GeoGraphix 2015.1 Release Notes

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GeoGraphix® and Discovery™ on OpenWorks® 2015.1

LMKR is pleased to announce the release of the GeoGraphix® and Discovery™ on OpenWorks® 2015.1 software.

The GeoGraphix 2015.1 release includes many new features in Pro 3D, PRIZM™, and SeisVision™, which are highlighted in the New Features section of this document. The Fixed Issues section highlights the customer bugs fixed in this release. The Known Issues section lists the unfixed issues in this release.

This document also provides important information regarding the system requirements and valuable resources that will allow you to get the most out of the GeoGraphix 2015.1 release.

Note: There are mandatory upgrades to the License Management Tool (LMT) so that users can configure licensing for this release. This upgrade can occur before or after installation of the GeoGraphix 2015.1 software. See the "LMKR Licensing" section of the Installation Guide for more information.

Note: If working in a network environment, in order for all computers to work together on shared projects, ALL computers (clients and servers) must be updated to the same version of the software. It is intentional that computers with different versions of GeoGraphix software cannot and should not be connected with each other.

GeoGraphix 2015.1 is an integrated product suite that incorporates shared data management and geological, petrophysical, and geophysical interpretation software. It utilizes the SAP database (GXDB) in GeoGraphix Discovery mode, or accesses the OpenWorks®/SeisWorks® (Oracle) database in Discovery on OpenWorks mode.

The GeoGraphix software consists of the following:

Pro 3D

- Enables interpreters to get the most from their data by quickly creating powerful and informative basemaps, fence diagrams and seismic backdrops. Using the Pro 3D window you can show IsoMap® structural surfaces, cultural layers, wells, seismic data, cross sections and fence diagrams in the 3D Scene.

Field Planning

- The advanced field planning tool is designed to reduce the time required for efficient field development. It provides the ability to create, save, analyze and manage multiple field plan scenarios before committing them to the database. Designed for horizontal well plans, the Field Planner software includes determination of the optimum location and orientation of wells. These proposed wells can all be visualized by creating a layer for display in GeoAtlas™.

Data Manager™ includes ProjectExplorer™, Coordinate System Manager™, WellBase™, SeisBase™, QueryBuilder™, LandNet™, LeaseMap™, and ZoneManager™.

- The GeoGraphix and Discovery on OpenWorks project and data management engine

GeoAtlas™

- The map display and montage environment working on ESRI MapObjects

IsoMap®

- The gridding contouring engine, featuring 10 powerful gridding algorithms

XSection™

- A fully integrated geological interpretation and cross section display tool

PRIZM™

- An interactive petrophysical and log analysis system

smartSECTION® with FrameBuilder™

- The next generation geologic modeling and cross section tool for complex structural and sequence stratigraphic analysis and unconventional well planning and monitoring

Discovery™ 3D

- The 3D scene viewer that uses the most recent video and X-Box tools to display seismic and geologic data in three dimensions

SeisVision™

- The SeisVision is a comprehensive 2D/3D seismic interpretation system, which also includes a dynamic real-time link to SeisWorks/OpenWorks

pStaX™

- The post stack processing module for enhancing seismic character and detecting anomalies related to geologic features

SCAN™

- The patented semblance calculation for enhanced fault interpretation

LogM Advanced Synthetics™

- The geophysical application used for interactively editing well logs and evaluating synthetic trace character response

LogM Modeling™

- The 2D forward seismic waveform, ray tracing and structural modeling tool to predict seismic response away from the well

STRUCT™ Model Entry

- The comprehensive forward seismic structural modeling tool that is used to determine the seismic response of complex geologic structures in areas where there is little or no well control

Discovery™ on OpenWorks®

- Enables the GeoGraphix software to access OpenWorks and SeisWorks projects, and uses the OpenWorks and SeisWorks data within the GeoGraphix framework

Xchange Tools

WellXchangePlus™

- Transfer well information to or from two GeoGraphix projects, or between GeoGraphix and OpenWorks

SeisXchange™

- Transfer seismic data between SeisVision and SeisWorks

GridXchange

- Transfer of map point sets and grids from GeoGraphix to OpenWorks

Note: SeisBase, LandNet, LeaseMap, LogM ModelBuilder (LogM Modeling), LogM Well Editor (LogM Advanced Synthetics), Field Planner, and Advanced 3D Visualization (Pro 3D) are not available in the current version of Discovery on OpenWorks.

New Features at a Glance

The new features available in the GeoGraphix 2015.1 release are listed below:

Pro 3D

- Scale bar has been added, which shows the color palette currently selected to display the various objects in the 3D scene. Click here for details.
- Directly rename measurements in the General toolbar before performing the save operation. Click here for details.
- Hide or show multiple selected region items at once in the 3D scene. Click here for details.
- Apply grids to the 3D scene. Click here for details.
- Move production bubble values along wells in the 3D scene. Click here for details.
- Well selection is now synchronized between Pro 3D and GeoAtlas. Click here for details.
- Well selection is now synchronized between Pro 3D and smartSECTION. Click here for details.
- Select different versions of the seismic volumes. Click here for details.
- Update picks and FrameBuilder surfaces in the geomodel. Click here for details.
- Enhancements to the Log Curves feature set. Click here for details.

PRIZM

- Use scanned images as references in the background for PRIZM crossplots. Click here for details.
- The Crossplot chart is added in the Graphical Curve Normalization dialog box to provide an enhanced view of the curve normalization changes. Click here for details.
- Directly import the V_{shl} curve as input to the 4 mineral PEM, bypassing the V_{shl} curve calculation process. Click here for details.
- Set the grid visibility of well logs by adjusting the transparency levels of the area fills. Click here for details.

SeisVision

- Export SeisVision Volumes to GVERSE™ Attributes™, where you can apply various attributes to the exported volumes on-the-fly. Click here for details.
- Export SeisVision Volumes to GVERSE™ Predict3D™ along with the associated wells and formations to predict rock properties away from wells using well logs and seismic data. Click here for details.

For details on the new features, fixed issues and known issues for the GeoGraphix 2015.1 release, please click on the following.

- New Features
- Fixed Issues
- Known Issues

System Requirements

In the following sections, you will find hardware and software system requirements for this release of GeoGraphix and Discovery on OpenWorks:

- GeoGraphix Workstation
- GeoGraphix Project Server

System requirements can vary considerably, depending on your computing environment and software objectives. Please contact your Sales Representative or Customer Support if you have questions or need more information about system requirements.

Important Notes:

- There are mandatory upgrades to the License Management Tool (LMT) so that users can configure licensing for this release. This upgrade can occur before or after installation of the GeoGraphix 2015.1 software. See the "LMKR Licensing" section of the Installation Guide for Release 2015.1 for more information.
- Discovery on OpenWorks is compatible with OpenWorks for Windows 5000.10.1.05 and SeisWorks 5000.10.
- Please also refer to the GeoGraphix Customer Support Portal (http://support.lmkr.com) for up-to-date information on system requirements for all GeoGraphix products.

GeoGraphix Workstation and Laptops

The requirements for GeoGraphix Workstation and Laptops are as follows:

Software and Hardware Requirements

We recommend using the latest Microsoft service packs and security patches. The following table lists the operating systems which are supported.

Supported Operating System	RAM	CPU
Windows® 7 Professional x64 Or Windows® 7 Enterprise x64 Or Windows® 7 Ultimate x64	4 GB Minimum 8+ GB recommended	Pentium i5/i7 or any Quad Core Processor

Additional Requirements and Recommendations

- DVD-ROM required for media installation. Download installation available through Electronic Software Delivery at http://support.lmkr.com.
- DCOM/Firewalls configured to allow remote access. Only necessary if sharing projects.
- Microsoft .NET 4.5.1 runtime required.

Graphics Hardware Requirements

We recommend the following Graphics Hardware to run the GeoGraphix applications:

Applications	Required Operating System	Graphics Hardware
All GeoGraphix Applications including Discovery 3D and advanced 3D visualization (Pro 3D)	All Supported	DirectX 11 capable hardware (see Note 2)
GeoGraphix Applications except for Discovery 3D and advanced 3D visualization (Pro 3D)	All Supported	All Supported

Note 1: It is recommend to use the latest video drivers and MS updates for your system. Microsoft DirectX End-User Runtime (June 2010) is required to run Discovery 3D and advanced 3D visualization (Pro 3D).

Note 2: To run Discovery 3D and advanced 3D visualization (Pro 3D), it is recommended that an NVIDIA DirectX 11 compatible card be used.

Optional Software Requirements

The following table lists the software requirements for using different tools available in GeoGraphix.

Tools	Software Requirements
Spreadsheet import utility in WellBase, SeisBase, and LeaseMap	Excel 2007 or 2010 (32-bit or 64-bit)
Selected Help files	Adobe Reader
For Discovery on OpenWorks, GridXchange, and SeisXchange	OpenWorks for Windows 5000.10.1.05 – Basic or Full (recommended) Install available on Landmark's LSM (See Notes below), and SeisWorks 5000.10 (for seismic workflows)
ESRI geo-referenced images and ESRI CAD file import in GeoAtlas	ESRI ArcGIS Runtime Engine 10.1 (SP 1) or 10.2.1 (included in the 3rd Party Installer)
For LOGarc™ Version 3.2.1.00 or 4.1.0.3 access in smartSECTION	To use the LOGarc feature, the LOGarc Version 3.2.1.00 or 4.1.0.3 software must be downloaded from IHS LogTech Canada, LTD and a valid account must be in place. You must have administrator rights to the computer on which you will load the software.

Notes for Discovery on OpenWorks: The OpenWorks Full installation requires Hummingbird Exceed. The Oracle client installation in use with the OpenWorks Full installation requires that the "Administrator" option be selected. The "Administrator" option type includes the SQL Plus and the Oracle Database Utilities components, which are needed to run Discovery on OpenWorks, as part of the total OpenWorks package.

Note: Hummingbird Exceed is not required for the OpenWorks Basic installation. If the OpenWorks Basic installation is used, the Oracle client installation can use the "Administrator" option, which will include all of the needed components. Or, the Oracle client installation for the OpenWorks Basic installation can use the "Custom" installation type. However, the following components must be installed with the "Custom" installation type:

- Oracle Database Utilities 10.2.0.1.0 or Oracle client 11.2.0.2
- SQL*Plus 10.2.0.1.0, or Oracle client 11.2.0.2
- Oracle JDBC/THIN Interfaces 10.2.0.1.0, or Oracle client 11.2.0.2
- Oracle Net 10.2.0.1.0, or Oracle client 11.2.0.2

After these Oracle components are installed, run the upgrade patch to Oracle 10g 10.2.0.4 (32-bit)

GeoGraphix Project Server

The requirements for GeoGraphix Project Server are as follows:

Software and Hardware Requirements

We recommend using the latest Microsoft service packs and security patches. The following table lists the operating systems which are supported.

Supported Operating System	RAM	CPU
Windows® Server 2008 R2 Standard x64 or Windows® Server 2008 R2 Enterprise x64	8 GB Minimum 16+ GB Recommended	Intel Xeon Processor or Equivalent Quad 2.4GHz 64-bit or better

Additional Requirements and Recommendations

- DVD-ROM is required for media installation.
- DCOM/Firewall must be configured to allow remote access.

Server performance is subject to a large number of variables. It is impossible to give specific recommendations here, but these are some guiding principles to use. In general, multi-user performance of a GeoGraphix project server is best when the server is dedicated to GeoGraphix and not shared with other applications, especially database applications or intensive file-system applications. In addition, consideration should be made for the number of GeoGraphix users and the size and number of concurrently accessed projects. At some point, having multiple project servers becomes a better solution than having all users on one server. Generally, somewhere between 10 and 20 users is when a second server might be suggested.

Networking

Networking performance depends on the number of users trying to access a server simultaneously, as well as the bandwidth requirements for those users. Recommendations for server bandwidth typically specify server connectivity at a higher bandwidth than an individual user. For instance, users running at 100 Mbit should be accessing a server running on a 1-Gbit backbone. If users are at 1-Gbit, consider running multiple 1-Gbit connections or a single higher-bandwidth connection on the server.

Database Cache

A large database cache is an important factor to consider when dealing with multiple users accessing large databases. The database engine is capable of addressing a practically unlimited amount of cache memory. The best way to size the memory is to estimate the memory requirements for other running applications and allow the database cache to dynamically allocate any remaining free memory. The engine will only allocate what it needs when using dynamic allocation up to the maximum specified.

It is highly recommended that you let the database engine use as much cache memory as it requires on the host server. Increasing database cache memory is the quickest and most effective way to improve database-related performance on large network projects.

On a workstation, it might be appropriate to reserve 1 to 2 GB for the OS and file system cache and 2 to 4 GB for other running applications. On a dedicated project server, not much memory needs to be reserved for other applications. The ideal maximum varies by the project size, the number of users, and other load considerations. But as a general rule, the higher you can set the maximum, the better.

Storage

A great deal of GeoGraphix's access patterns on a server deal with file I/O. Database access, raster images, and seismic data are examples of files that benefit substantially from a fast disk sub-system. Server environments also place a high importance on data integrity and reliability. At a minimum, consider using a RAID 5 (stripe-set with parity) array. As the size of disks increase, you may also want to consider a hot swap drive and/or RAID 6 (striped with dual parity). Using a controller card with its own cache can also help improve performance.

Network Attached Storage (NAS), Storage Area Networks (SAN), and Other Non-Windows Storage Solutions

There are two typical methods used for accessing external storage devices from a project server: iSCSI and CIFS.

- iSCSI allocates a block of storage on the external device and makes it appear to be a physical disk on the project server. This has the advantage of a 100% compliant file system. However, since the external device sees the allocation as one big file, it can make backing up and restoring of individual files using the external device's capabilities more difficult. Standard backup and restore procedures from the server will still work.
- Using CIFS for external storage devices depends greatly on the vendor's implementation of the CIFS protocol used by the Windows platform. In general, a 100% compliant implementation of CIFS for a performant system is required. In particular, vendor's implementation of the "File Change/Notify" functionality has been problematic. Devices based on Windows Storage Server should be 100% compatible since it shares its components with Windows. Implementations based on UNIX/Linux are where problems occur due to the fact that the kernel level support is not present. Due to these uncertainties with CIFS implementations LMKR does not technically support CIFS.

Compatibility with OpenWorks Software

The Discovery™ on OpenWorks (DOW) software directly links a GeoGraphix application to the data in an OpenWorks project, and provides a shared project environment for interpretation applications. Landmark Software has delivered the OpenWorks and DOW software for Release 5000 and will continue to provide updates and enhancements to these products. When planning your uptake of Release 5000 and verifying your workflow, you should consider version compatibility between the OpenWorks software and the Discovery on OpenWorks software.

In the compatibility table below, the table indicates the level of compatibility of previous releases and of upcoming scheduled and planned releases. This table will be updated as new releases are planned. The objective is to provide closely coupled compatible versions of the software to allow you to more easily take up current releases.

LMKR performs full release testing for those combinations indicated as Release, R, in the table, but may not exercise full release testing on other version combinations. For these iterative releases, LMKR performs compatibility testing between the OpenWorks and DOW software (indicated as Compatibility, C, in the table). See the table below for the level of testing for each version combination. Although LMKR does not anticipate any integration issue, in these cases it is recommended that customers also verify compatibility in their own environment.

LMKR supports the versions listed as Release in the table. However, while LMKR has completed compatibility testing, LMKR/GeoGraphix Support may not be able to fully support the versions listed as Compatibility in the table. When customers request support for a Compatibility environment, LMKR/GeoGraphix Support works on a best effort basis to troubleshoot any issues, and if an issue needs additional attention, LMKR/GeoGraphix Support reports such issues to LMKR Research & Development. The LMKR/GeoGraphix Support Team cannot guarantee any resolution service levels associated with issues from a compatibility environment.

Combinations which have not been tested, either in the full release or in a compatibility environment, are indicated by U (untested). P indicates the indicated versions are probably incompatible, as the OpenWorks version has a newer development kit (devkit) than that of the indicated DOW version. Blank cells in the table indicate that OpenWorks and GeoGraphix are incompatible and will not operate together.

For the most current version of this information and an overview of suggested compatibility test paths, please refer to the LMKR Technical Support Solution Document KBA-65218-F9D7D5.

Compatibility Matrix

Discovery on OpenWorks

OW License 5000	DOW License 5000.02								
GeoGraphix Version	2015.1	2015.0	2014.0	2013.0	2012.0.0	5000.0.2.5	5000.0.2.1	5000.0.2.0	5000.0.1.1
OW 5000.10.1.05	**R**	**R**							
OW 5000.8.3.01	**C**	**C**	**R**						
OW 5000.8.1.1				**R**					
OW 5000.8.0.0					**R**				
OW 5000.0.3.5					**C**	**R**			
OW 5000.0.3.0					**C**	**C**	**R**		
OW 5000.0.2.9					**U**	**U**	**U**	**U**	
OW 5000.0.2.8					**U**	**U**	**U**	**U**	
OW 5000.0.2.7					**U**	**R**	**R**	**R**	
OW 5000.0.2.2									**R**
OW 5000.0.2.0									
OW 5000.0.1.7									
OW 5000.0.1.6									
OW 5000.0.1.5									
OW 5000.0.1.4									
OW 5000.0.1.2									
OW 5000.0.1.1									
OW 5000.0.0.3									**R**

OpenWorks Version

Legend

R = Release level full testing

C = Compatibility level basic testing

U = Untested

P = Probably incompatible since OW and GeoGraphix are running different OW devkits.

A blank cell indicates that OW and GeoGraphix are incompatible.

New Features

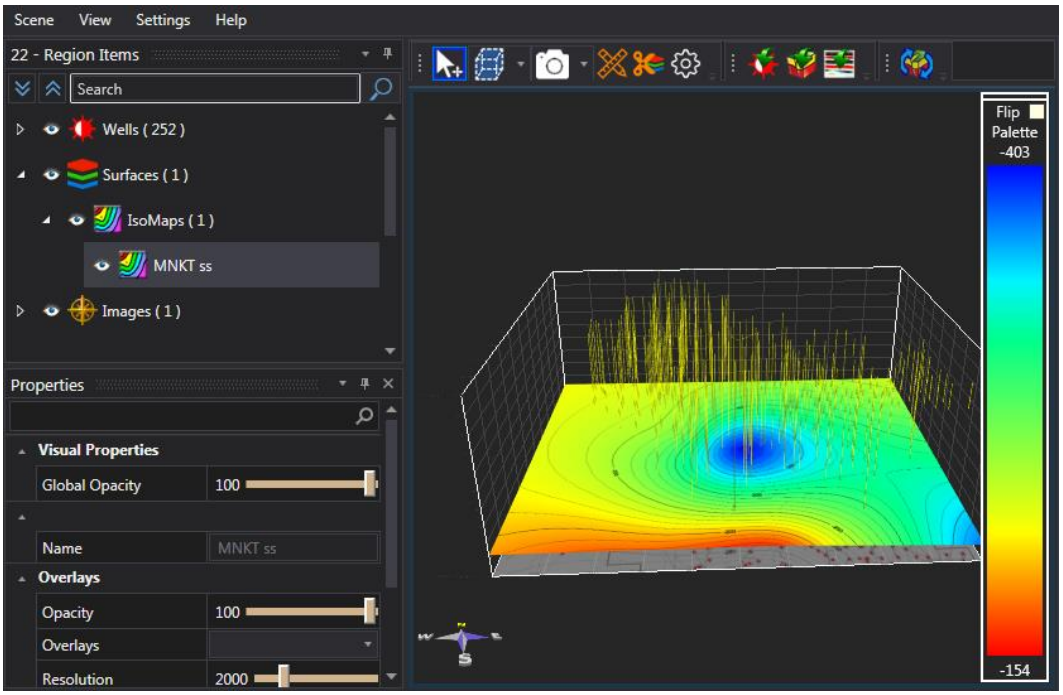
This section contains a brief description of the exciting new features included in the 2015.1 release.

Pro 3D

This section describes the changes to Pro 3D.

Scale Bar

The Scale bar shows the color palette currently selected to display the various objects in the 3D scene. These objects include cross sections, curves, faults, FrameBuilder, surfaces, horizons, and IsoMap layers. You can easily customize the bar colors as per your requirements. In the image below, the scale bar displays to the right of the 3D scene.



Rename Measurements Before Saving

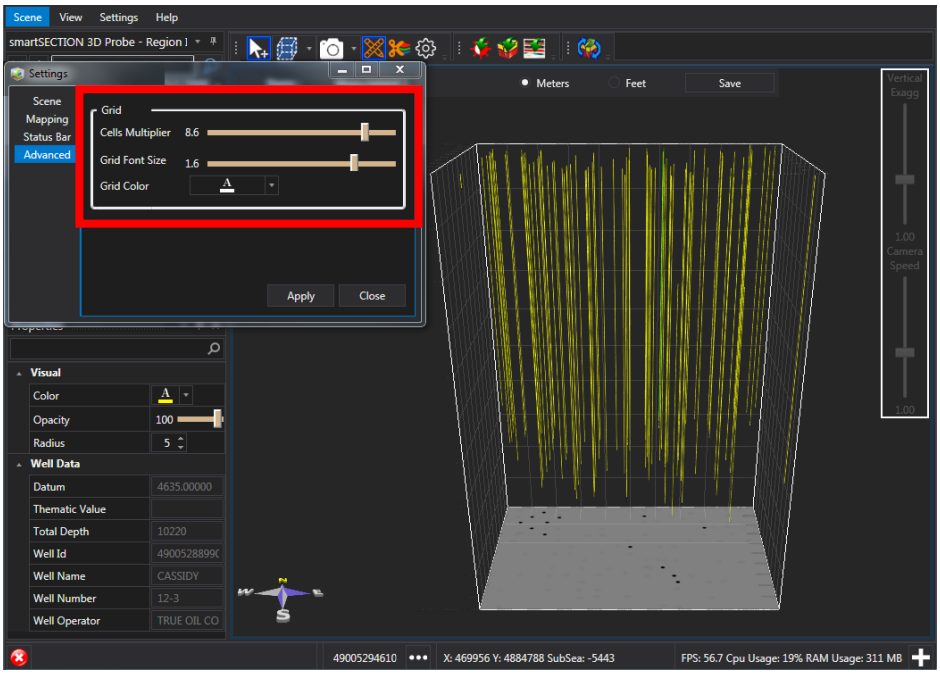
You can directly rename measurements in the **General** toolbar before performing the save operation. Previously, you could only rename them in the **Properties** pane after the save operation.

Hide/Show Multiple Items

You can hide or show multiple selected region items at once in the 3D scene. To do so, press <**CTRL**>, and then click on the required items in the **Regions** pane.

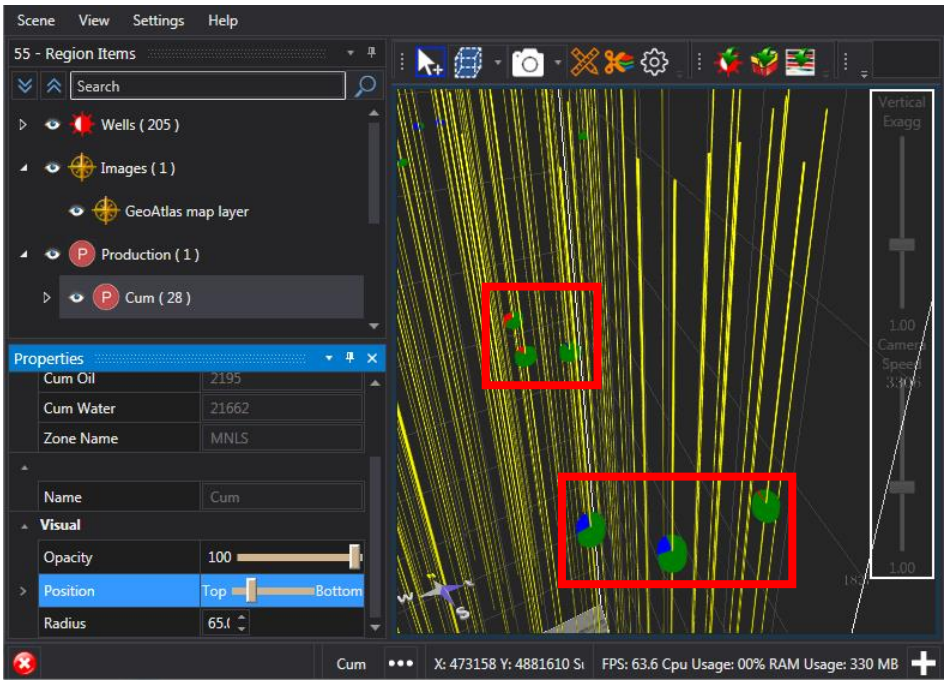
Apply Grids to 3D Scene

The grid feature provides a network of intersecting lines that can be used for better data presentation. The grids display along your data so that you can read x-y components along with the depth values. The grid options are available in the **Settings** menu >> **Settings** dialog >> **Advanced** tab.



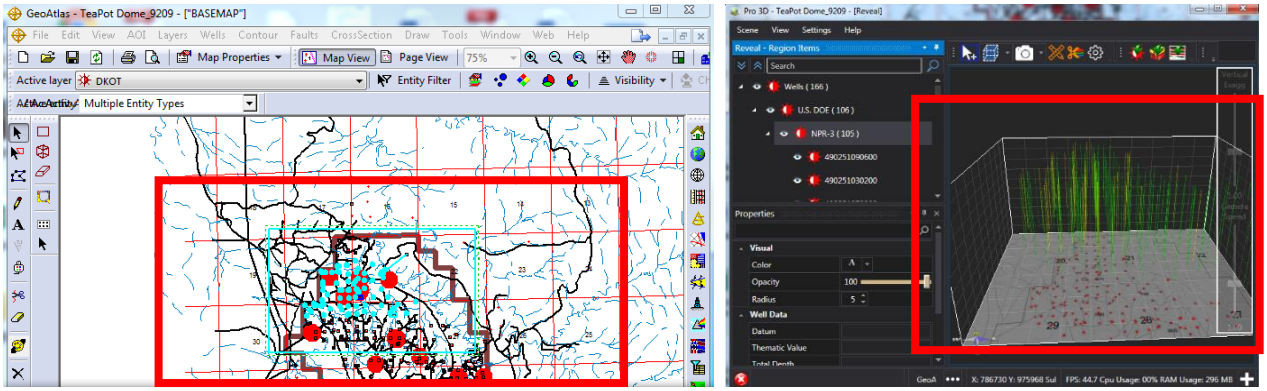
Move Production Bubbles Along Wells

Use the **Position** slider to move production bubble values along wells in 3D scene, from top to bottom. This slider is available in the **Properties** pane. In the image below, the green discs are the production bubbles that are moved along a well using the **Position** slider.



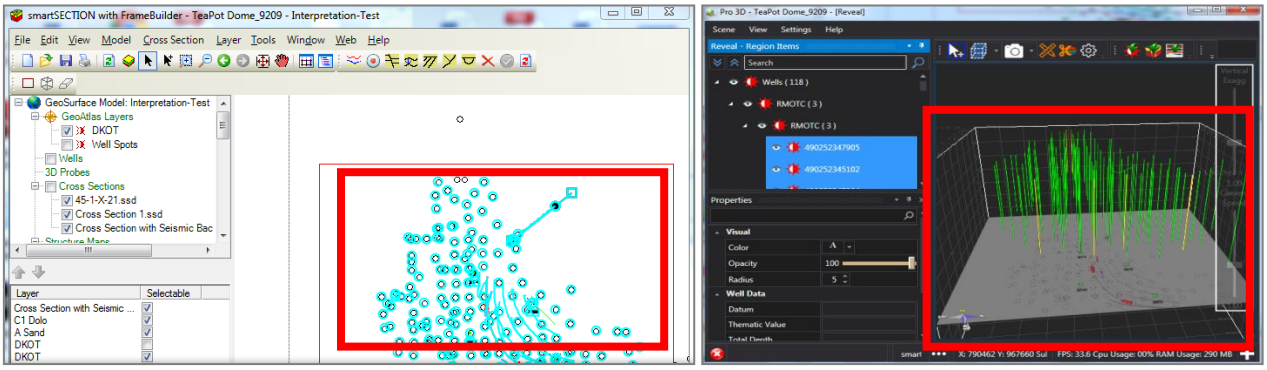
Real Time Selection of Wells between Pro 3D and GeoAtlas

Well selection is now synchronized between Pro 3D and GeoAtlas; such that when you select a well in one application, it gets selected in the other application simultaneously.



Real Time Selection of Wells between Pro 3D and smartSECTION

Well selection is now synchronized between Pro 3D and smartSECTION; such that when you select a well in one application, it gets selected in the other application simultaneously.



Select Different Versions of Seismic Volumes

Select different versions of the seismic volumes from the **Volume Options** drop-down list available in the seismic **Properties** pane. Selecting a volume from this drop-down list updates the seismic data displayed in the probe to the currently selected volume.

Update Picks & FrameBuilder Surfaces

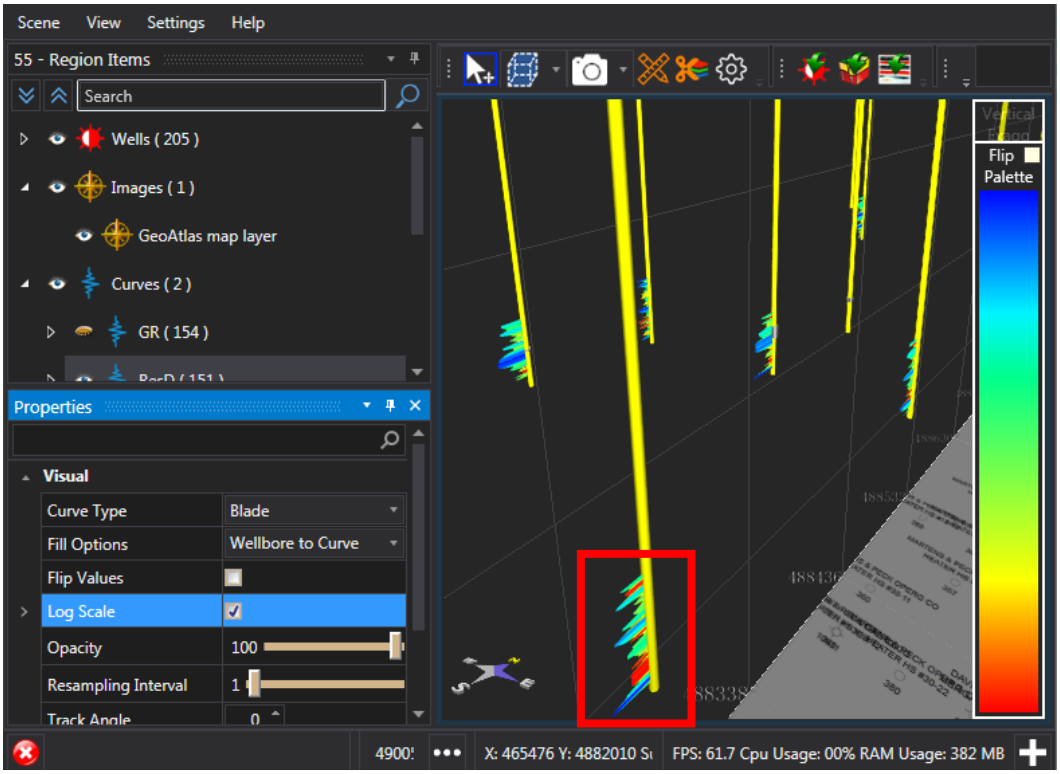
Update the picks and FrameBuilder surfaces in the geomodel using the **Update FrameBuilder** button available in the **General** toolbar.

Enhanced Log Curves Feature Set

The following enhancements are added to the log curves:

- View histograms for log curves.
- Log curves can be displayed by selecting **Log Scale** in the **Properties** pane.
- **Flip** color **Values** in the **Properties** pane.
- Set **Track to Curve** in **Fill Option** in the **Properties** pane.

The image below shows logs curves displayed via logarithmic scale.



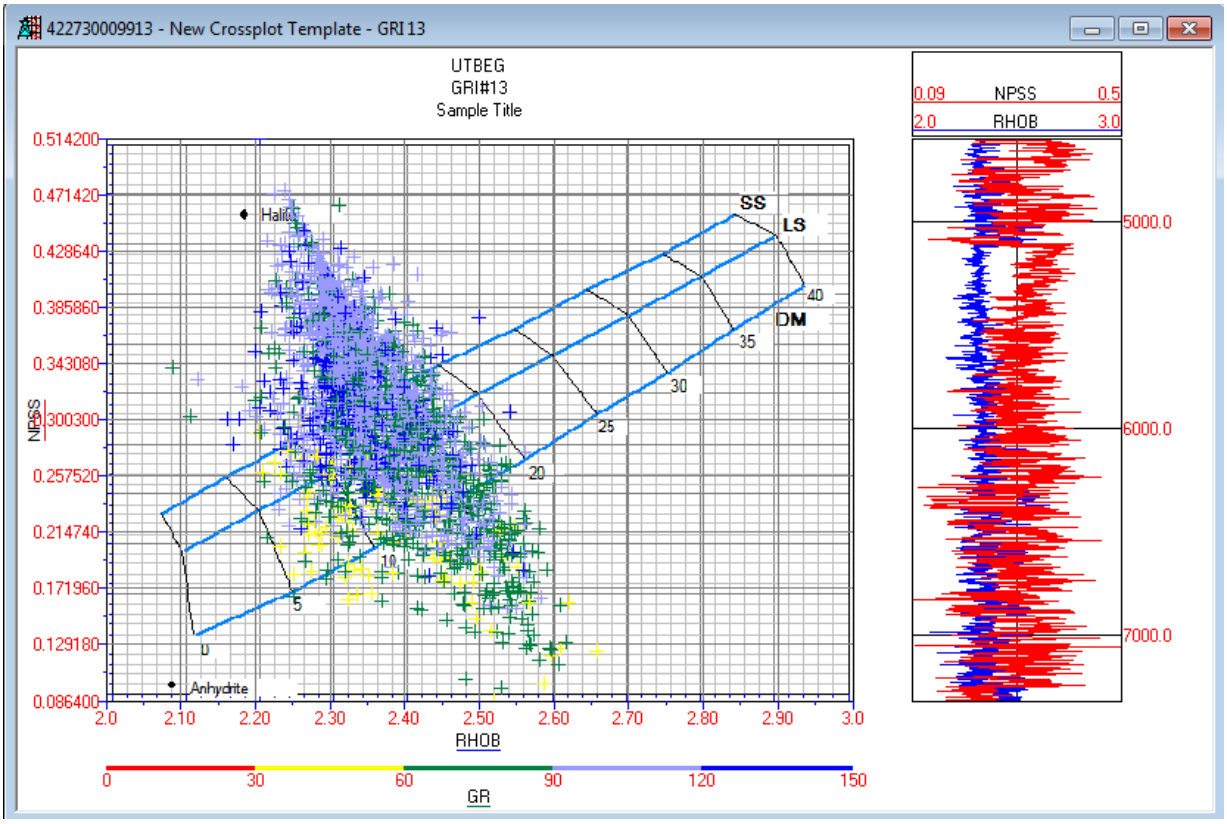
PRIZM

This section describes the changes to PRIZM.

Crossplot Chart Image Background

You can use scanned images as references in the background for PRIZM crossplots. This allows you to conveniently carry out interpretation atop the reference image. You can also save the interpretation along with the image for your record.

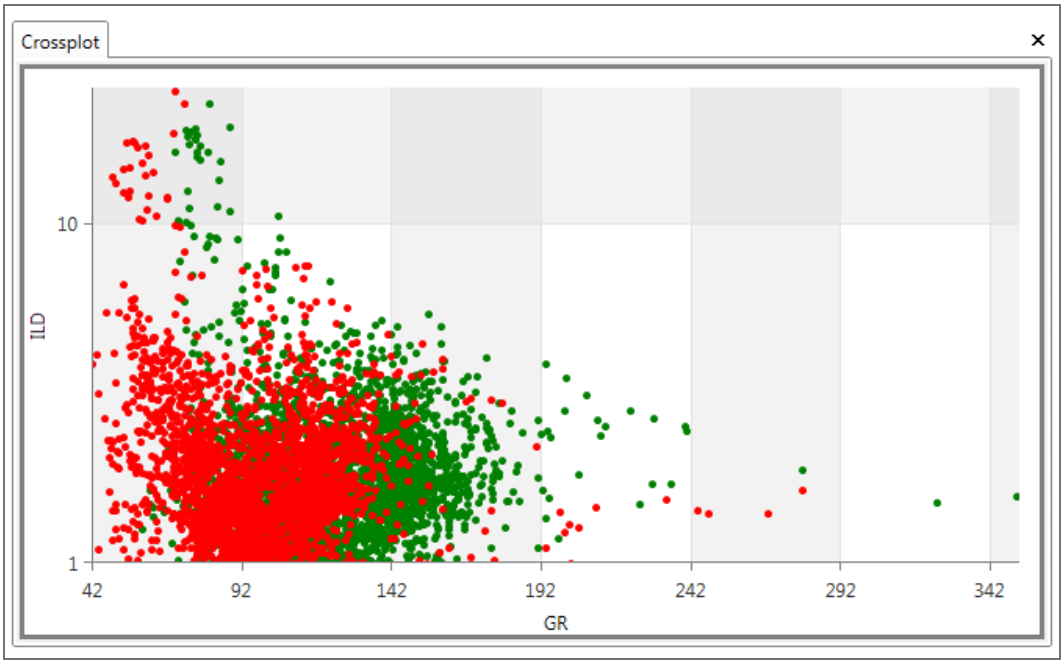
The background image is added from the **Edit** menu >> **Background Chart** option >> **Crossplot Template Properties** dialog box >> **Background Chart** tab.



GCN Crossplot Chart

The Crossplot chart in the Graphical Curve Normalization dialog box provides an enhanced view of curve normalization changes. You can efficiently navigate through the crossplot view and interact with the normalized and referenced data on it. The crossplot seamlessly updates in real time with the normalization process.

The Crossplot chart can be accessd from the **Curves** menu >> **Operations** option >> **Normalize** option >> **Graphical Curve Normailization** dialog box.



Directly Import Vshl Curve

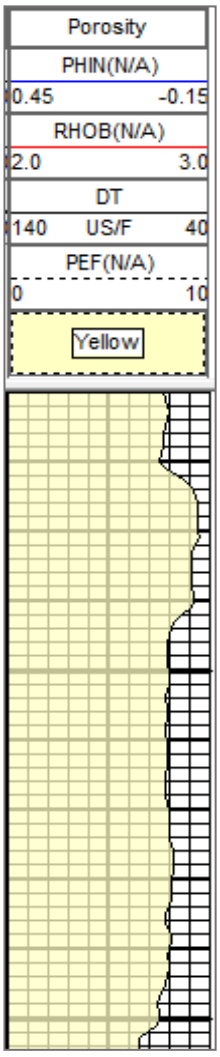
You can directly import the V_{shl} curve as input to the 4 mineral PEM, bypassing the V_{shl} curve calculation process. Previously, V_{shl} was calculated using the GR_{cln} and GR_{shl} curves.

To set V_{shl} curve as input to the 4 mineral PEM, go to the **Interpretation** menu >> **Select User Defined Equation Set** option >> **New Set** button >> **PRIZM External Model** list box, and then select the **4 min DW MS IND English; RHOB, PHIN, PEF, VShl, RT** option.

Transparency in Area Fills

The grids visibility of well logs is improved by adjusting the transparency of the area fills. This helps in viewing curve responses while working with multiple Curve Spectrums and Color Area Fills. The transparency levels are set from the **Edit** menu >> **Area Fills** option >> **Area Fills** tab.

Curve Spectrum



Color Area Fill

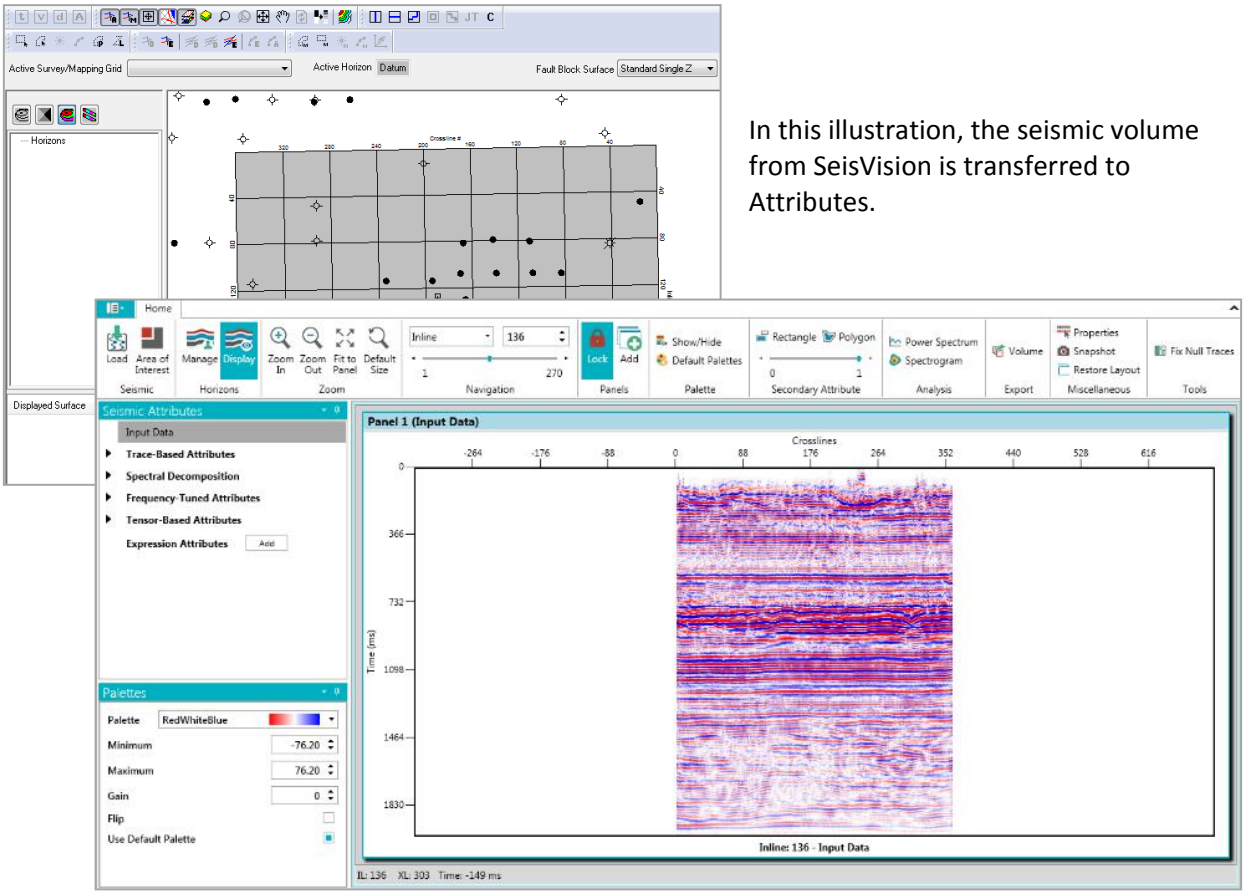
SeisVision

This section describes the changes to SeisVision.

Export SeisVision Volumes to GVERSE™ Attributes™

SeisVision volumes can be exported to GVERSE Attributes application, where you can apply attributes to the exported volumes on-the-fly.

To export the volume to Attributes, open the interpretation in SeisVision, load 3D data, and then from the **Tools** menu, select **Send to GVERSE Attributes**.



In this illustration, the seismic volume from SeisVision is transferred to Attributes.

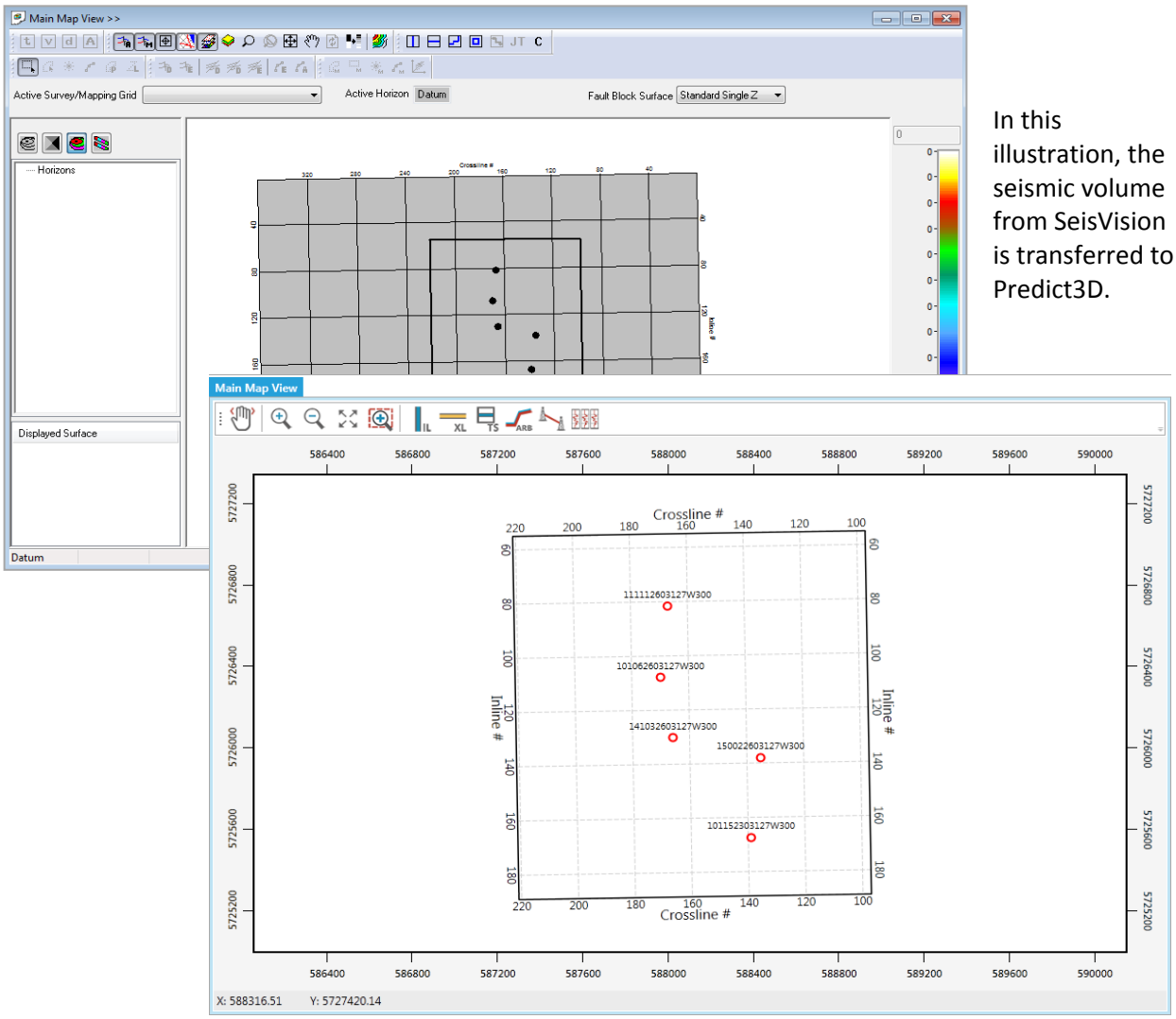
The Attributes software is part of the GVERSE application suite by LMKR (http://www.lmkr.com/gverse). It enables geoscientists to harness the full power of seismic attributes by drastically reducing the time, effort and disk space required for attribute analysis. Fast, on-the-fly computation, and real-time visualization of seismic attributes in a multi-pane viewer lets interpreters perform detailed, in-depth attribute analysis quickly and efficiently, maximizing the value of their seismic data.

The attributes applied in this software are computed using both GPU and CPU, and displayed in a versatile, integrated viewer for immediate feedback. Interpreters can quickly select and fine tune attributes that add most value to their data. It also supports on demand spectral decomposition which removes the need for intermediate volumes, eliminating any disk space management concerns when computing high-resolution attributes.

Export SeisVision Volumes to GVERSE™ Predict3D™

You can now export SeisVision volumes along with the associated wells and formations to the GVERSE Predict3D software to predict rock properties away from wells using well logs and seismic data. In Predict3D, you can set different parameters to calculate coefficients used to predict the property volume. You can also view the difference between actual, predicted and training curves. Once the output volume has been generated, it is can be exported back to SeisVision and used in the seismic interpretation process.

To export the volume to Predict3D, open the interpretation in SeisVision, load 3D data, add the required wells and formations, and then from the **Tools** menu, select **Send to GVERSE Predict3D**.



In this illustration, the seismic volume from SeisVision is transferred to Predict3D.

The Predict3D software is part of the GVERSE application suite by LMKR (http://www.lmkr.com/gverse). It is a multi-attribute inversion solution that estimates rock properties over an entire survey area. Using spectral decomposition and state-of-the-art optimization techniques, Predict3D generates rock property volumes from well logs and seismic data to help better understand the reservoir away from wells, therefore, reducing risk in well planning and field development.

Fixed Issues

The following customer reported issues were fixed in this release.

License Management Tool

ID	Description
80796	The FLEXID9_Shared_Objects.cmd batch utility shipped with LMT 3.0/2015.0 installer did not function properly in certain cases. This has been fixed by replacing the batch file with the CopySharedFiles.exe executable in the LMT 3.1/2015.1 installer. This file automatically runs with elevated permissions.

ProjectExplorer

ID	Description
57457	In multiple user environments, the database services no longer crash when the users carry out the workflows in different AOI.

Pro 3D

ID	Description
80796	Pro 3D no longer displays incomplete data when large size IsoMap layers are loaded into the 3D scene. Previously, only selected data was displayed.

GeoAtlas

ID	Description
15153	Broken annotation polygons can now be rejoined.
17995	In a specific scenario, extraneous lines are no longer drawn on the map when displaying conditional pies.
69461	Inset border fills no longer appear outside of the active polygon.

IsoMap

ID	Description
78284	While creating an IsoMap layer volume calculation, a confirmation message no longer displays for every zero volume setting.
69329	IsoMap Build Surfaces now recognizes the renamed field captions in WellBase. Previously, the renamed captions in WellBase did not appear when creating IsoMaps in GeoAtlas.

WellBase

ID	Description
52166	The wells no longer appear multiple times in the excel pivot report if it has the legal location.
59502	The Excel Sheet Importer no longer displays the Save Changes dialog twice upon exit.
69795	When importing proposed surveys with IHS 297, the WellBase layers show the correct proposed borehole path corresponding to the proposed wells.

DefCon2

ID	Description
82392	When importing the production data through IHS 298, the first production date displays correctly in the Production tab.
76312	In multiple user environments, ASCII 4 import process is no longer blocked if another user launches the Production tab on the same project.
77006	The import feature has been fixed to import only specific bottom hole Texas locations. Previously, the locations could only be imported via bulk import.

DepthRegistration

ID	Description
77824	Top DepthRegistration points display at the correct location on the image. Previously, the points were displayed at the top of the image which pushed down the log curves.

PRIZM

ID	Description
9781	Rendering logic has been fixed to prevent faulty display of Area Fill between 'Flag' curves. Previously, the Area Fill was extending to the headers area in the printed output for exported graphics.
18652	Rendering logic has been improved to fix the display issues in print preview and graphics export.
32527	The memory issue in the Multi-Well UDE output has been fixed.
47937	Curve Title displays correctly in the Mineral Track properties dialog box. Previously, it used to reset on changing the display order of the curves.

78719	The batch LAS import process is a continuous process now, and in case of a corrupt LAS file import, an error is logged without halting the import process. Previously, the bad LAS file import stopped the process.
79352	Saving the Curve Data Statistics output to Zone Manager has become faster after the implementation of bulk data fetching. Previously, it was slower in case of large number of wells.
54876	Simple depth shift now moves the core data associated with the alpha-numeric core numbers. Previously, only cores that had numeric core numbers were shifted.
77200	The User Defined Equation Evaluation dialog box accommodates the values for curves with long names as the dialog size has been increased.

smartSECTION

ID	Description
73292	The SQL Query for the Load Wells on Demand option has been improved to correctly display the Interval data after refreshing all views in the Cross Section view.
77294	Rendering performance on the Main Map view has been improved for large projects.
83501	Signature log file support in SSDX format has been added to allow saving of the log files used in the Geosteering Correlation tool. Previously, it was not possible to save the signature log file to SSDX format.
77515	Wellbase filters can now be sorted alphabetically in the Interpretation Options dialog box.
77516	Sorting option is available for the Intervals list in the Display Intervals dialog box. Previously, the list was not sortable.
77540	Bottom hole labels are now positioned properly with associated wells. Previously, the labels did not display properly.
77091	Selection of correlation line between wells is possible on any point. Previously, it was selectable only on a soft or a hard point.

Known Issues

This section lists the known issues in this release.

License Management Tool

ID	Description
54434	Two license files with two different bitlocks cannot be configured at the same time using LMT.

DefCon2

ID	Description	Workaround
84649	When reimporting wells from either an ASCII file or an IHS file, the directional survey is automatically recalculated for wells with formation tops that exist in the database as well as in the file being imported. Previously, surveys were recalculated only if there was a change in the formation tops or deviation survey.	Do not select survey calculation at the time of import. Once, all the wells have been imported, then calculate the survey of the intended well through WellBase.

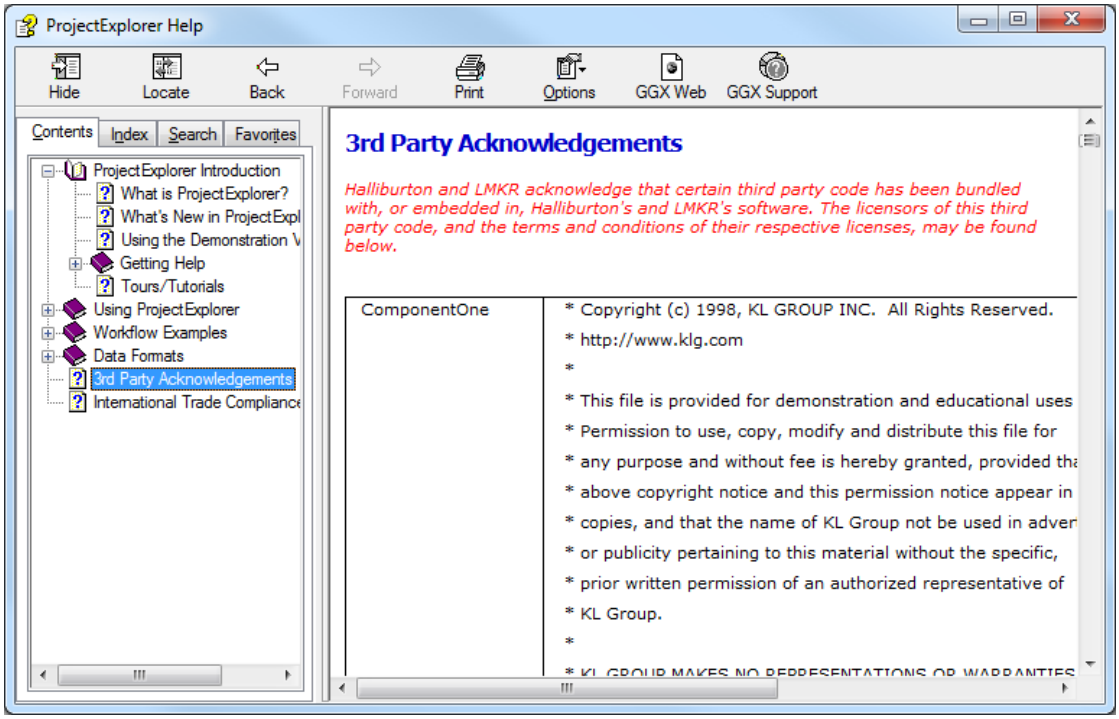
Third Party Applications

LMKR uses various third-party applications in the development of its software.

LMKR acknowledges that certain third party code has been bundled with, or embedded in, its software. The licensors of this third party code, and the terms and conditions of their respective licenses, may be found in the GeoGraphix Help files:

1. Open your help files.
2. In the list of topics on the left, locate the **Third Party Acknowledgements** topic and click to open the topic.

   A list of third party applications and their details display.



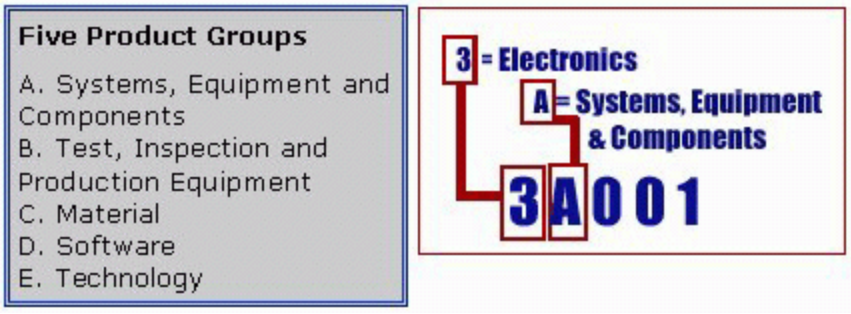
International Trademark Compliance

This application is manufactured or designed using U.S. origin technology and is therefore subject to the export control laws of the United States. Any use or further disposition of such items is subject to U.S. law. Exports from the United States and any re-export thereafter may require a formal export license authorization from the government. If there are doubts about the requirements of the applicable law, it is recommended that the buyer obtain qualified legal advice. These items cannot be used in the design, production, use, or storage of chemical, biological, or nuclear weapons, or missiles of any kind.

The ECCNs provided here (if available) represent LMKR's opinion of the correct classification for the product today (based on the original software and/or original hardware). Classifications are subject to change. If you have any questions or need assistance please contact us at support@lmkr.com.

Under the U.S. Export Administration Regulations (EAR), the U.S. Government assigns your organization or client, as exporter/importer of record, responsibility for determining the correct authorization for the item at the time of export/import. Restrictions may apply to shipments based on the products, the customer, or the country of destination, and an export license may be required by the Department of Commerce prior to shipment. The U.S. Bureau of Industry and Security provides a website to assist you with determining the need for a license and with information regarding where to obtain help.

The URL is: http://www.bis.doc.gov.



Definitions

CCATS (Commodity Classification Automated Tracking System) - the tracking number assigned by the U.S. Bureau of Industry and Security (BIS) to products formally reviewed and classified by the government. The CCATS provides information concerning export/re-export authorizations, available exceptions, and conditions.

ECCN - Export Control Classification Number - The ECCN is an alpha-numeric code, e.g., 3A001, that describes a particular item or type of item, and shows the controls placed on that item. The CCL (Commerce Control List) is divided into ten broad categories, and each category is further subdivided into five product groups. The CCL is available on the EAR Website.

The ECCN number (if available), License Type, and the CCATS Numbers for this product are included in the table below. Also included is the date the table was last updated.

Product/Component/R5000	ECCN Number	License	CCATS Number	Last Updated On
GeoGraphix	--	-	-	-
LMKR License Manager	5D002C.1	ENC	G055172	6/19/2007

Contacting LMKR Support

LMKR is committed to providing the highest level of technical customer support in the industry. With an average tenure of more than thirteen years, our highly trained and experienced staff of technical analysts is comprised of geoscientists, engineers, land professionals, petrophysicists, and system specialists.

Please refer to our Customer Support timings mentioned below to ensure that you have access to our support analysts assigned to your region. When getting in touch with LMKR support, please remember that real-time support will not be available during bank holidays or after office hours. If you do get in touch with LMKR Support outside of work hours, please leave a voice message with a brief description of the issue that you are facing. Your voice message will be used to automatically create a support case for you. This will enable our analysts to attend to your issue and provide you with a resolution as soon as possible

North and South America	**Europe, Middle East & Africa**
Monday – Friday 8am-6pm CST Toll Free (US/Canada) : +1 855 GGX LMKR (449 5657) Colombia : +57 1381 4908 United States : +1 303 295 0020 Canada : +1 587 233 4004 *Excluding bank holidays	UK Monday - Friday 8am - 5pm +44 20 3608 8042 *Excluding bank holidays UAE Sunday - Thursday (Dubai GMT+4) 8am - 5pm +971 4 3727 999 Egypt Sunday - Thursday +0800-000-0635 *Excluding bank holidays
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Helpful Links

Name	Website Address
LMKR Homepage	http://www.lmkr.com
LMKR Support Portal	http://support.lmkr.com