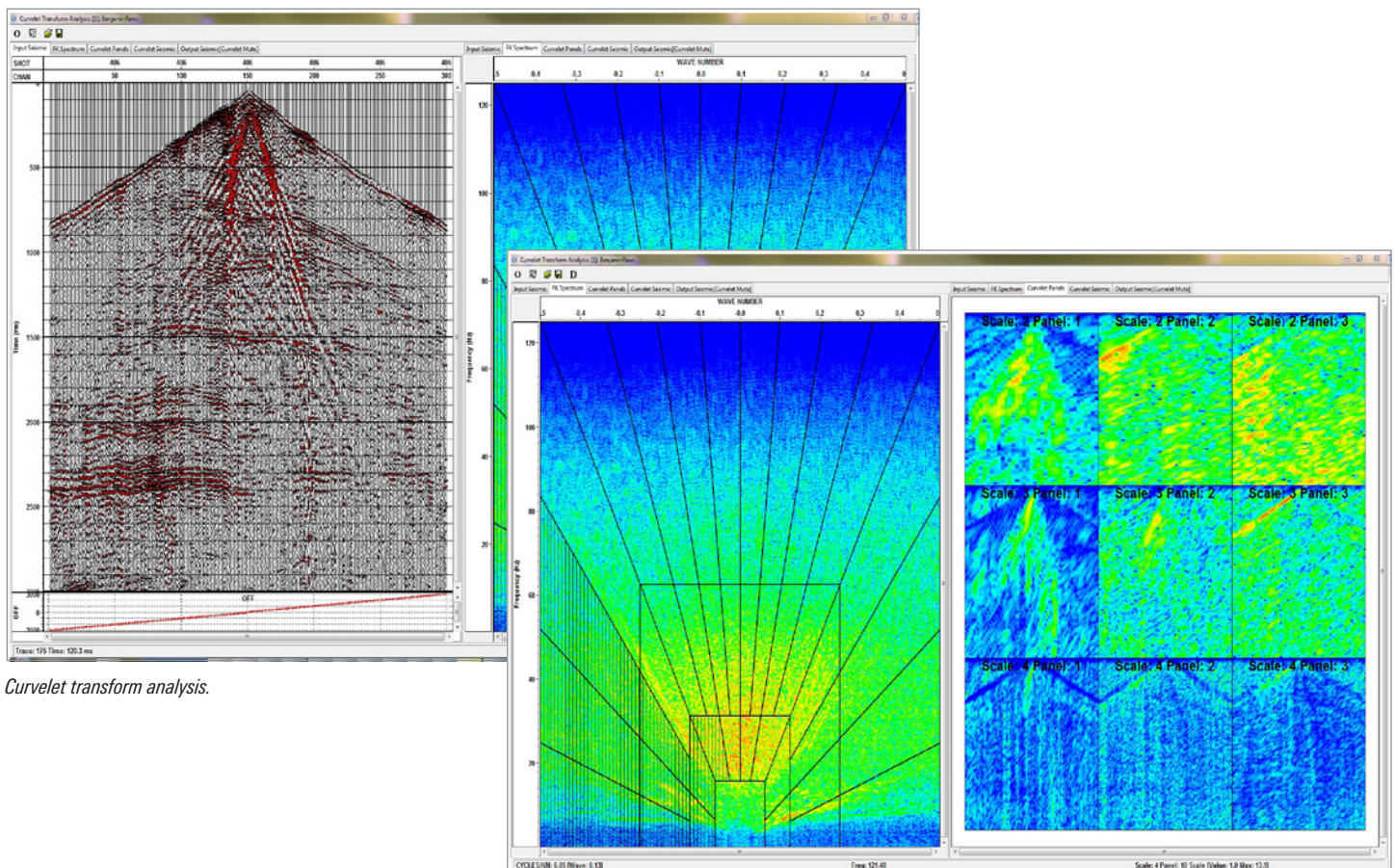
Data compatibility
- All common file formats

Licensing options

Versatile licensing options for individual or shared usage
- Portable USB license key
- Networked USB license key

Flexible license purchase or rental plans
- Flexible purchase options and annual maintenance
- Annual lease
- Short-term rental
- University donation available

Curvelet transform analysis.

The VISTA software advantage

Benefits

User-oriented design
- Benefit from an icon-driven interface and easy-to-learn software functionality

Multiple QC tools
- Plot multiple header values on the same display or plot combined header values, mathematical operations, or results from seismic processes
- Create header values from mathematical operations and seismic processes such as statics or signal-to-noise ratio computations
- Display files in a similar fashion (e.g., statics, mute functions, velocities, or any value computed from the data)

Interlinked attribute and seismic display window
- Integrate all phases of processing: survey geometry, velocity picking, refraction and residual statics, surface-consistent attributes, and migration imaging picking
- Identify anomalies and display the relevant data for inspection using the data attribute window

Data loading
- Integrate with a large variety of supported data formats: SEG-B, SEG-Y, SEG-D, SEG-2, SAC, MIRF, ZGY, JavaSeis, LDF, LAS
- Merge poststack 2D and 3D surveys and repair SEG-Y files using flexible utility tools
- Overwrite incorrect or missing headers easily with powerful operation flows

Production optimization
- Load and apply processing flows to different input datasets easily
- Control and queue job flows on network or local machines interactively for computationally intensive flow runs
- Use the multistep flow capabilities of VISTA software to increase your efficiency

### Complete prestack seismic processing
- Apply processes such as velocity analysis, residual moveout correction, residual statics, trim statics, noise attenuation, AVO angle decomposition, muting, and more
- Interpret poststack seismic data
- Test numerous poststack processes including deconvolution, noise attenuation, 2D and 3D poststack migration, and a powerful principal component decomposition signal enhancement program to enhance seismic data prior to and during interpretation
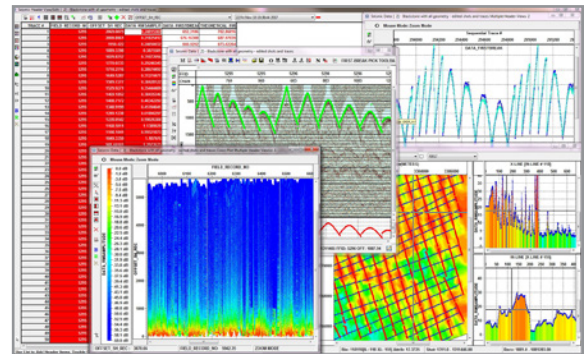
Open system
- Add your own algorithms to the existing suite of software using the MATLAB programming development interface
- Create ASCII files that you can edit with standard word processing or spreadsheet software
- Benefit from VISTA software using industry standard formats wherever they exist
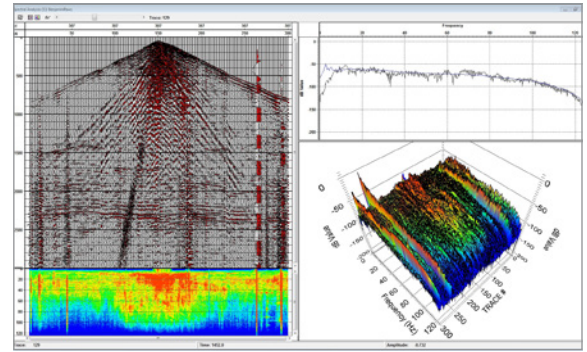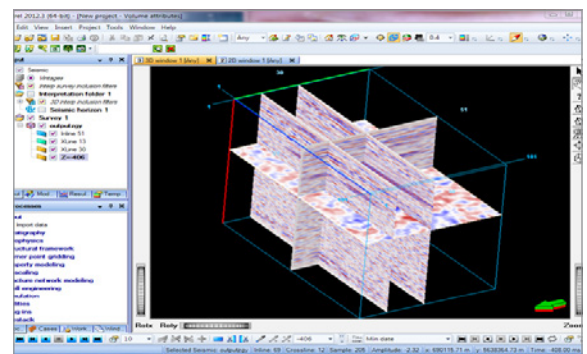

Data frequency analysis.
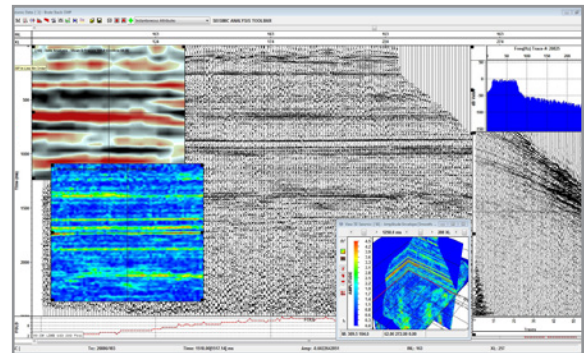
Multiple attribute display.

Interactive multiple Interactive windows.

VISTA software dataset loaded into the Petrel* E&P software platform.

Features

Automatic data editing using threshold criteria

- Apply thresholds for omitting traces from the processing sequence and edit thresholds to exclude a different set of traces

Station position QC

- Use interactive tools for station geometry prediction, verification, and QC
- Automatically detect geometry errors

Multiple input and output processing flows

- Leverage the ability to have multiple inputs and outputs within processing flows
- Enable simultaneous generation of alternative products that aid in process testing
- Manipulate fractions of the data according to a particular key (e.g., matching vibroseis data with dynamite data)

Statistical analysis

- Indicate signal-to-noise ratio, filter panels, amplitude spectra, and *f-k* analysis
- Use for trace editing, polarity reversals, and noise and dead trace detection

Real-time velocity analysis and QC

- Get on-the-fly interactive velocity and analysis using semblance, offset stack gathers, constant velocity stack (CVS), or multivelocity function stack (MVFS)
- Benefit from interactive displays of velocity data in cross-section and time slice views with an interactive base map
- Use simultaneous interactive picking of velocity and eta functions on gathers

Flexible trace sorting

- Achieve versatility in trace sorting with range selection on any trace header and sorting up to three keys deep

Project history

- Track history of input data, processing workflows, and the parameters used

Montage plotting

- Create sophisticated scaled plots that include side labels, seismic data, attributes, and log displays

Documentation and help

- Get online help for all interactive windows and modules
- Read step-by-step instructions and tutorials on the various data types (2D, 3D, and VSP) and the necessary files for processing the data
- Access online instructions with example screenshots and plots
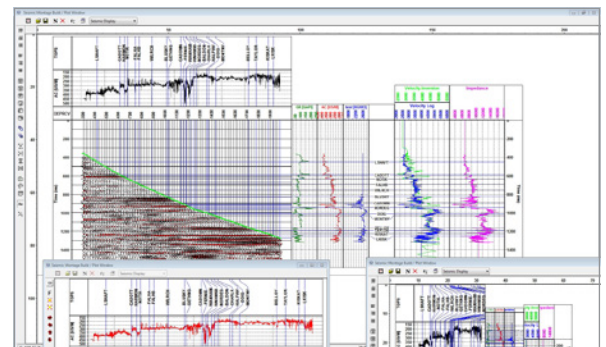- Watch instructional videos to learn more
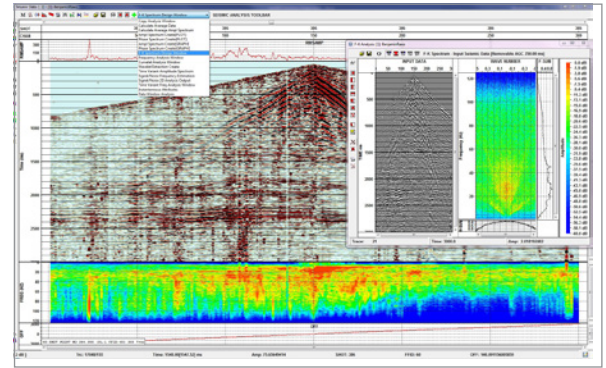
Interactive calculations.
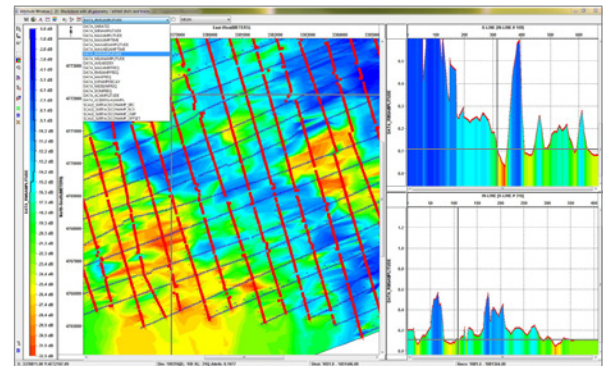
Statistical analysis.
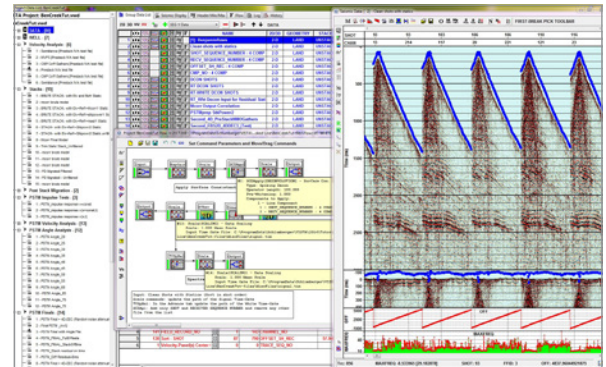
Graphical interface.


Plot montage.

VISTA Field QC

## Premier tool for in-field processing and QC

- Disk and tape input from industry standard formats supported
- Wide variety of SCSI devices supported
- Instrumentation tests, recording parameter QC, and vibroseis testing
- Verification of position information using seismic data
  - Energy decay versus offset
  - First arrivals (actual versus predicted)
  - Field stacks
  - Time slices
  - Use of inline and crossline displays
  - Interactive shot and receiver location prediction
  - Interactive spreadsheets, ASCII imports and exports, and user-defined equations to manipulate headers
- Quality control indicators
  - Filter panels
  - Amplitude spectra
  - *f-k* spectra analysis
  - Deconvolution testing
  - Signal-to-noise indicators: build and display by shot, receiver, CMP, or offset
- Trace editing for automatic and semiautomatic detection of noise, dead traces, reverse polarity, and more
- Standard processing sequences
  - Scaling, filtering, and deconvolution
  - Multilayer and static analysis
  - Elevation and refraction statics with and without first-break picking
  - Powerful on-the-fly interactive velocity analysis and velocity field QC
- Linear moveout first break picking
- Noise attenuation and signal enhancement techniques
- User-expandable headers to handle multicomponent passive seismic and other data
- Automatic building of sort indexes for field QC (e.g., common shot, receiver, CMP, offset, and component)
- Customer deliverables with full project history
- Interactive montage plotting (easily create scaled plots including side labels, seismic data, attributes and log displays)
- No limitations on channel count or record length
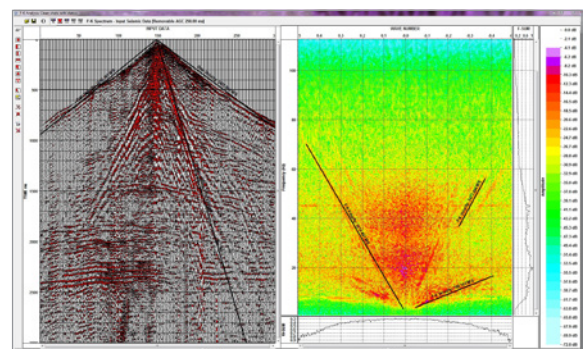- SDK supplied through MATLAB interface

SCSI tape input.
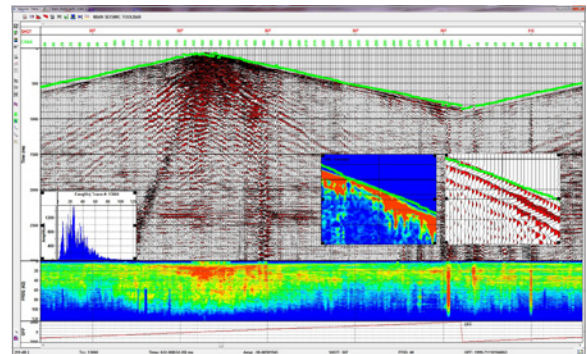
*Seismic display window.*
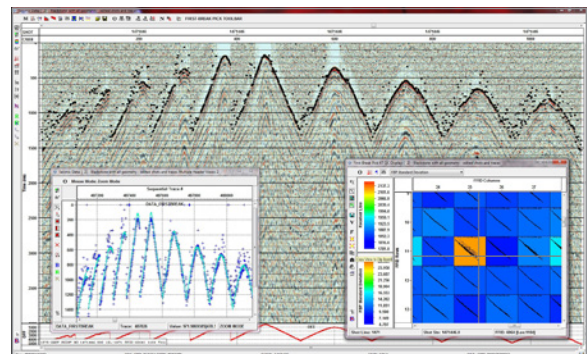
Combined QC displays.

*The f-k analysis window.*

VISTA Field Pro

Advanced field package, including full geometry QC and poststack migration

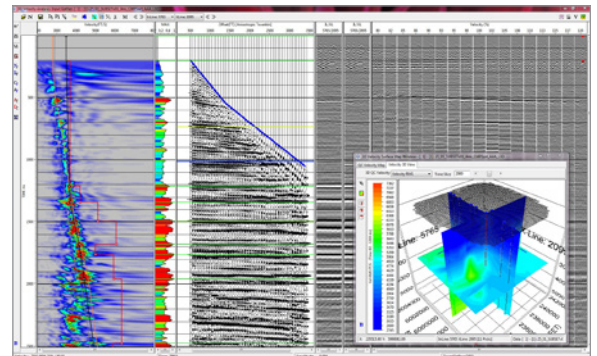### Includes all VISTA Field QC capabilities

- Field QC through to 2D and 3D poststack migration
- Standard processing sequences
  - Surface-consistent scaling and deconvolution
  - Time-variant spectral balancing
  - Several automatic and interactive techniques for residual statics
  - DMO processing
  - On-the-fly interactive velocity analysis using semblance, common offset gather stack, and CVS or MVFSs
  - Normal moveout (NMO)—second or fourth order—from fixed or floating datum or from true surface topography
- Several noise attenuation algorithms
  - *f/Kx-Ky*, *f-x/f-xy*, *fx-fk*
  - Tau-p, radon, and radial trace transforms
  - Interactive curvelet transform design and application
  - 3D ground roll for elimination of linear noise
  - Proprietary burst noise attenuation (e.g., swell noise, spikes)
  - 4D and 5D-DEC proprietary noise estimator including effects of structure, statics, and coherence
  - Rank reduction noise attenuation (e.g., Cadzow)
  - Adaptive subtraction algorithm to remove modeled noise, including linear noise, random noise, and multiples
- True amplitude processing sequence
- AVO and AVA processing capabilities
- Interactive poststack Q analysis
- Forward and inverse Q analyses
- Poststack time migration
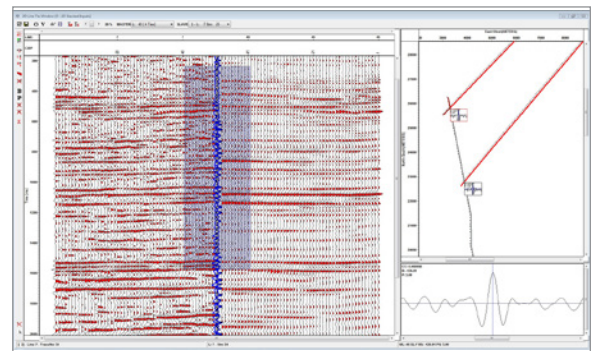 - *f-k*
  - Kirchhoff
  - Finite difference
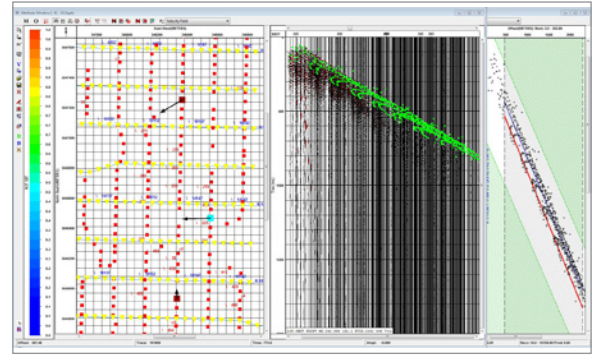
Station prediction window.
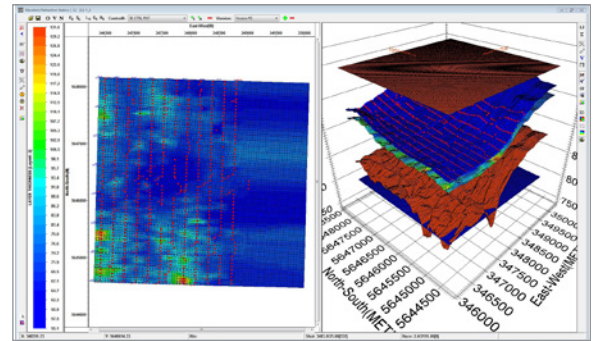
*Refraction statics.*

Interactive velocity analysis.


2D line tie window.

VISTA Full Pro

The complete solution from QC to prestack migration and time-depth image analysis

### Includes all VISTA Field QC and VISTA Field Pro, plus

- Full processing from demultiplex to prestack time or depth migrations
- Land, OBC, and marine processing
- Batch processing using any network node (and multiple CPUs) for true parallel processing
- Multiple attenuation by *f-k*, radon transform, or surface-related multiple elimination (SRME)
- Interactive 2D multiline tie and 3D multisurvey merger
- 2D and 3D automatic velocity estimation
- 3D poststack trace interpolation
- 5D prestack trace interpolation
- Prestack and poststack time migrations
- Interactive prestack time migration velocity analysis
- Interactive velocity model building for depth migration
- Prestack and poststack depth migrations
- Multicomponent and converted-wave QC and processing
  - Tilt correction and Alford rotations
  - True-surface NMO with converted-wave velocity (V_c)
  - Converted-wave receiver statics for stack power maximization
  - Conversions between primary wave velocity (V_p), V_c, and shear wave velocity (V_s)
  - Conversion between P-wave (PP) and S-wave (PS) two-way times — stretching and squeezing of stack sections
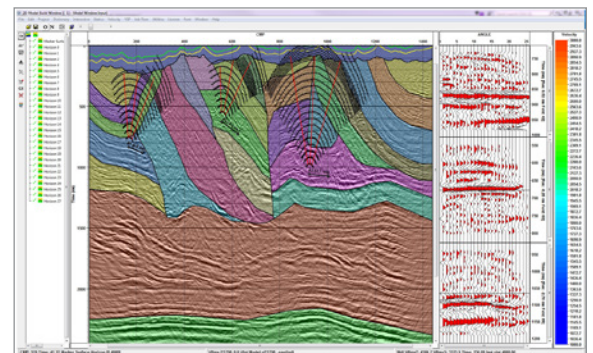 - Asymptotic conversion-point (ACP) and true common conversion-point (CCP) stacking
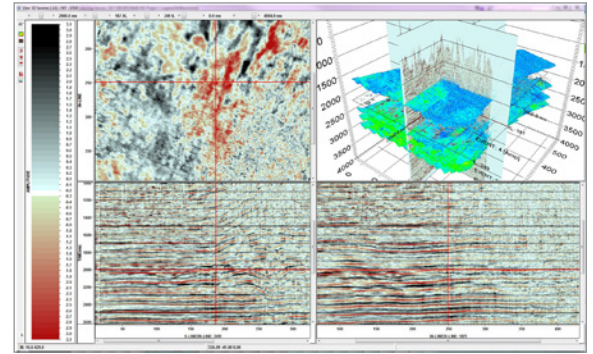
Interactive 3D display.
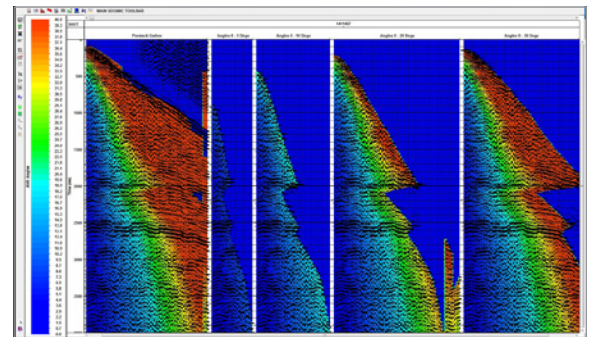
AVO and AVA QC tools.
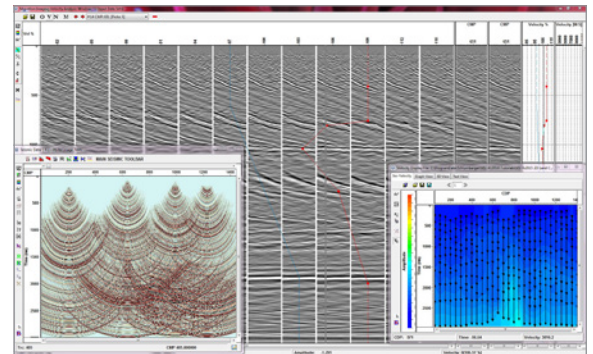
Migration analysis.

*Prestack depth imaging.*

VISTA 2D VSP Pro and VISTA 3D VSP Pro

Complete VSP QC and processing for 2D and 3D VSP data

**2D VSP Pro available as a stand-alone package or an add-on to other VISTA software packages**

- 2D VSP from field to final image
- Full 2D VSP geometry QC
- Zero-offset and walkaway processing algorithms
- Single component or multicomponent processing
- Automatic and interactive VSP first-break picking
- Noise attenuation and signal enhancement techniques
- Interactive hodogram analysis
- Automatic 3C rotation
- Vertical rotation for deviated wells
- Multiple wavefield separation techniques
- Multicomponent wavefield separation
- LAS log viewing and editing
- Synthetic generation using sonic and optional density log curves
- Sonic calibration and velocity profile analysis
- Interactive VSP Q analysis
- Interactive VSP look-ahead window
- Forward and inverse Q filtering
- 2D VSP common depth point (CDP) transform
- Interactive 2D VSP anisotropic model building and inversion
- 2D Kirchhoff depth migration

**3D VSP Pro available as an add-on to VISTA Full Pro**

- Includes all 2D VSP capabilities plus
  - Process 3D VSPs from field to final image
  - Full 3D VSP geometry QC
  - 3C–3D VSP first-break picking window
  - Interactive 3D VSP anisotropic model building and inversion
  - 3D VSP CDP transform
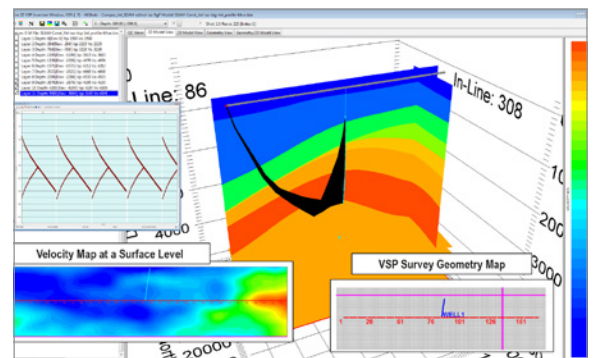 - 3D Kirchhoff depth migration
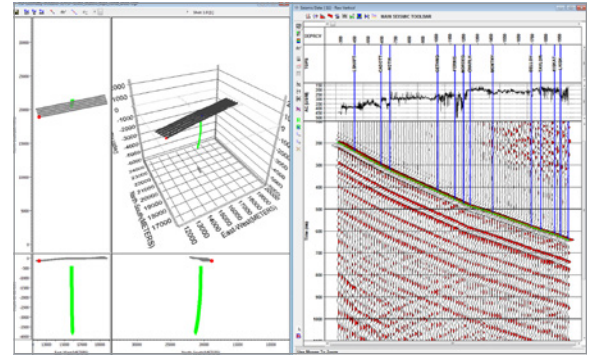
3D VSP geometry QC and log display window.
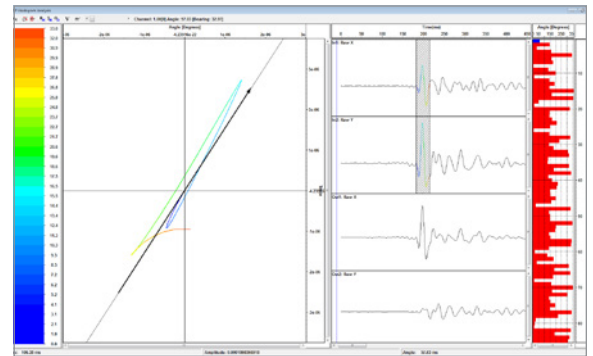
Interactive VSP hodogram window.
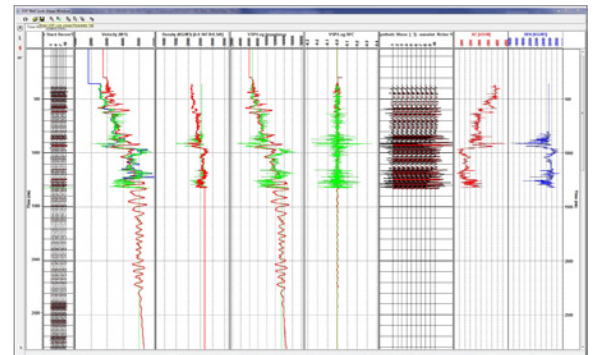
Interactive VSP look-ahead window.

2D and 3D VSP model building and inversion.

Version 2020

Learn more at
slb.com/VISTA

VISTA Software Sales and Support
Direct (Canada): 1-403-538-8999
E-mail: vista@slb.com

slb.com/VISTA

Schlumberger