DecisionSpace® Seismic Attributes Software

OVERVIEW

DecisionSpace® Seismic Attributes software provides the functionality to calculate seismic attributes from seismic data volumes as well as perform additional post-processing signal enhancements of an attribute or seismic volume. Because seismic attributes remain a reliable geophysical approach to understanding subtle subsurface characteristics and features, DecisionSpace Seismic Attributes software includes a comprehensive range of Poststack™ volume attribute calculations including continuity, curvature and sweetness, along with other industry standard calculations that can all be efficiently executed via the DecisionSpace Geosciences suite. For the geoscientist’s qualitative workflows, the application can also perform volume math comparisons as well as time-depth domain conversions.

Depending on the geology in the region or the project, seismic attributes remain one of the most dependable tools for direct hydrocarbon identification as well as providing an invaluable visual reference to the interpreter doing complex fault and horizon interpretations. Landmark’s volume calculation approach makes attribute calculation and data conditioning easy and efficient for handling large volumes. The application also contains a full library of horizon attributes and waveform classification technologies. DecisionSpace Seismic Attributes software is a module of the DecisionSpace Geosciences suite, a unified visualization, interpretation, and modeling workspace where asset teams can collaborate more effectively to evaluate and develop assets. It delivers a true multi-user environment with unprecedented integration across multi-domain workflows and data types—all on the award winning OpenWorks® information management foundation.
**BENEFITS**

**Signal Enhancement and Volume Calculations Improve the Seismic Without Processing Cost or Delays**
The integrated interpretation environment provides fundamental seismic processing tools for 2D, 3D, and volume processes. This gives the interpreter the ability to filter, enhance, or test different signature parameters directly from the interpretation workspace without having to wait for a reprocessing exercise.

**DecisionSpace Geosciences Software Scenario Testing Enables “What If” Prestack and Poststack Application Comparisons**
The ability to interactively view the seismic data effects on the fly within the same viewing window allows for more precise understanding of data quality and interpretation readiness.

**Multi-View 1D/2D/3D Provide Precise Geologic Perspective in Context of Horizons and Faults**
The interpreter has flexible yet precise control to view seismic data from multiple perspectives to gain the best understanding of the geologic influences on horizon and fault interpretation workflows. All windows can be interpreted within and dynamically shared between views, making activities, such as standard attribute-based fault interpretation picking, more efficient and accurate.

**Comprehensive Library of Proven Poststack Attribute Calculations**
A thorough and growing list of fundamental seismic attributes includes common amplitude, phase, frequency, shaded relief, dip, azimuth, Structure Cube for discontinuity, and curvature attributes. Unique memory performance design allows for efficient attribute calculation of both 2D and 3D data.

**Time-to-Depth Conversion Provides Flexibility to Work in Any Domain**
The interpreter is provided the flexibility to work in time, depth, or both domains giving them the ability to craft a “best practice” workflow relative to their challenge and performance requirements.
FEATURES

Seismic Volume Attribute Generation
Generates a comprehensive array of 2D/3D poststack seismic attributes including amplitude, frequency, phase, relief, structural and miscellaneous attributes. To best visualize subtle characteristics of the seismic volume, among the more than 30 attribute calculations, the software contains a wide array of advanced calculations like Structure Cube for Discontinuity, curvature, sweetness, and several variations of seismic shaded relief.

Horizon Attribute Library
Essential for understanding lithology and pore characteristics, the DecisionSpace Seismic Attributes software includes a complete catalog of horizon attribute algorithms, including amplitude extraction techniques and both supervised and unsupervised waveform classifications. Calculated seismic attributes are easily merged with well-based zone attributes into the DecisionSpace ZoneManager™ software for reservoir characterization validation.

Attribute Processing
Noise removal and data enhancement features include the ability to process attribute or seismic volumes using algorithms for gain, standard filtering, structure filters, spectral shaping, and a range of specialized tools.

Structural Filtering
To better understand subtle fault changes, Landmark provides advanced structural filtering for coherency analysis that use fault preservation and across-fault smoothing techniques depending on the data requirements.
System and Software

**SOFTWARE REQUIREMENTS**

- OpenWorks® 5000.8.3.0
- DecisionSpace® Base module

**OPERATING SYSTEMS**

- Red Hat® Enterprise Linux®
- Workstation 5.3, 64 bit
- Windows® 7, 64 bit

### Spectral Shaping

For signal-to-noise enhancement, Landmark provides spectral shaping capabilities for data matching of amplitude spectrums and spectral shaping processes, including spectral whitening and spectral blending.

### Volume Math

For comparison of data volumes, Landmark enables the ability to do volume math calculations, scaling either on the entire volume or an easy-to-define area of interest determined by the user.

### Time-Depth Conversion

High performance and selectable conversion of 2D or 3D volumes for domain conversion enable interpreters to select working domain preference.

### Fingertip Project and Data Access with Processing History

With DecisionSpace Geosciences software, instant access to project or geophysical data is available on demand to streamline the interpreter’s data administration needs. To ensure future collaboration is enhanced, prior interpretation sessions are captured with a processing history feature that provides an audit trail of key seismic volumes.