

The **S**eisWorks Family

Trusted

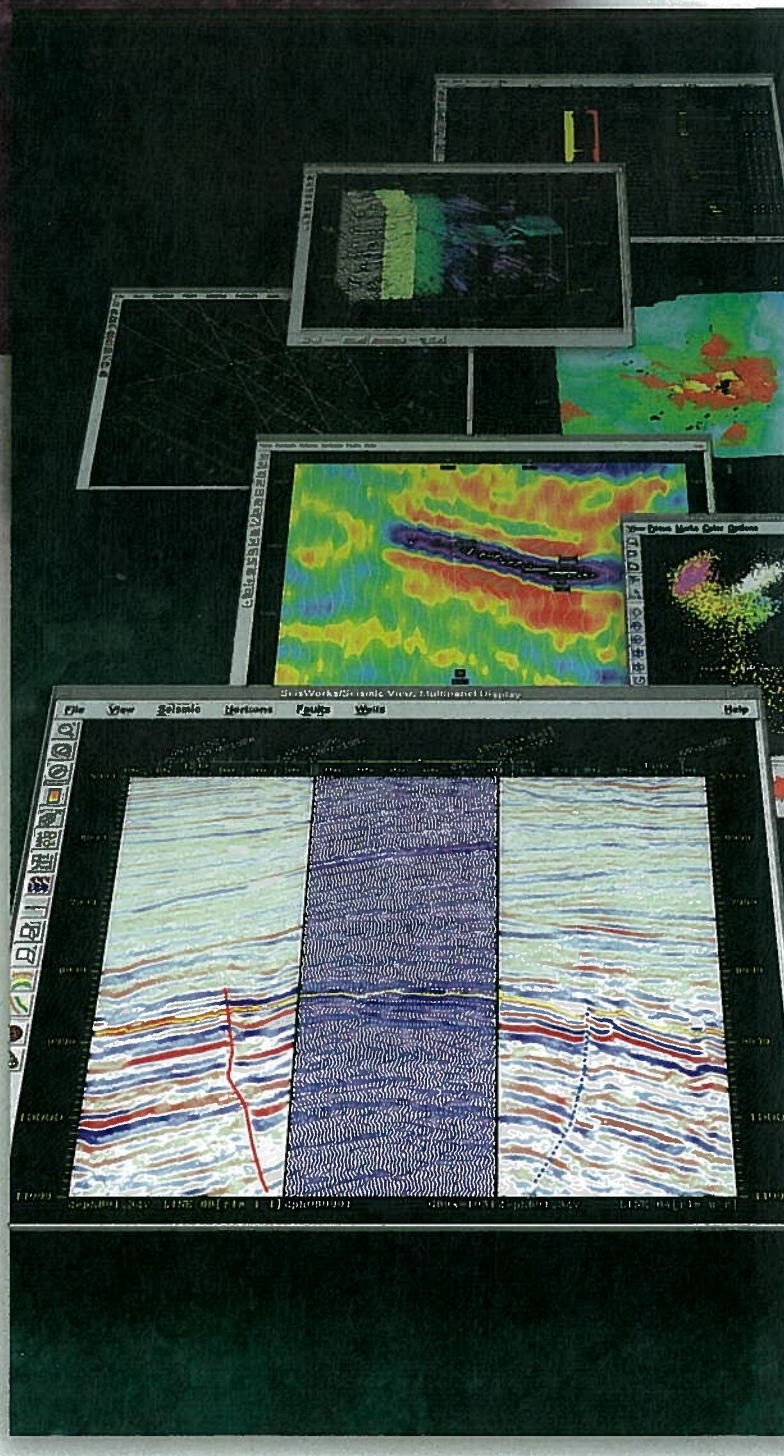
Interpretation

Technology.

Proven

Oil Finding

Success.



Landmark

SeisWorks: The Industry's Most T

At Landmark, we know the exploration and production industry. We understand the value of your time and assets. And your need to improve productivity.

That's why we rely on the extensive input of oil and gas professionals from around the world to develop and continuously improve our complete line of integrated solutions for seismic interpretation, analysis and visualization. The result is an integrated family of proven solutions that help you quickly and accurately transform complex and expensive data into the most competitive business decisions possible.

Used by more geoscientists to find more oil and gas – worldwide.

When it comes to proven oil finding success, SeisWorks® is in a class of its own.

Fast, accurate and easy-to-use, the SeisWorks Family is preferred throughout the oil and gas industry by geoscientists, partners, consultants, colleagues, investors and universities. From members of multi-disciplinary teams within large multinational corporations to individual geoscientists running their own companies, SeisWorks is *the* preferred technology choice. Worldwide.

Incorporating more good ideas from more geoscientists than any other interpretation product on the market.

Today's SeisWorks is the result of 14 years of continuous improvement in seismic interpretation technology. Landmark pioneered 3D interpretation workstation technology and paved the way for comprehensive, industry-wide use of 3D seismic surveying. The SeisWorks Family of today is superior because of user input — whether it's a new feature, an improved interface or a better workflow. SeisWorks simply contains more good ideas from more geoscientists than any other interpretation system on the market.

Trusted Name in Seismic Interpretation

Proven interpretation technology from the industry's interpretation leader.

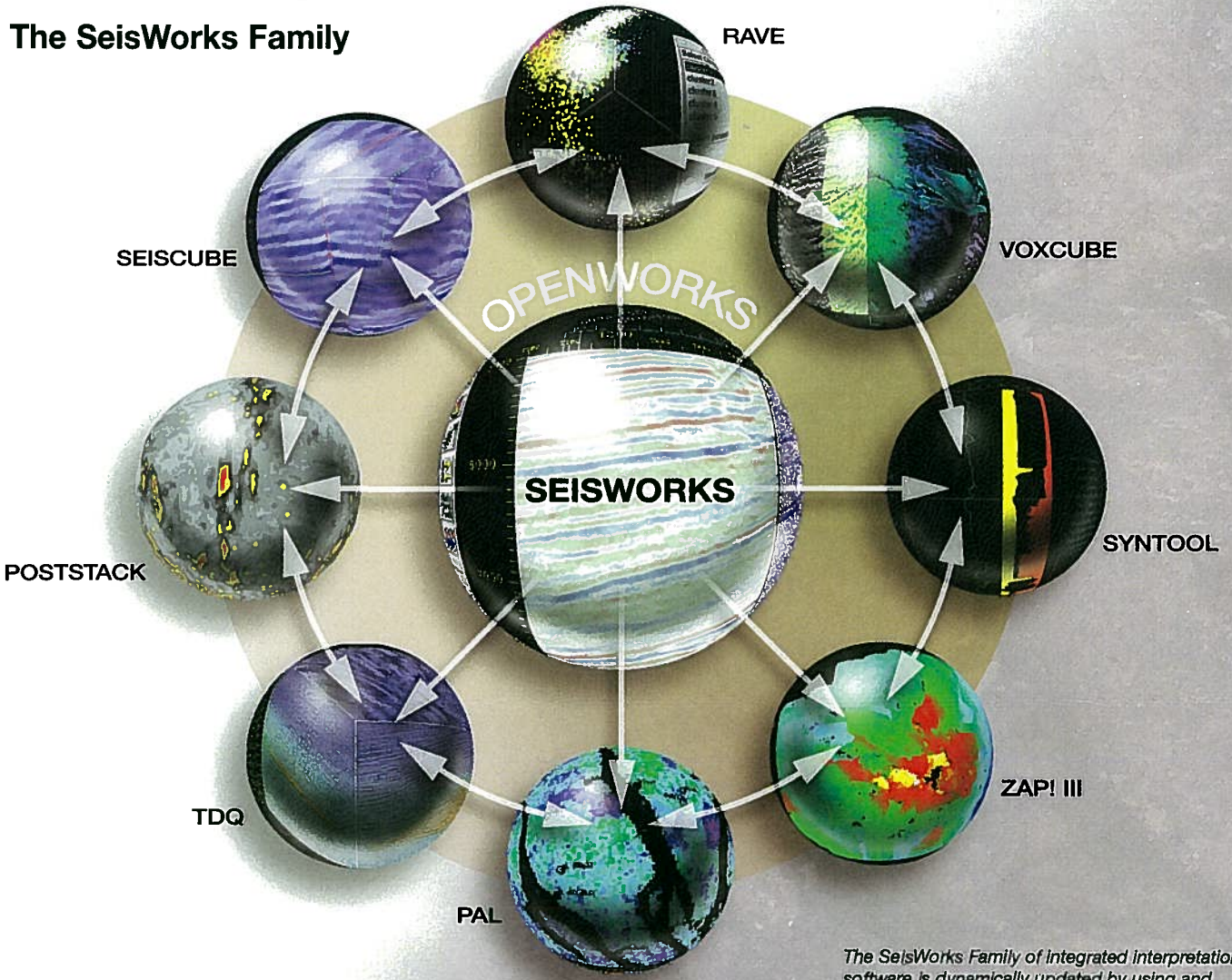
To succeed in today's increasingly competitive world of exploration and production, you need tools designed to give you a distinct competitive edge. Just as importantly, you need reliable software

from an experienced company dedicated to providing frontline technology to the global petroleum industry. And support and training from experienced professionals dedicated to meeting your needs.

As the recognized leader in interpretation technology, Landmark also offers the industry's broadest range of fully

integrated third-party systems, services and support. And because each product uses and shares data stored in the OpenWorks® ORACLE® database, the SeisWorks Family of integrated interpretation software can give your team the power and flexibility to achieve unprecedented productivity and high degrees of interpretation accuracy while decreasing prospect risk.

The SeisWorks Family



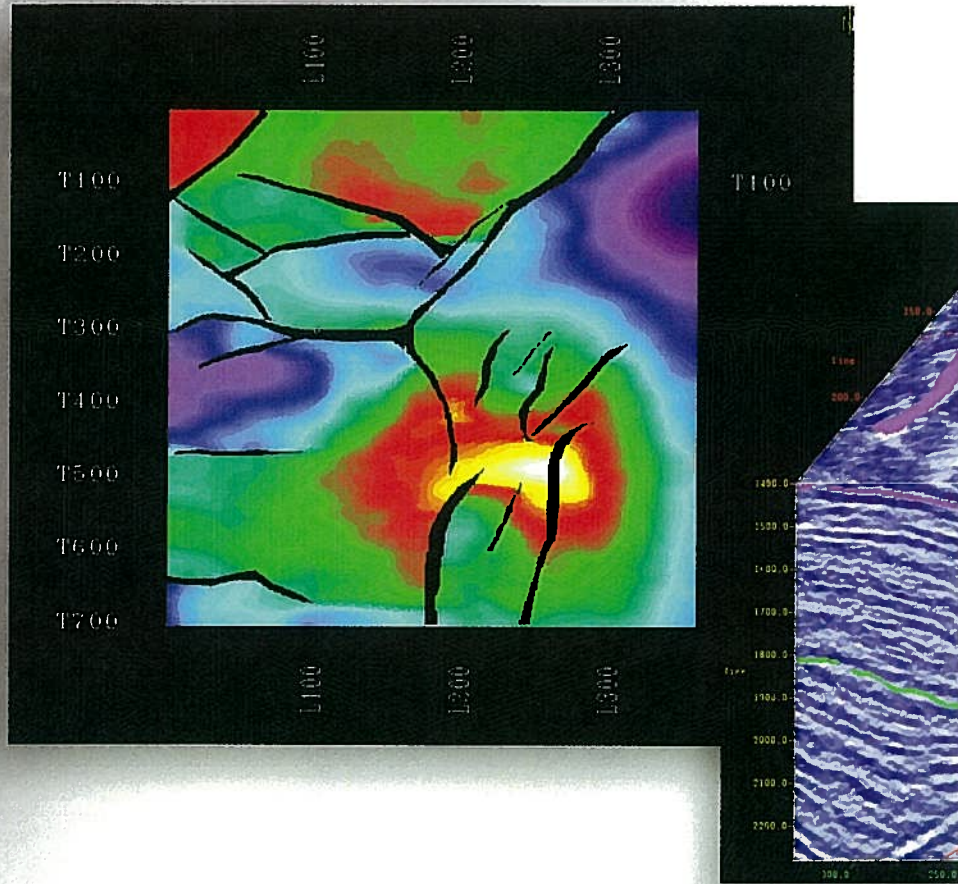
The SeisWorks Family of Integrated Interpretation software is dynamically updated by using and sharing data stored in OpenWorks.

C omplete Integration for Optimal

Superior interpretation tools for successful business decisions and an improved bottom line.

To transform complex and expensive data into business decisions that put you ahead of your competition, you need the best tools available. SeisWorks helps you produce highly accurate interpretations in record time. Your interpretations support the best, most competitive business decisions possible — decisions with a critical impact on your organization's bottom line. From basic interpretation and analysis to advanced interpretative visualization, the SeisWorks Family of products offers the best, most effective solution for your interpretation needs.

The SeisWorks Family is Landmark's core seismic interpretation system. Today's SeisWorks offers major improvements including fault handling capability, full merge functionality and significant usability enhancements. We are committed to delivering more than just the functionality you need; we are committed to your success. You can count on Landmark to deliver innovation throughout our seismic interpretation systems — from the SeisWorks Family to EarthCube™, our new next-generation system that leverages high-performance 3D graphics capabilities.



Maximize your team productivity and accuracy. Lower your prospect risks.

The key to achieving your organization's goals lies in SeisWorks' total integration capabilities. Through integration, SeisWorks enables your geoscientists to achieve:

Improved Productivity

Integrated applications can dramatically reduce prospect cycle times. Without integrated applications, up to 60 percent of your interpretation time can be spent managing data among different applications. With the SeisWorks Family of integrated applications, you never waste valuable time copying, transferring and reformatting your data.

Superb Interpretation Accuracy and Prospect Insight

An integrated suite of applications provides markedly new and more accurate ways to identify the hidden opportunities within your data that others may have missed. From SeisWorks' traditional 3D interpretation and analysis to the advanced visualization and interpretation techniques of SeisCube™ to the unique data visualization and analysis capabilities found in VoxCube™, RAVE™, PostStack™ and PAL™, the SeisWorks Family of integrated applications provides a powerful array of tools for interpreting, viewing and analyzing your data. Powerful tools that quickly transform problems into opportunities and provide innovative solutions.

Teamwork, Better Business Decisions

Lower Prospect Risk

The interpretative and visualization functionality contained in the SeisWorks Family of products helps you understand the complex interplay of a reservoir's components before a well is ever drilled. Because you're able to examine, test and compare alternative interpretation scenarios with a vast amount of relevant data, you can discover and select the best one. Better, more accurate interpretations result. The critical business decisions based on these interpretations can result in higher success ratios, lower finding costs and fewer dry holes. In today's successful companies, dry holes and uneconomic reservoirs must be identified at the workstation and not by the drill bit.

Multiple Levels of Integration. Essential to Your Success.

SeisWorks delivers three critical levels of integration:

Integration within the SeisWorks Family

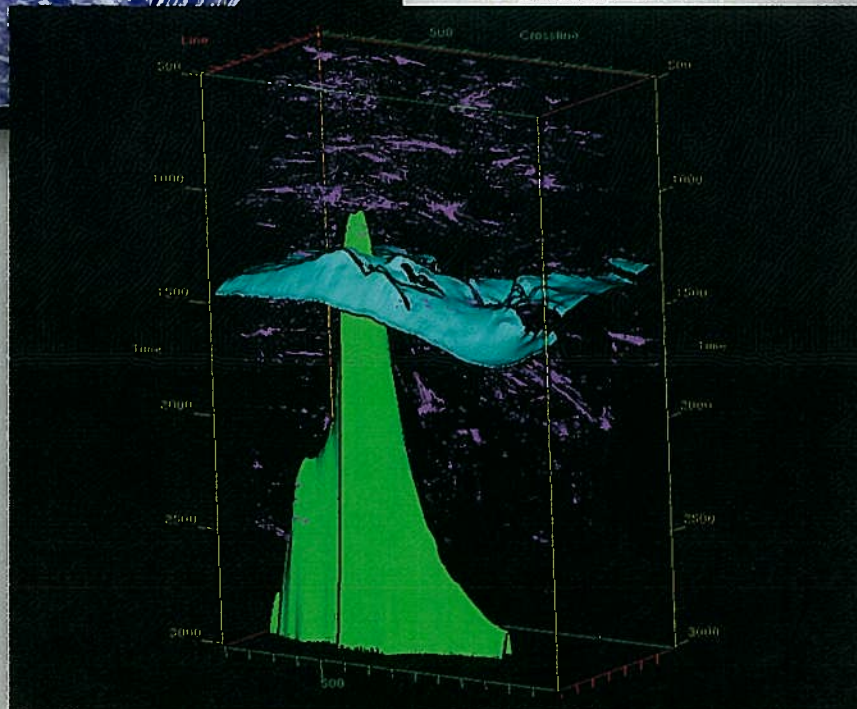
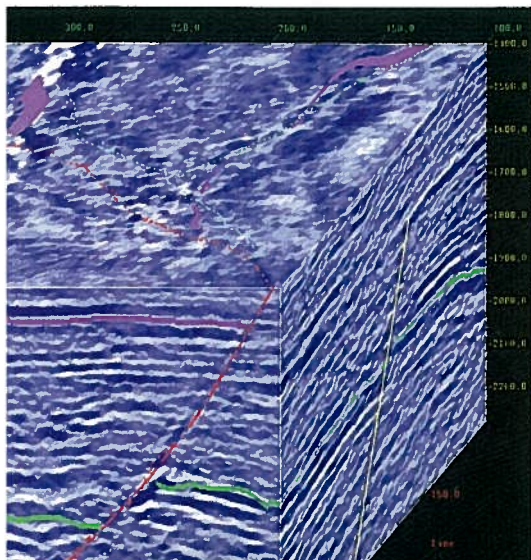
The SeisWorks Family of products consists of 10 applications that are fully integrated among themselves and with other Landmark applications. All SeisWorks applications access the same data so interpreters can work simultaneously in more than one application. Merging 2D and 3D data sets, interpreting a single seismic section, "flying" through an entire seismic volume, or zeroing in on a cloud of significant data attributes, the SeisWorks Family makes it easier to gain valuable new insights by examining the same data from different viewpoints.

Integration with Other Landmark Applications

Every SeisWorks application writes data directly to and from the OpenWorks database. All interpreters, whatever their specialty, have immediate and simultaneous access to the most current data — a critical element for interpretation productivity, accuracy and validity. Geologists, geophysicists and engineers using SeisWorks tools see each other's interpretations and understand each other's point of view. SeisWorks features standardized interfaces and icons, and common menu placements with StratWorks® and Z-MAP Plus™. As a result, you can shorten your learning curve while producing more effective workflows.

Complete Integration with Leading Third-Party Applications

But Landmark's broad integration strategy extends even further. The SeisWorks Family of products can easily share data with any program operating under OpenWorks, including applications from Landmark and other leading oil and gas technology vendors — applications that allow you to evaluate all phases of the oil field life cycle.

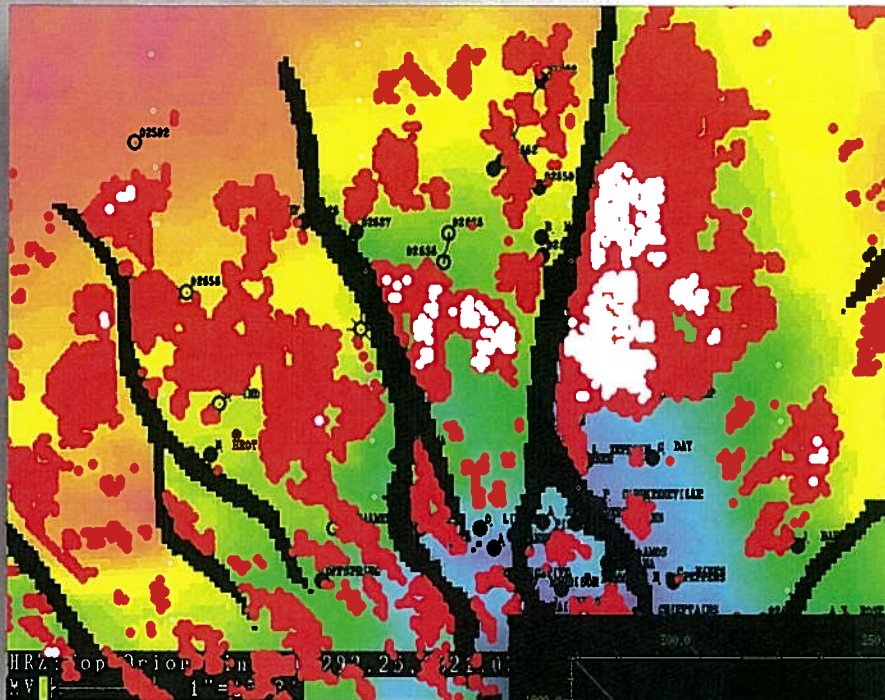


C omplete Integration for Optima

Achieve dramatic productivity gains through integration and teamwork.

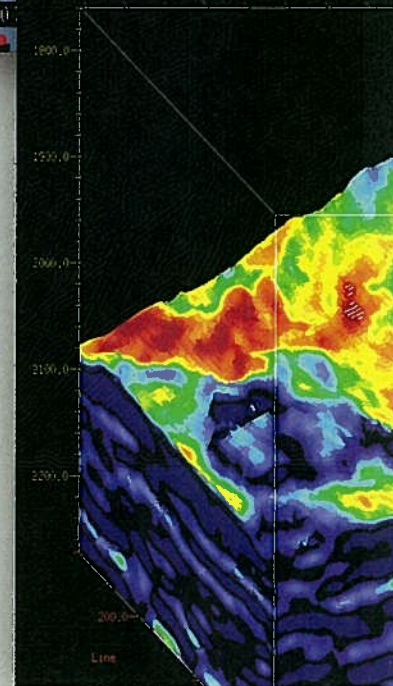
The impact of OpenWorks integration on your hydrocarbon recovery program can be profound. Geologists and geophysicists can examine, access and interpret the same data at the same time. Integration allows them to concurrently view each other's interpretations, as *they develop*. Now, engineers can incorporate their data into developing interpretations, working in union with geoscientists to refine reservoir descriptions like never before.

Integrated applications enable every member of your multi-disciplinary team to simultaneously access multi-disciplinary data on currently available hardware platforms. Simultaneous data access by multiple users becomes an important efficiency consideration when working to



meet tight project deadlines on multi-gigabyte surveys. SeisWorks helps to dramatically increase team productivity and extract more value from your data. Having highly detailed information all in one place — along with the tools to view, analyze and interpret — increases your understanding of the prospect's complexities. Increased understanding raises confidence levels and lowers overall prospect risk.

Something important happens with that kind of integration — effective teamwork among those responsible for developing the prospect or defining the reservoir. Team members build interpretations together. The results can far exceed the sum of the individual contributions. You begin to realize the real competitive advantage of successfully combining truly integrated products with multi-disciplinary teams. You can get better prospects — much faster.



Teamwork, Better Business Decisions

Flexible technology that can meet your needs today *and* tomorrow.

Every business has needs, resources and goals that change with time. The SeisWorks Family allows you to define a technology solution that precisely meets the interpretation requirements you need to achieve your business goals.

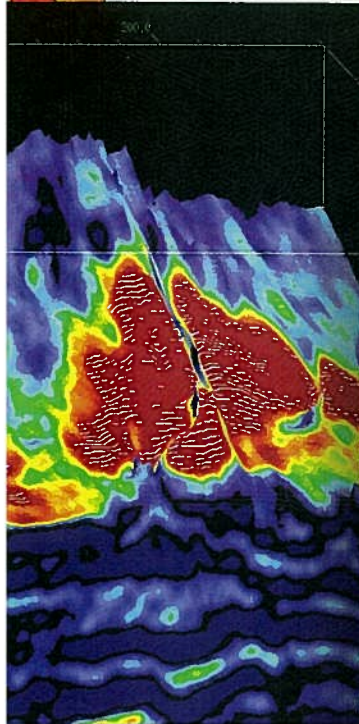
Whether your organization is small or large, if your company is new to workstation technology or already a 3D leader, or if your interpreters work independently or in teams, SeisWorks can operate as a stand-alone application or easily expand as your interpretation needs grow.

And with its increasing levels of technical sophistication, SeisWorks covers the spectrum of seismic interpretation. From manually picking a few horizons and fault cuts to lightning-fast autotracking of

multiple horizons in structurally complex terrain; from seeing simple two-dimensional seismic sections on screen to visualizing the complex geometric relationships among all the elements of your reservoir — SeisWorks tackles the simple to the complex. Whether you're:

- Conducting regional reconnaissance studies, developing exploration ideas and prospect leads, or determining the critical details of a reservoir delineation and characterization
- Targeting new billion dollar fields in high cost operating environments or coaxing the last half million barrels out of an old field
- Dealing with a few 2D lines or working in the world of high density data where you need to combine 2D with 3D as well as handle multiple 3D surveys

The SeisWorks Family offers a full range of flexible solutions that can grow with your technological needs today *and* tomorrow.



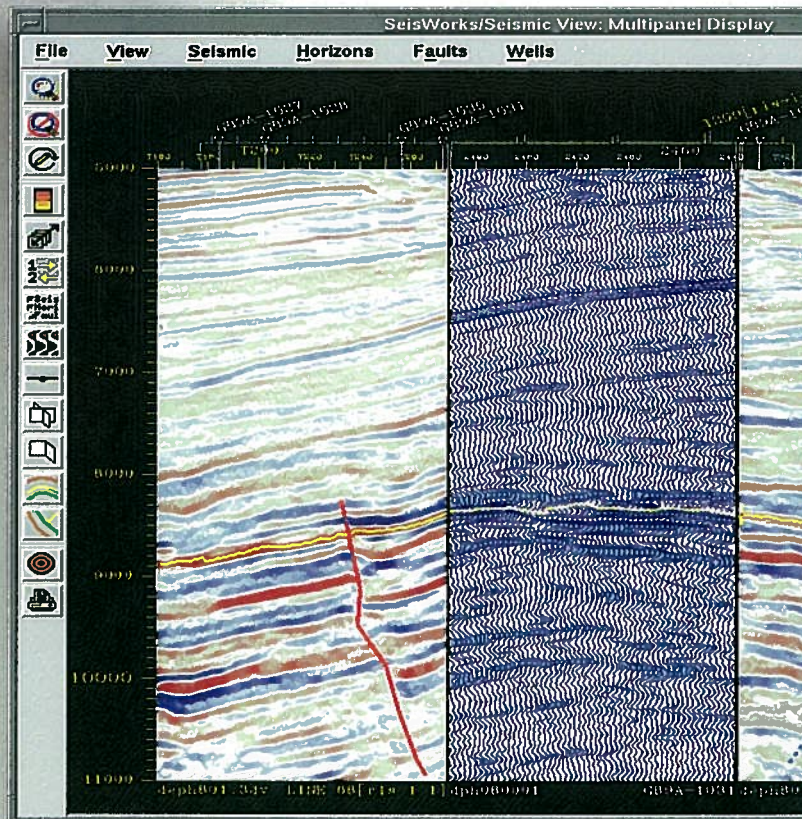
I ntegrated Solutions for Seismic

SEISWORKS

The industry's flagship technology leader in 2D and 3D interpretation.

SeisWorks is the leader in its field, with a full range of functions for seismic interpretation and analysis. SeisWorks/2D is a complete, stand-alone interpretation package. SeisWorks/3D incorporates full multi-survey merge capabilities.

SeisWorks/3D users can combine 2D with 3D projects and can also merge multiple 3D projects. Seismic balance functions allow users to correct for differences in amplitude, phase and frequency to ease interpretation across surveys. Merging your projects is fast and easy. For example, 8-bit and 32-bit information can be displayed in the same seismic window, avoiding the necessity for reloading to a common format.



SeisWorks/3D incorporates full multi-survey merge capabilities that can combine 2D with 3D projects as well as merge multiple 3D projects — all with seismic balance functions to correct for differences in amplitude, phase and frequency to support interpretation across surveys.

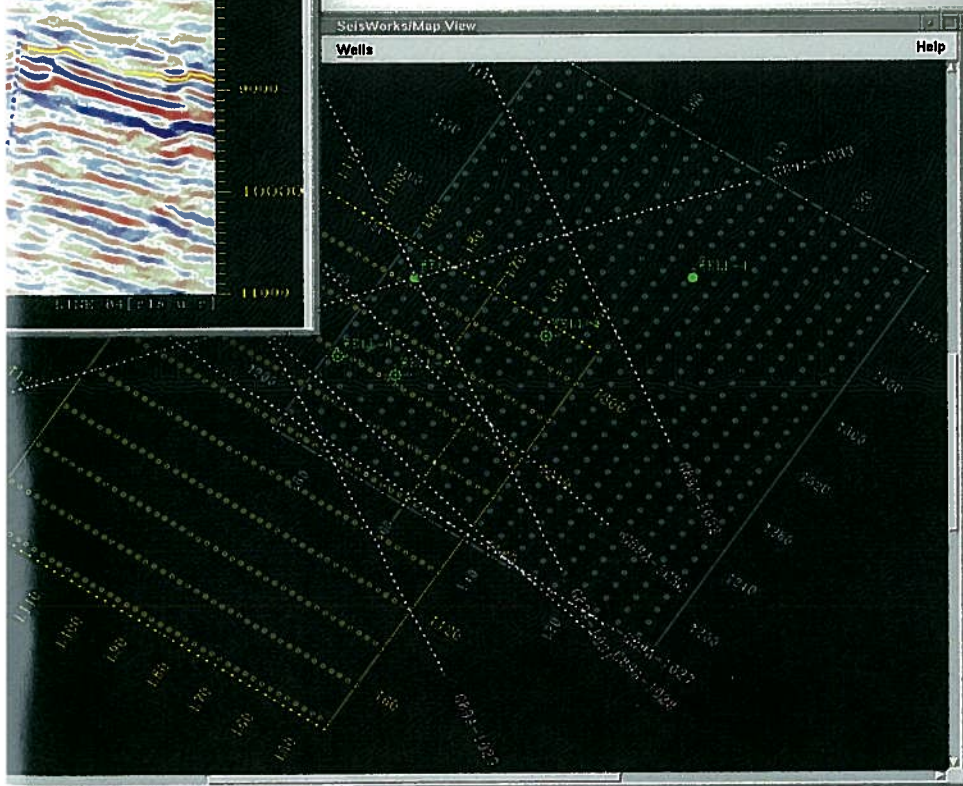
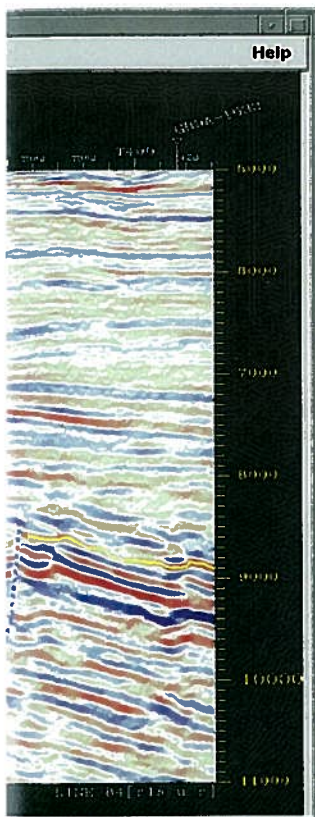
Interpretation

SeisWorks' fault interpretation functionality is considered the best in the industry. Calculating triangulated surfaces reduces the amount of time that users spend on fault interpretation. Significant enhancements in SeisWorks include handling multiple Z-valued faults and the addition of fault intersection symbols.

Expanded fault functionality includes interpretation on mapped attributes (dip and azimuth displays), fault editing on time slices, and improved fault heave calculations. All faults are stored in the OpenWorks database, facilitating dynamic

updating between projects and multiple interpreters within a single project.

SeisWorks supports interpretation in either time or depth, making depth interpretation a convenient reality. In addition, users will find significant enhancements to seismic data management and usability. And with a user interface featuring standardized colored icons, menu, and window options common to other core Landmark interpretation and mapping systems, SeisWorks can vastly reduce learning curves while enabling team members to share and build on each other's work.



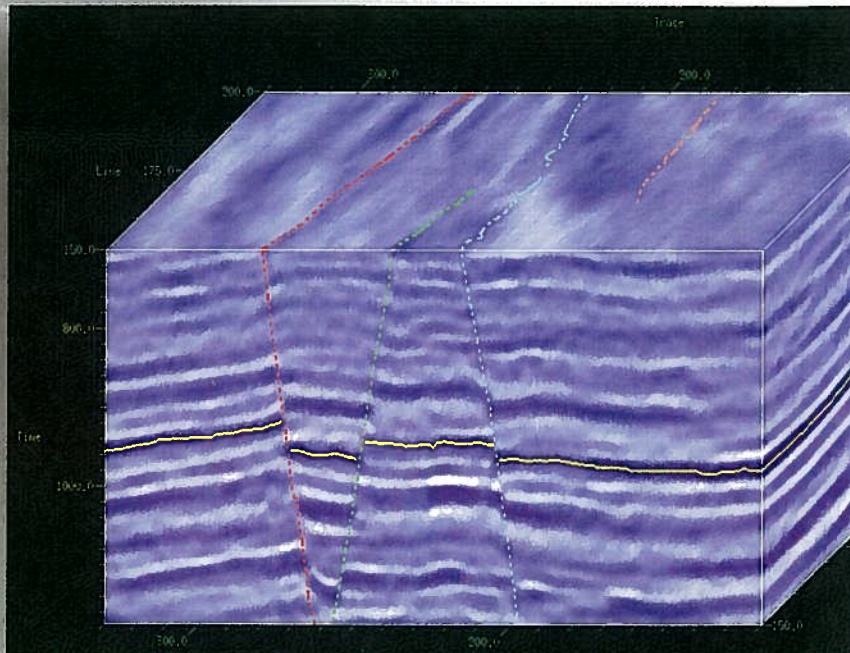
Because fault data is centrally stored in the OpenWorks database, projects are dynamically updated. SeisWorks fault interpretation includes handling multiple Z-valued faults and displaying active fault intersection symbols, allowing you to see fault dip directions for correlations — on the fly.

I ntegrated Solutions for Seismic

SEISCUBE

Interpret and visualize all your data in 3D.

Today's SeisCube is very fast — so fast that users asked us to give them the ability to slow it down. The prime advantage of SeisCube is the 3D visualization of an entire data set. Instead of having to extrapolate a mental picture of the subsurface from a series of two-dimensional slices through the earth, SeisCube Interpreters see the seismic data volume in three dimensions. SeisCube's animation "moves" you through the data. It enables you to identify and follow trends through an entire data set. And, of course, SeisCube includes comprehensive interpretation functionality on any face of a data volume. In these days of fast cycle time and smaller, subtler targets, SeisCube can repay an investment almost immediately.



SeisCube's animation "moves" you through data, helping you see and understand more of the important geologic relationships hidden within the seismic volume. The result can be reduced prospect cycle time and lower prospect risks.

SUPERSEISWORKS

The world's only customized interpretation package designed for leading edge interpreters.

The SuperSeisWorks™ toolbox includes SeisWorks/3D, SeisCube and ZAP! III — critical applications that "leading edge" interpreters need for maximized 3D

interpretation, visualization and productivity. And because they are all linked by a single convenient license, SuperSeisWorks interpreters never waste valuable time waiting for application licenses to become available. Landmark's SuperSeisWorks sets the standard for a "personalized" 3D interpretation environment.

Interpretation

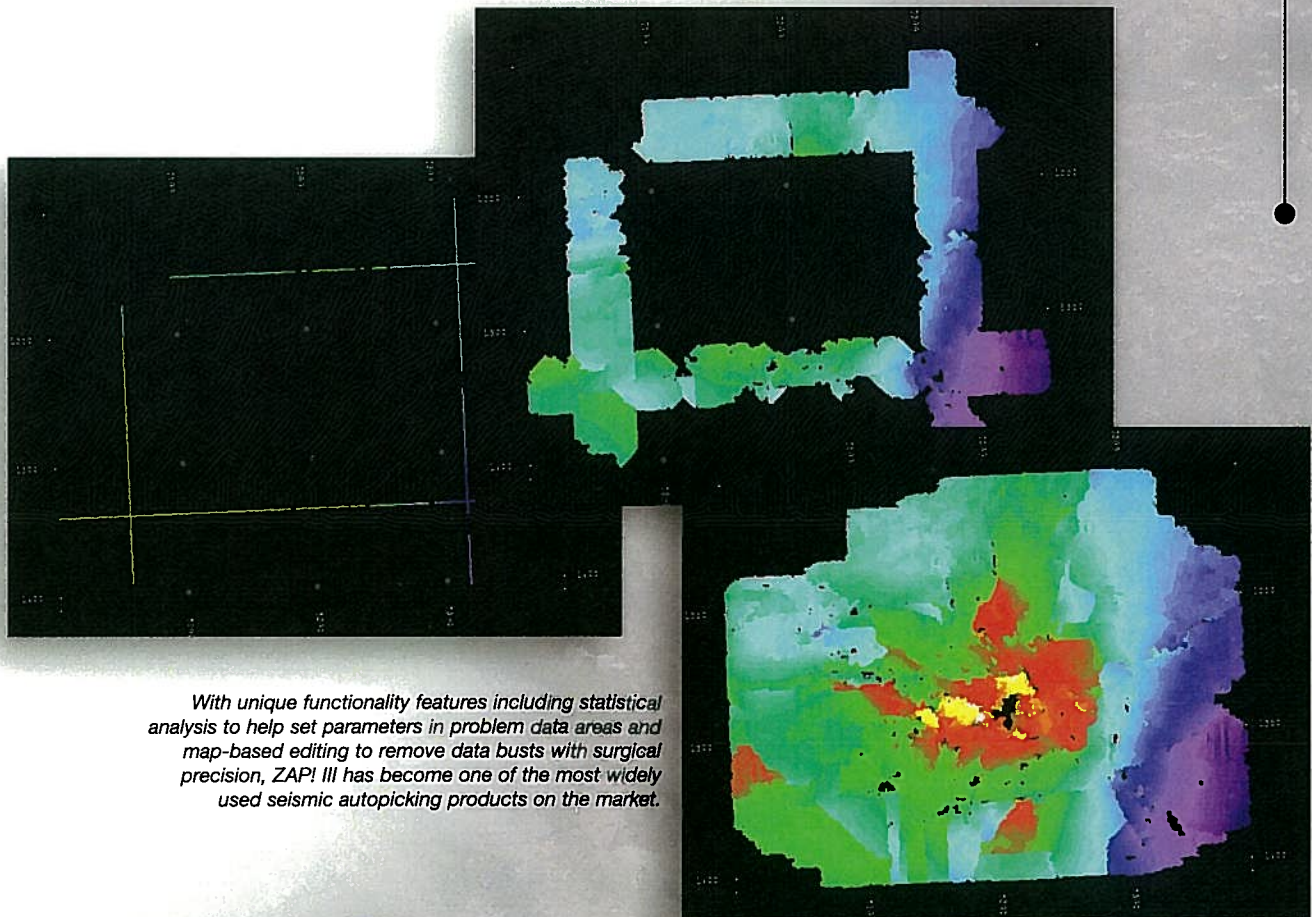
ZAP! III

Achieve major productivity gains using the industry's first and finest seismic autopicker.

Landmark's ZAP! III was the industry's first, and today remains the finest seismic autopicking product on the market. ZAP! III automates the tedious process of picking and editing seismic horizons within a 3D volume. Interpreters create highly accurate interpretations in a fraction of the time, even in areas of complex geology or low data quality.

Unique features of ZAP! III include statistical analysis to help set parameters in problem data areas, map-based editing to remove data busts with surgical precision before retracking, and autotracking within triangulated, fault-bounded blocks to manage structurally complex areas.

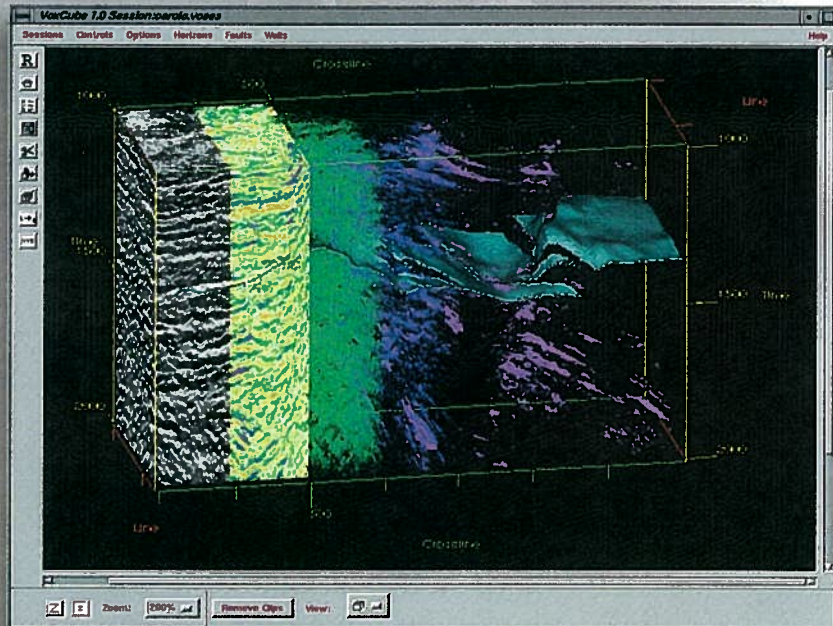
As with SeisCube, productivity gains with ZAP! III can be major. This is particularly true in areas of good data quality where a few seconds spent interpreting can result in accurate interpretation of 60 percent of your project.



With unique functionality features including statistical analysis to help set parameters in problem data areas and map-based editing to remove data busts with surgical precision, ZAP! III has become one of the most widely used seismic autopicking products on the market.

I ntegrated Solutions for Seismic

VOXCUBE



With its combination of voxel technology and powerful visualization, VoxCube allows you to "see through" a seismic data volume to quickly identify significant features without the bias of an imposed interpretation.

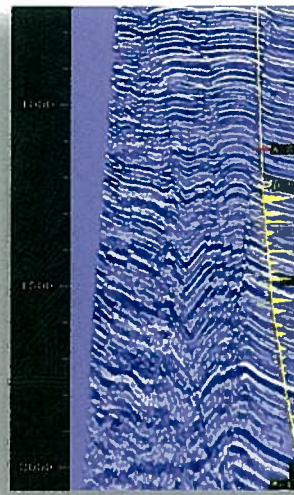
Visualize and analyze your data in radically new ways.

VoxCube provides an innovative, new way of viewing 3D data volumes. By combining voxel technology with powerful visualization, VoxCube allows interpreters to view and examine data from new perspectives. Interpreters control the data's opacity so they can "see through" the seismic data volume to quickly target significant features without the bias of an imposed interpretation.

Once a correlation between seismic attribute characteristics and the presence

of hydrocarbons is suspected, VoxCube tests that assumption. Those attributes can be related to well and interpretation data to determine if a meaningful correlation exists. Interpreters can also calculate the surface area or volumetrics of attribute clouds, a feature offered by no other voxel-based product.

VoxCube includes a full range of surface visualization capabilities — lighting, attribute overlays on surfaces, surface transparency, display of wire mesh surfaces and many others. This improved ability to display horizons and faults in 3D space makes VoxCube a formidable QC tool.

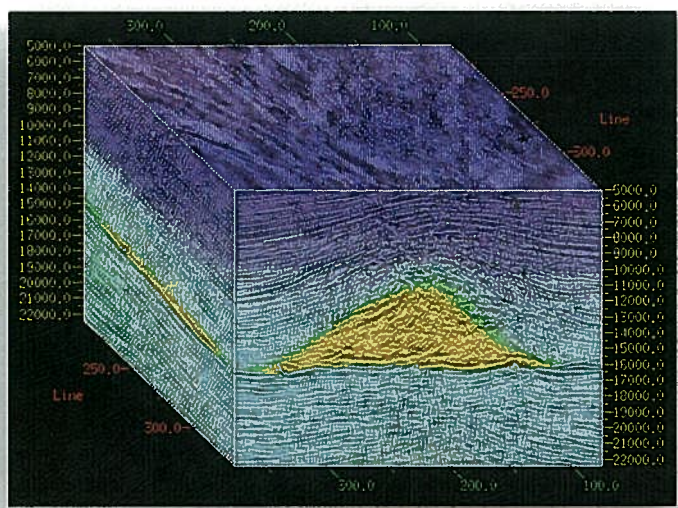


Interpretation

TDQ

A superior tool for fast, easy and accurate time/depth conversions.

TDQ™ provides the critical link between time and depth domains. Using well-based or stacking velocities, TDQ lets interpreters quickly convert a seismic time interpretation from SeisWorks to an accurate depth map in StratWorks. Or, just as easily, convert from depth to time. Interpreters can also convert a seismic data set from time to depth for interpretation in SeisWorks or StratWorks. As a critical integration element, TDQ makes all your data available for high quality final interpretations in much less time. TDQ also makes it possible to create a velocity data set for immediate QC in SeisWorks or SeisCube.

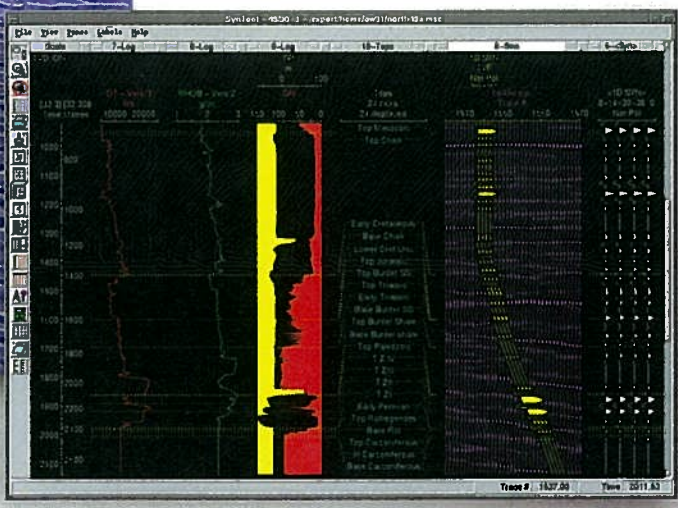


TDQ quickly and easily performs time/depth conversions between SeisWorks and StratWorks — an essential link between geology and geophysics.

SYNTOOL

Create accurate synthetic seismograms for critical geological/geophysical links.

SynTool™ is a pivotal product in the SeisWorks Family, allowing interpreters to tie well data, formation tops and lithologies accurately with seismic data. SynTool provides all the features needed to create accurate synthetic seismograms. Detailed log editing and processing capability allow interpreters to correct log recording and hole problems. Special thickness and zone editors allow prediction of changes in structure and reservoir properties away from the well.



SynTool is the crucial linking technology that accurately ties well information such as well correlations, formation tops and lithologies to your seismic data.

With SynTool, interpreters extract and display seismic data. Seismic wavelets can be calculated, displayed and used to derive synthetics. Full integration with the OpenWorks database allows a curve to be modified and the results be immediately available in SeisWorks.

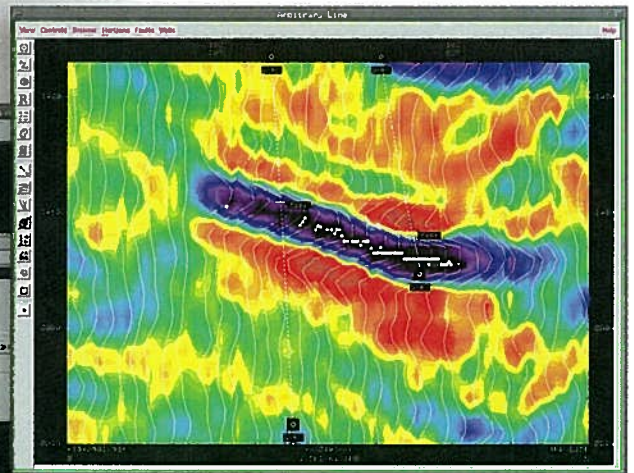
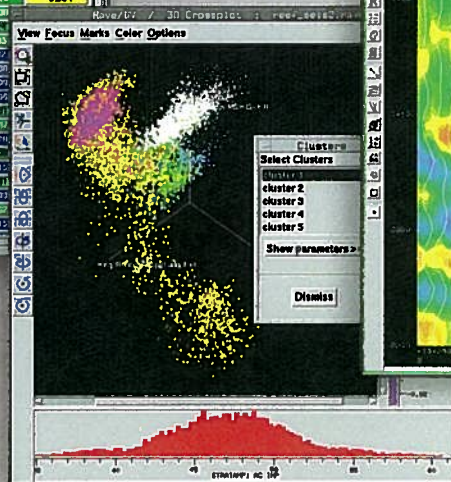
Integrated Solutions for Seismic

RAVE

With its single visual display, RAVE unifies data from multiple sources — including the geophysicist's seismic attributes and the engineer's reservoir attributes — enabling you to explore for hidden and, possibly critical, data relationships.

DATA correlation coefficients -- Subject: All Data

	1st amp_F	peak Spec	ratio Pos	rms Amplit	slope Int	slope Ref	slope Spa
AVG_RLD_P	0.081	0.276	0.207	0.145	0.153	0.074	0.000
AVG_RLD_R	0.021	-0.029	0.207	0.213	-0.025	-0.127	0.220
AVG_PHL_P	0.007	0.025	0.021	0.150	0.081	0.000	0.151
AVG_PHL_R	-0.111	0.100	-0.002	0.272	0.122	0.000	0.126
AVG_RHOAP	0.537	0.033	0.176	-0.030	0.047	0.508	-0.000
AVG_RHOAP	0.576	0.103	0.243	0.261	0.188	0.605	-0.317
AVG_RHOAP	0.609	0.245	0.075	0.264	-0.126	0.710	-0.204
AVG_RHOAP	0.000	-0.061	0.070	0.200	0.161	0.231	0.000
AVG_Sw_PA	0.577	0.041	0.571	0.020	0.000	0.000	0.000
AVG_Vhr_P	0.028	0.174	-0.095	0.005	0.228	0.235	0.235
AVG_Vhr_R	-0.322	0.274	0.131	-0.110	0.264	0.032	0.032
GROSS TH	0.204	0.204	0.171	-0.010	0.261	0.000	0.000
GROSS TH	0.121	0.202	-0.121	-0.011	0.187	0.000	0.000
GROSS INT	0.243	0.150	0.261	0.117	0.103	0.000	0.000
HPVH-Feet	0.181	0.194	-0.000	-0.037	-0.011	0.000	0.000
NET SAND	0.160	-0.140	0.161	-0.230	0.246	0.187	0.187
NET SAND	0.000	-0.005	-0.011	-0.081	0.098	0.070	0.070
NET SHALE	0.251	-0.121	0.064	0.105	0.178	-0.000	-0.000
NET SHALE	0.252	0.294	0.143	0.112	0.007	0.010	0.010
NET PAY-F	0.000	0.000	0.251	-0.021	0.100	-0.211	-0.211
NET RESV	0.200	0.200	0.091	0.18	0.000	0.000	0.000
NET TO GR	0.227	0.205	0.217	0.056	-0.122	0.200	0.200
PWH-Feet	0.175	0.174	0.205	-0.101	0.007	0.010	0.010

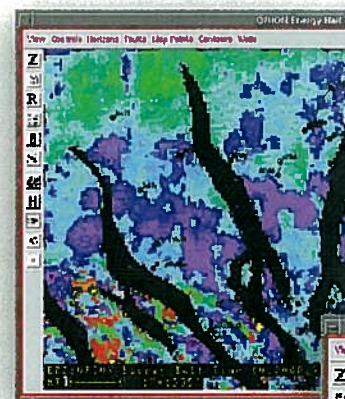


Visualize hidden data relationships and understand their geological significance.

RAVE is a multi-disciplinary reservoir characterization tool that enables geoscientists and engineers to visualize relationships among various seismic and reservoir attributes. RAVE allows interpreters to associate multiple reservoir properties and make geological sense of them in familiar map and cross section views.

Relationships identified in RAVE are then instantaneously communicated to SeisWorks, SeisCube or VoxCube for further study in order to determine if they have hydrocarbon significance.

RAVE can highlight subtle reservoir information hidden in seismic and production data. Such valuable opportunities often went untapped before such analysis was possible in the SeisWorks integrated environment.



PAL makes attribute extraction and interpretation an integral part of every interpreter's daily workflow. By directly accessing SeisWorks data to extract more than 50 possible attributes, PAL gives you the flexibility to examine your data in detail.

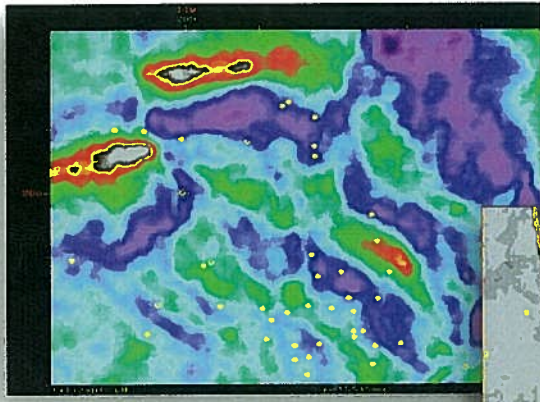
Interpretation

POSTSTACK

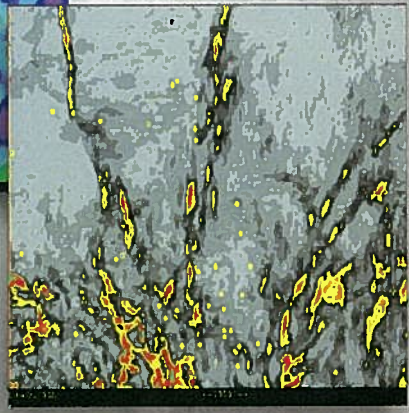
Optimize your data — highlighting faults and stratigraphy — with outstanding continuity processing.

Built on proven and reliable algorithms from ProMAX®, Landmark's premiere seismic processing software, PostStack provides interpreters with optimal control over their data through easy access to post stack processing functions.

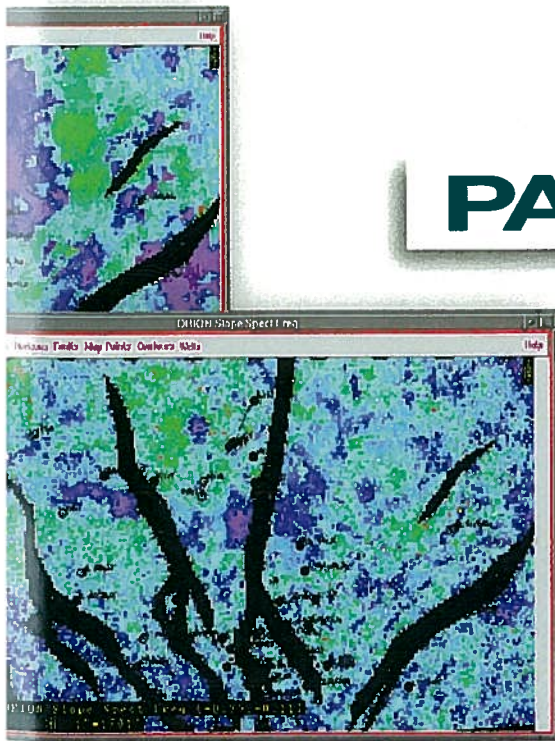
Interpreters can now optimize their data to show particular features of interest and create multiple scenarios to choose the best interpretation. Functions included in PostStack are those most frequently requested by interpreters: scaling, filtering, phase matching, deconvolution, data shifting and data attributes. Unique continuity functionality allows interpreters to reprocess a 3D cube of data to highlight faults and stratigraphic trends.



And with its continuity functionality, PostStack allows you to quickly reprocess all or part of your 3D data volume to furnish an unrivaled view that specifically highlights faults and stratigraphic trends. PostStack is launched from within SeisWorks, uses the same interface, and is easy to learn. Naturally, PostStack uses SeisWorks data so there are no time delays caused by data manipulation.



PostStack's unique continuity functionality allows interpreters to reprocess a 3D cube of data to highlight faults and stratigraphic trends. By extracting valuable information through easy user access to post stack processing functions, PostStack creates multiple interpretation scenarios to optimize your data so you can spot the best possible solution.



PAL

Maximize the value of your data with attribute extraction.

Like PostStack and RAVE, PAL enables interpreters to maximize the value of their seismic data by directly accessing SeisWorks data for attribute extraction. Because these attributes are stored as horizons, they can immediately be accessed and used throughout the SeisWorks Family — for example,

displayed in a SeisWorks map view, overlaid on a VoxCube horizon or evaluated in RAVE.

With PAL, attribute extraction and interpretation of attributes becomes an integral part of every interpreter's daily workflow. PAL provides more than 50 possible attributes, enabling extensive examination of the data and a particularly potent tool when used in conjunction with RAVE.

Landmark offers a complete portfolio of integrated, highly-innovative software for exploration and production. We deliver a full range of professional consulting services designed to optimize your technical computing environment. And we offer worldwide support – when you need it, where you need it.

At Landmark, we offer proven solutions across the oil field life cycle for geophysicists, geologists, petrophysicists and engineers that combine knowledge and technology to better manage risk, reduce cycle times and increase productivity.

With Landmark, you'll make better decisions.

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